Academia to Action:

Managerial Academic Experience and Corporate ESG Performance[*]

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Abstract

This paper examines the impact of managerial academic experience on corporate environmental, social, and governance (ESG) performance. We find that firms with more academic executives in the top management team exhibit significantly higher ESG performance. In addition, our results suggest that the effect is stronger for firms with young academic executives. To address potential endogeneity concerns, we employ instrumental variables and propensity score matching approaches and confirm our main findings. Moreover, we show that high ESG performance of firms with academic executives is consistent with shareholder value and unlikely driven by agency issue. To corroborate our main findings using observable ESG actions, we show that firms with academic executives have lower pollution intensity and engage more in philanthropy. Finally, we show evidence that academic executives improve firm ESG performance through increases in capital expenditure rather than financial leverage.

1.   Introduction

Environmental, social, and governance (ESG) performance has become an increasingly important component of corporate policies. This is because shareholders and stakeholders demand firms to achieve financial goals in a socially responsible manner (Cox, Brammer and Millington, 2004; Riedl and Smeets, 2017; Chen, Dong and Lin, 2020). There has been an increasing attention in recent literature on the determinants of corporate ESG performance and the implications of firm ESG efforts. In particular, a growing stream of literature explores the effect of top managers' individual characteristics, such as prior career and life experiences, on firm ESG performance.[1]

In this paper, we investigate whether and how managerial academic experience affects corporate ESG performance. Our study focuses on China as it provides a uniquely interesting setting to examine the impact of managerial academic experience on corporate policies. The historical economic reform set forth in 1978 in China witnessed waves of intellectuals leaving academia and pursing opportunities in the industry (Groves, Hong, McMillan and Naughton, 1995). As a result, China has a relatively high proportion of academic executives. Moreover, along with fast economic growth, environmental concerns (e.g., air pollution) and social issues (e.g., workplace safety) have emerged. Should corporate executives be socially responsible has since become a hotly debated issue in China (Yin and Zhang, 2012).

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[1] For instance, the highlighted experiences in the ESG-related literature includes early-life disaster experience (O'Sullivan, Zolotoy and Fan, 2021; Choi, Shin and Kim, 2023), poverty experience (Xu and Ma, 2021), and regulatory experience (Wang, Wang and Wu, 2023).

We conjecture that academic executives can improve corporate environmental and social externalities due to their acquired knowledge, sense of social responsibility, and unique positions to put idealism into practice. First, academic experience equips executives with tangible ESG-related knowledge. They are more inclined to believe climate change, understand the long-term impact of environmental and social issues, as well as the interdependence of firm financial performance and social development (Graafland and Noorderhaven, 2020). Second, academic executives not only are well educated with more influence of Confucianism but also, as researchers and educators, have more social awareness and relatively strong idealism (He, Chen and Zhang, 2021). Their sense of responsibility to community and society may become even more elevated due to their social status as corporate leaders (Borghesi, Houston and Naranjo, 2014). Third, with professional academic experience, academic executives possess the ability to exert real impact on corporate ESG performance. They are more likely to have the skills to effectively invest in firms' ESG activities. With their unique positions as corporate decision makers, academic executives have the platform to put their idealism to work. Thus, we hypothesize that firms with more academic executives in the top management team are more likely to have higher ESG performance.

We identify academic executives as those with prior work experience at universities or colleges, research institutes, or academic associations. Based on the sample of firms in the Chinese A-share market from 2008 to 2020, we show that firms with more academic executives in top management team exhibit significantly higher environmental, social and governance performance. We show that the effect remains

significantly positive after controlling for main firm characteristics and important executive personal characteristics, such as education. In addition, we further explore whether the age of academic executives affects the relationship between academic experience and firm ESG performance. We find that the effect of academic experience on corporate ESG, particularly social performance, is stronger for firms with young academic executives. This is consistent with the notion that younger generation cares more about environmental and social issues.[2]

We perform a number of robustness tests of our main findings. First, we adopt two alternative measures of academic executives. One is a dummy variable that equals one if at least one executive has academic experience and zero otherwise, and the other is the percentage of senior executives (i.e., CEOs or board chairpersons) with academic experience. We find that our main findings remain robust. Second, to mitigate the impacts of time-invariant local characteristics, we further include province and city fixed effects in the regressions and find that our results are robust.

Although we find positive association between managerial academic experience and firm ESG performance, it remains challenging to establish the causal inference due to potential endogeneity concerns. It is possible that companies with better ESG performance are more likely to hire academic top managers. In addition, there are potential omitted variables which simultaneously affect managerial academic experience and firm ESG performance. Moreover, firms with academic executives can

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[2] In a survey released by Stanford Graduate School of Business, investors in their twenties or thirties are shown to be more willing to sacrifice their investment return to make companies improve their environmental practices (https://www.gsb.stanford.edu/insights/esg-generation-gap-millennials-boomers-split-their-investing-goals).

be significantly different from those without, leading to selection bias. To address these concerns, we exploit instrumental variable regressions and propensity score matching (PSM) approaches.

First, we use the percentage of individuals working in the education sector among the local population as an instrumental variable. We also simultaneously use two instrumental variables, namely (1) the average percentage of academic executives in top management teams within an industry each year and (2) the average percentage of academic executives in top management teams of firms that are located within the same area each year (Kim, Li and Li, 2014; Ertugrul, Lei, Qiu and Wan, 2017). The results of two-stage least squares (2SLS) regressions suggest that all the instrumental variables are positively associated with the percentage of academic executives, and our main results remain robust in these instrumental variable regressions. Second, we employ the PSM method to mitigate sample selection bias and show that the positive effect of managerial academic experience on ESG performance remains statistically significant based on the matched sample. Finally, to further mitigate the omitted variable issue, we control for two additional groups of factors, namely local economic and cultural situations and other life or career managerial experiences. Overall, our results support causal inferences regarding the effect of managerial academic experience on corporate ESG performance.

It is possible that high corporate E&S performance may be driven by academic executives' personal value and not necessarily consistent with shareholder value. There might be a conflict between pursuing high E&S performance and shareholder interests

(Masulis and Reza, 2015). On the other hand, firms' E&S-related efforts may increase both corporate pecuniary and non-pecuniary value (Benabou and Tirole, 2010; El Ghoul, Guedhami, Kwok and Mishra, 2011; Jiraporn, Jiraporn, Boeprasert and Chang, 2014; Aouadi and Marsat, 2016).[3] Therefore, it remains unclear whether E&S-related activities are consistent with long-term firm value. We investigate whether the improvement in E&S performance of firms led by academic executives is driven by potential agency conflicts. Specifically, we use managerial ownership as a reverse proxy for agency problems, and the empirical results show that the interaction between executives' academic experience and managerial ownership is positively associated with firm ESG performance, particularly social performance, suggesting that the ESG investments of academic executives are consistent with shareholder wealth. In addition, we demonstrate that executives' academic experience is positively associated with firm value, indicating the consistent interests of academic top managers and shareholders. Overall, these findings highlight that the emphasis of academic executives on ESG activities is unlikely to be driven by agency issues.

While our main results show a positive association between managerial academic experience and corporate ESG performance, there is yet concrete evidence that academic executives actively contribute to ESG performance. To corroborate our main findings, we investigate the effect of academic executives on toxic emissions and

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[3] Executives may use ESG strategies to achieve firm value growth by enhancing customers' satisfaction (Saeidi, Sofian, Saeidi, Saeidi and Saaeidi, 2015) and catering to investors' preferences (Cox et al., 2004). These strategies can also reduce ESG-related potential risks, such as environmental risk (Fernando, Sharfman and Uysal, 2017) and regulatory risk (Oikonomou, Brooks and Pavelin, 2012; Unerman and O'Dwyer, 2019; Peng, Colak and Shen, 2023), leading to higher firm value.

corporate giving, which are observable actions of firms' ESG efforts (Chen, Patten and Roberts, 2007; Akey and Appel, 2020). The empirical results demonstrate that managerial academic experience is associated with less toxic emissions and more corporate philanthropy.

Finally, we explore the mechanisms underlying the positive relationship between managerial academic experience and firm ESG performance. We examine the effects of capital expenditure and financial leverage. We show that academic executives improve firm ESG performance by increasing capital expenditures. However, leverage appears not to be an important underlying mechanism.

Our paper makes several contributions to the literature. First, we add to the literature on the effect of executives' career and life experience on corporate decisions (Malmendier, Tate and Yan, 2011; Cain and McKeon, 2016; Huang, Tan and Faff, 2016; Law and Mills, 2016; Feng and Johansson, 2018). Given that existing studies emphasize the effect of poverty experience and early-life disaster experience on firm ESG (O'Sullivan et al., 2021; Xu and Ma, 2021), we further examine the impact of managerial academic experience on corporate ESG performance. Second, we extend the literature on the determinants of corporate ESG performance (McWilliams and Siegel, 2001; Mahoney and Thorne, 2005; Jo and Harjoto, 2011; Liang and Renneboog, 2017; McCarthy, Oliver and Song, 2017; Al-Shammari, Rasheed and Al-Shammari, 2019). We hypothesize that ESG-related knowledge, the sense of social responsibility, and ability to put idealism to work drive the superior ESG efforts of academic executives. Our results show that consistent with our conjecture, firms led by academic

top managers indeed have better ESG performance. In addition, we contribute to the debate on whether ESG activities are driven by agency problems (Masulis and Reza, 2015) and provide evidence that corporate ESG improvement in China's firms introduced by academic executives is unlikely a consequence of agency conflict. Finally, environmental and social issues in China have become severe and urgently needed to be addressed in recent decades. In this context, given the crucial roles of companies in dealing with these problems, this paper has important practical implications. Our findings suggest that firms can contribute to society by hiring executives with academic experience, who are the pioneers in improving corporate E&S externalities.

The remainder of this paper is organized as follows. Section 2 describes the data and variable construction. Section 3 presents the baseline results on the relationship between managerial academic experience and corporate ESG performance. In Section 4, we perform robustness tests. Section 5 addresses potential endogeneity issues. Section 6 conducts further analyses. Section 7 concludes.

2.   Data and Variable Construction

2.1 Data

Our sample includes all public companies in the Chinese A-share market. We collect executives' characteristics, including academic experience, from the China Stock Market and Accounting Research (CSMAR). Academic experience is defined as having worked in universities or colleges, research institutes, or academic associations

(Chen, Garel and Tourani-Rad, 2019). In addition, we manually double-check the data on executives' academic work experience based on information from public sources, such as companies' annual reports, financial websites and platforms (e.g., Wind, NetEase Finance, Hexun), and search engines (e.g., Baidu and Bing).

ESG-related information is obtained from the Datago database, which has been widely used in recent studies (Wu and Ye, 2020; Deng, Jiang and Young, 2021). Berg, Koelbel and Rigobon (2022) find that ESG ratings from different providers disagree substantially. Our paper does not suffer from this concern because the ESG performance measures are constructed based on ESG-related news sentiment, which is similar to the RepRisk ESG database used for the U.S. sample. Specifically, we employ the average daily environmental, social and governance new sentiment scores over a given year in this study. After excluding financial companies and those under special treatment companies during 2008-2020, we finally have 16,558 firm-year observations. To avoid the impact of extreme values, we winsorize all continuous variables at the 1st and 99th percentiles.

2.2 Variable construction

We use four measures to proxy for firms' ESG performance in our regression model: *Env*, *Soc*, *Gov*, and *AvgESG*. *Env*, *Soc*, and *Gov* are the average daily environmental, social, and governance news sentiment scores over a given year, respectively. *AvgESG* is the average of *Env*, *Soc* and *Gov* scores.

The main variable of interest is *Academic%*, which is measured as the percentage

of executives with academic experience in top management teams. [4] We define academic experience as work experience at universities or colleges, research institutes, or academic associations. In addition, we control for four variables related to executives' characteristics. The first one is *Education*, calculated as the average education of top managers, which may have a significant impact on the corporate ESG footprint (Amore, Bennedsen, Larsen and Rosenbaum, 2019). The second variable is *Age*, defined as the average age of top managers. The third is *Gender*, a dummy variable equal to one if at least one executive of the top management team is female and zero otherwise. The last control variable of executives' features is *ManagerOwn*, calculated as the percentage of shares held by top managers. In addition, we control for key firm characteristics, including *Ln(Asset)* (the natural logarithm of the book value of total assets), *Capex* (capital expenditure scaled by total assets), *Leverage* (total liability divided by total assets), *ROE* (return on equity, which equals net income divided by the total book value of common equity), *Cash* (cash holdings divided by total assets), *Tobin's Q* (the market value of assets divided by the book value of assets where the market value of assets equals the book value of assets plus the market value of common equity less the sum of the book value of common equity), *SOE* (an indicator variable equal to one if the firm is state-owned and zero otherwise) and *InstOwn* (the percentage of shares held by institutions). We present the detailed definitions in Table A1 in the Appendix.

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[4] The members of the top management team include Chief Executive Officer (CEO), Chairman of the Board, Deputy CEO, Executive Chairman, Chief Financial Officer (CFO), Chief Operating Officer (COO), Chief Technology Officer (CTO), Chief Law Officer (CLO), Chief Research Officer (CRO) and Commercial Director, etc (Geiler and Renneboog, 2015).

2.3 Summary statistics

Table 1 presents the summary statistics for the variables used in our baseline analysis. The average percentage of executives with academic experience in top management teams in our sample is approximately 9%. For the ESG-related score, the firms have an average score of 0.32, 0.40, 0.24 and 0.43 for *Env*, *Soc*, *Gov*, and *AvgESG*, respectively.

[Insert Table 1 about here]

We also provide descriptive statistics for the important control variables in the research. We find that the executives are on average 47 years old and have above a bachelor's degree.[5] In addition, 57% of top management teams have at least one female executive, and the corporation's managerial ownership has an average of 10%. For remaining control variables, a typical firm has a natural logarithm of total assets at 22.19. The *Capex* and *leverage* in an average firm are 0.06 and 0.43. The means of *ROE*, *Cash* and *Tobin's Q* are 0.07, 0.05 and 1.99, respectively. Moreover, 33% of corporations are state-owned enterprise (*SOE*). For a typical firm, institutional ownership (*InstOwn*) is 0.46.

3. Baseline Results

To examine our testable hypothesis, we use the following multiple regression

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[5] The higher value of the *Education*, the higher the degree. If the value of *Education* is higher than three, the executive has a bachelor's degree or above. The mean of education is 3.28, which is higher than three; therefore, on average, the executives have above bachelor's degree.

model:

$$ESG\ (E\backslash S\backslash G)\ Performance_{i,t+1} \tag{1}$$

$$= \alpha + \beta \text{Academic\%}_{i,t} + \gamma Controls_{i,t} + FEs + \epsilon_{i,t}$$

where *i* denotes a public firm and *t* denotes a year. The dependent variables are ESG-related performance (scores), including *Env*, *Soc*, *Gov*, and *AvgESG*, for year *t+1*. The variable of interest in this regression is *Academic%*, which is measured as the percentage of executives with academic experience in top management team. *Controls*$_{i,t}$ is a set of control variables including *Education*, *Age*, *Gender*, *ManagerOwn*, *Ln(Asset)*, *Capex*, *Leverage*, *ROE*, *Cash*, *Tobin's Q*, *SOE* and *InstOwn*. Moreover, year and industry fixed effects are included in Eq. (1).[6] The standard errors are clustered at the firm level.

3.1 Managerial academic experience and firm ESG performance

We present the regression results of Eq. (1) in Table 2. The dependent variables are *Env*, *Soc*, *Gov*, and *AvgESG*. The results show that across all regressions, the coefficient estimates of *Academic%* are significantly positive at the 1% level, suggesting that firms with a larger proportion of academic executives in top management teams exhibit better ESG performance. Specifically, the coefficient in column (1) suggests that, economically, a one-standard-deviation (0.15) increase in the percentage of academic executives is associated with a 6.52% (0.15×0.139/0.32) increase in environmental score from the mean level of 0.32. In addition, column (2)

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[6] Low within firm variation in proportions of academic executives does not allow us to control for firm fixed effects.

shows that a one-standard-deviation (0.15) increase in *Academic%* is associated with an approximately 4.35% (0.15×0.116/0.4) increase in social score from the mean level of 0.4. Furthermore, economically, a one-standard-deviation (0.15) increase in *Academic%* is associated with an approximately 4.44% (0.15×0.071/0.24) increase in governance score from the mean level of 0.24 (column (3)). Finally, the coefficient estimate of *Academic%* in column (4) is 0.117, indicating that an economically one-standard-deviation (0.15) increase in *Academic%* is associated with an approximately 4.08% (0.15×0.117/0.43) increase in average ESG score from the mean level of 0.43. Overall, these results support our hypothesis that managerial academic experience has a positive impact on corporate ESG performance.

[Insert Table 2 about here]

For the control variables, we find that large firms (*Ln(Asset)*) have better ESG performance. In addition, state-owned enterprises have higher environmental, governance, and overall ESG scores. Moreover, more capital expenditures (*Capex*) and high return on equity (*ROE*) are associated with better ESG performance. Furthermore, institutional ownership has positive impact on corporate social and average ESG scores. We also find that firms with high leverage have worse social and average ESG performance. Finally, high Tobin's Q is associated with superior environmental and social (E&S) scores.

Furthermore, we explore the effect of executives' age on the relationship between managerial academic experience. We first define *YAcademic%* as the percentage of young academic executives in the top management team. Young academic executives

are those with age lower than the sample median among academic executives. We also construct *OAcademic%,* which is defined as the percentage of old academic executives in the top management team, where older academic executives are those with age higher than the sample median among academic executives.

[Insert Table 3 about here]

In Table 3, we present the regression results of corporate ESG on *YAcademic%* and *OAcademic%.* We find that across all specifications, the coefficient estimates of *YAacademic%* are significantly positive. However, the coefficients of *OAcademic%* are insignificant when *Soc* and *Gov* are dependent variables (columns (2) and (3)). Furthermore, we perform one-sided F-tests for the differences between the coefficients of *YAcademic%* and *OAcademic%,* and present the p-values in the bottom line of Table 3. The divergences between the coefficient estimates of these two variables (i.e., *YAcademic%−OAcademic%*) are positive and significant for *Soc* (column (2)) and *AvgESG* (column (4)). These results indicate that the effect of academic experience on firm ESG, particularly social performance, is stronger for young academic executives. One potential explanation is that enterprising and aggressive thoughts make young academic executives more open to emerging and challenging issues. Therefore, they are more inclined to actively make efforts to address ESG-related challenges (Planer-Friedrich and Sahm, 2019).

3.2 Robustness tests

To demonstrate that our baseline findings are not sensitive to our measurement of managerial academic experience and cannot be explained by time-invariant local

features, we perform robustness checks by (1) using two alternative proxies of executives' academic experience and (2) controlling for province fixed effect.

In our baseline regressions based on Eq. (1), we mainly gauge managerial academic experience by using *Academic%*, which is defined as the percentage of top managers with academic experience. To demonstrate our main findings are not sensitive to our measuring approach, we perform robustness tests through adopting alternative proxies for managerial academic experience.

[Insert Table 4 about here]

First, we employ an indicator variable, *DAcademic*, which equals one if at least one executive in the top management team has academic experience, and zero otherwise (Yuan and Wen, 2018) as an alternative measure. Panel A of Table 4 presents the regression results, and the coefficients of *DAcademic* are significantly positive. Second, we define another alternative proxy for executives' academic experience, *SAcademic%*, which is calculated as the percentage of executives with academic experience in the senior top management team to replace *Academic%* in Eq. (1). The senior top management team involves two executives, including the CEO and board chairperson (Daily and Schwenk, 1996). The results are presented in Panel B of Table 4. We find that the coefficients of *SAcademic%* remain positive and significant, indicating that the senior executives' academic experience plays a pivotal role in enhancing firm ESG performance. Overall, our main findings regarding the positive relationship between academic executives and firm ESG are robust to various alternative measures of managerial academic experience.

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China has a vast land area with diverse economic and cultural situations, which may lead to the various habits and leanings of local residents. Therefore, we argue that the characteristics of different regions can have impacts on the relationship between managerial academic experience and firm ESG performance.

To mitigate the influence of time-invariant local characteristics, we further include province fixed effect into Eq. (1). The empirical results are presented in Panel C of Table 4. We show that after including province fixed effect, our baseline findings remain consistent. These results indicate that the effects of managerial academic experience on corporate ESG performance cannot be explained by local time-invariant features.[7]

4. Endogeneity Issues

Although we show a positive relationship between the percentage of academic executive and corporate ESG performance, it remains challenging, however, to identify the causality. An alternative interpretation is that academic top managers are more likely to work for or be hired by companies with better ESG performance. Another concern lies in omitted variable issues. While we include many control variables to capture firm and manager characteristics, it is possible that certain unobservable factors can explain the improved ESG performance. On the other hand, in our main regressions based on Eq. (1), the sample includes both firms with academic executives and those without. We acknowledge that these two subsamples may be very different, potentially leading

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[7] When we use city fixed effect rather than province fixed effect to capture the local characteristics, our results still remain robust.

to selection bias.

To address these concerns, we first employ instrumental variables regressions. Then, we use the propensity score matching approach to mitigate the sample selection bias. Finally, to further mitigate the omitted variable issue, we control for two additional sets of variables. Specifically, the first group involves the local characteristics, including local tourism income, historical Confucian influence and gross domestic product (GDP). Another set of controls is related to other managerial life or career experiences, involving overseas experience (Yuan and Wen, 2018), research and development experience (Islam and Zein, 2020; Jiang, Li, Li and Wang, 2022), financial working experience (Janani, Christopher, Nikolov and Wiles, 2022) and legal experience (Lewis, Walls and Dowell, 2014) .

4.1 Instrumental variables approach

We first use two-stage least square (2SLS) instrumental variables (IVs) regressions to mitigate endogeneity concerns. Our identification mainly relies on three instrumental variables. The first IV is *Edu%*, which is calculated as the percentage of people who work in the education section within the same city. Education section includes universities, colleges, primary and secondary schools as well as education institutions. Higher proportion of people engaged in education section indicates that local residents are more inclined to work in the academic-related section. Therefore, it can be associated with a high possibility that the top managers in local firms have academic career experience.

The 2SLS regression results are presented in Panel A of Table 5. In the first stage, we regress managerial academic experience on the percentage of people who work in the education section within the same city and other control variables. The result is reported in column (1) of Panel A. *Ed%* is positively associated with *Academic%*. Then in the second stage, we use the predicted value of managerial academic experience based on the first stage of 2SLS (i.e., $\widehat{Academic\%}$). The results are presented in columns (2) to (5). We find that the predicted percentage of academic executives still have a significantly positive effect on firm ESG performance. In addition, the Kleibergen-paap rk LM statistic is 11.824, rejecting the null hypothesis that the equation is underidentified, and the Cragg-Donald Wald F statistic is 79.091, rejecting the null hypothesis that our instrumental variable is weak.

Moreover, following Ertugrul et al. (2017), we use another two instrumental variables, namely *Loc Ave Academic%* and *Ind Avg Academic%*. Specifically, *Loc Ave Academic%* is calculated as the average percentage of academic executives in top management teams of firms that are located within the same area in a given year, and the *Ind Avg Academic%* is the average percentage of academic executives in top management teams within an industry in a given year. Both variables are likely to be correlated with a firm's employment of academic executives, satisfying the relevance condition. For example, when a firm's peer companies in the same industry or area generally hire more top managers with academic experience, the focal firm may have incentives to adopt a similar strategy. We simultaneously employ these two instrumental

variables, *Loc Ave Academic%* and *Ind Avg Academic%*, in our analysis. The results are presented in Panel B of Table 5. In the first stage, we regress managerial academic experience on *Loc Ave Academic%*, *Ind Avg Academic%* and other control variables. These instrumental variables are positively associated with *Academic%* (column (1)). We then regress the ESG-related measures on the predicted value of *Academic%* based on the first stage of 2SLS. The second-stage results are reported in columns (2) to (5) of Table 5 Panel B. We show that the effect of managerial academic experience on firm ESG remains positive and significant. Furthermore, the Kleibergen-paap rk LM statistic is 165.01, meaning that we can reject the null hypothesis that the equation is underidentified. The Cragg-Donald Wald F statistic is 651.989, suggesting that we can reject the null hypothesis that our instrumental variables are weak.

4.2 Propensity score matching (PSM)

In this section, we take advantage of propensity score matching (PSM) to mitigate the sample selection bias. We split the full sample into *treated* and *nontreated* groups. The *treated* groups refer to the firms with at least one academic executive in the top management teams, while the *nontreated* groups are identified as those without academic executives in their top management teams. Next, for each *treated* firm, we identify one matching *control* firm from the *nontreated* groups with the closest propensity score. We use the control variables included in Eq. (1) as the matching

factors to calculate the propensity scores.[8]

[Insert Table 6 about here]

The final number of pairs of matched firms is 3,793, leading to an overall sample with 7,586 observations. The regression results based on the matched firm pairs are shown in Table 6. The coefficient estimates of *Academic%* remain significantly positive, suggesting that our main findings remain robust to the procedure of addressing selection bias.

4.3 Potential omitted variables

To further alleviate the concern regarding omitted variable issues, we control for two additional groups of variables, namely local characteristics and other managerial experiences.

First, we control for some regional economic and cultural situations, including *Tourism*, *Confucian*, and *GDP*. Specifically, we obtain data from China's National Bureau of Statistics and construct *Tourism*, which is calculated as the tourism income scaled by the local gross domestic product (GDP). In addition, we manually collect the number of Confucian academies and temples during the Ming and Qing dynasties from

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[8] We estimate the following logit model using the matching factors (i.e., control variables included in Eq. (1)).

$$Prob(DAcademic_{i,t} = 1) = \alpha + \beta Controls_{i,t} + FEs + \epsilon_{i,t} \qquad (2)$$

We present the logit regression results in IA Table 2 of the Internet Appendix. We find that before PSM, *Education*, *Age*, *Gender*, *ManagerOwn*, *Ln(Asset)*, *Capex*, *Leverage*, *ROE*, *Cash*, *Tobin's Q*, *SOE* and *InstOwn* are significantly associated with the probability of firms having an academic executive (column (1)). We conduct a one-by-one closest propensity score, leading to an overall sample with 7,586 observations. We then present the logit regressions based on the matched sample in the column (2) of IA Table 2. All the coefficient estimates of the matching factors become statistically insignificant, suggesting an effective matching.

local gazetteers in China (Yan, Xu and Lai, 2021; Gu, Liang and Zhang, 2022). *Confucian* is calculated as the natural logarithm of the total number of Confucian academies and temples scaled by local population. The final economic variable is *GDP*, measured as the city-level GDP based on the statistical yearbooks.[9] The regression results are presented in the Pannel A of Table 7. We show that these local economic and cultural features cannot explain the positive relation between managerial academic experience and firm ESG performance.

[Insert Table 7 about here]

Interestingly, we find that the *Tourism* is positively associated with the firm E&S performance (columns (1) and (2)). If tourism sectors play an essential role in regional economic development, the local people and government may have higher environmental and social awareness, imposing more pressure on local firms. In addition, we find that *Confucian* is positively associated with social performance (columns (2)). This is because Confucianism emphasizes personal contribution to society, potentially making local managers pay more attention to improve their firms' social influences.

In addition, we control for other four oft-mentioned managerial experiences in Eq. (1), including *Foreign%*, *Law%*, *Financial%*, and *R&D%*. Specifically, *Foreign%* is calculated as the percentage of executives with foreign experience in the top management team. Foreign experience is defined as the proportion of executives who has overseas working or studying experience. In addition, *Law%* is calculated as the percentage of executives with lawyer experience in top management teams. *Financial%*

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[9] We collect the statistical yearbooks from the official websites of municipal governments.

is calculated as the proportion of executives with finance-related working experience. The *R&D%* is calculated as the percentage of executives with research and development (R&D) working experience in the top management teams. The results are presented in Panel B of Table 7, and we find that the effect of managerial academic experience on firm ESG remains significantly positive, indicating that these experiences are not omitted variables in our analyses.

5. Further Analysis

In this section, we further explore whether the positive effect of managerial academic experience on firm ESG performance is mainly driven by agency issues. In addition, we use observable ESG-related actions, namely firm pollution intensities and corporate philanthropy, to provide supporting evidence to our baseline findings. Finally, we explore the potential channels underpinning such the positive relationship between managerial academic experience and corporate ESG performance.

5.1 Agency issue

First, we investigate whether agency issues drive the positive relationship between academic executives on ESG-related activities. Prior literature documents that ESG activities can potentially conflict with shareholders' interests and are an outcome of agency problems (Di Giuli and Kostovetsky, 2014; Buchanan, Cao and Chen, 2018). Therefore, to investigate whether our baseline results are driven by potential agency conflicts, we use the percentage of shares held by top managers (*ManagerOwn*) as a

proxy for agency issues between top managers and shareholders (Mishra, 2014). Higher

managerial ownership is associated with fewer agency concerns (Kim and Lu, 2011).

We define a dummy variable, namely, *High ManageOwn*, which equals one when

manager ownership is higher than the sample median in a given year and zero otherwise.

In Table 8 Panel A, we extend Eq. (1) by including the interaction term between *High*

ManageOwn and *Academic%* (*High ManageOwn × Academic%*) and replacing the

original control variable *ManagerOwn* by *High ManageOwn*.

[Insert Table 8 about here]

If agency issues drive our baseline findings, we should observe that the interaction

of executives' academic experience and manager ownership is negatively associated

with corporate ESG performance. However, the empirical results in Table 8 Panel A

show that the interaction between managerial academic experience and manager

ownership (i.e., *High ManageOwn × Academic%*) is positively associated with

corporate ESG performance (columns (1) to (4)). In particular, the coefficient estimates

of the interaction term are significantly positive and when *Soc* and *AvgESG* are

dependent variables (columns (2) and (4)), indicating that in a firm with fewer agency

concerns, managerial academic experience even has a stronger effect on corporate

social performance.

In addition, if the academic executives' efforts in improving ESG activities are

driven by agency issues, we should observe that they broadly make decisions that are

inconsistent with shareholders' interests, damaging firm value (Di Giuli and

Kostovetsky, 2014; Masulis and Reza, 2015). Therefore, we examine the effect of

managerial academic experience on firm value and present the results in Table 8 Panel B. We find that academic experience is positively associated with firm value, which is captured by *Tobin's Q*. Our findings suggest that the superior ESG performance of firms managed by academic executives is not driven by agency problems.[10]

5.2 Corroborating evidence: Pollution Intensity and Philanthropy

Although we demonstrate a positive impact of managerial academic experience on ESG performance, it remains unclear if academic executives can lead to observable ESG-related actions. Therefore, we further examine the effects of managerial academic experience on two observed ESG-related corporate policies, namely firms' toxic emission intensities and corporate philanthropy.

We first collect the data regarding firm pollution intensities from Datago Database and construct two proxies, including *Ln(NO$_X$ Emission Intensity)* and *Ln(SO$_2$ Emission Intensity)* (Cole, Elliott and Shimamoto, 2005; Hsu, Li and Tsou, 2023). Specifically, *Ln(NO$_X$ Emission Intensity)* is defined as the natural logarithm of the kilograms of firms' nitrogen oxide emissions scaled by total sales, and *Ln(SO$_2$ Emission Intensity)* is measured as the natural logarithm of the kilograms of firms' sulfur dioxide emissions scaled by total sales. In addition, we obtain information on corporate giving from CSMAR database. We mainly employ three proxies for corporate philanthropy, namely

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[10] We present the subgroup regressions results in IA Table 3 in the Internet Appendix. We present the results of the high managers ownership group from columns (1) to (4). The regression results of the low managers ownership group are reported from columns (5) to (8). We find that both of the effects of managerial academic experience on firm environmental performance (columns (1) and (5)) are significant positive. The effect of managerial academic on the social performance is positive and significant in high managers ownership group, but the coefficient of *Academic%* in the low managers ownership is insignificant. The results are consistent with our findings in Table 8.

Donation, *Ln(Donation)*, and *Ln(Donation/MV)*. Specifically, *Donation* is a dummy variable, which is equal to one when the enterprises make social donations in a given year, and zero otherwise. *Ln(Donation)* is the natural logarithm of the amount of firm social donations. Finally, *Ln(Donation/MV)* is the natural logarithm of donations scaled by the market equity value.

[Insert Table 9 about here]

We present the results for firm pollution intensities and corporate giving in Panel A and B of Table 9, respectively. We first find that managerial academic experience is negatively associated with emission intensities, indicating that academic executives actively mitigate firms' pollution intensities, leading to better corporate environmental performance (Panel A). In addition, we show that academic experience is positively associated with corporate donations, suggesting that academic executives increase corporate philanthropy (Panel B). This contributes to the improvement in corporate social performance.

5.3 Underlying mechanism

In this section, we further explore the underlying mechanisms through which managerial academic experience affects corporate ESG performance. We mainly focus on two potential channels, namely, increased capital expenses and decreased leverage.

[Insert Table 10 about here]

We first examine the role of capital expenditure, which is measured by capital expenditure scaled by total assets (*Capex*). We present the results in Panel A of Table

10. We find that managerial academic experience has a positive impact on firms' capital expenditure (column (1)). In addition, we show that increases in capital expenditure lead to better ESG performance (columns (2) to (5)). The results suggest that academic executives improve firms' ESG performance by investing more in ESG-related capital, which is necessary for ESG implementation (Erhemjamts, Li and Venkateswaran, 2012). Furthermore, when we simultaneously include *Academic%* and *Capex* in the regressions, the effect of *Academic%* on corporate ESG remains significantly positive, indicating that increasing capital expenditure is not the only underlying mechanism.

Next, we examine the role of leverage, which is captured by the total liability divided by total assets (*Leverage*). Leverage is an accounting-based measure for financial constraints (Xu and Kim, 2022), while lower leverage (i.e., mitigated financial constraints) may potentially increase firms' ESG activities. The results are shown in Panel B of Table 10. We find that managerial academic experience is associated with lower leverage (column (1)). However, we find no significant impacts of leverage on firms' E&S performance (columns (2) to (5)), while managerial academic experience still significantly improves corporate E&S activities. Our findings indicate that leverage is not one of the underlying mechanisms.

6. Conclusion

In this paper, we examine the impact of managerial academic experience on corporate ESG performance. Our findings suggest that firms with a higher percentage of academic executives in the top management team have significantly higher ESG

performance. In addition, we show that the positive effect of managerial academic experience on firm ESG activities is stronger for young academic executives. In the robustness tests, we use alternative measures for managerial academic experience. In addition, to mitigate the impacts of time-invariant local characteristics, we control for province fixed effect. Overall, our main findings regarding the positive relationship between academic executives and firm ESG are robust in all these tests. Furthermore, we mitigate endogeneity concerns by taking advantage of 2SLS instrumental variables regressions, employing a propensity score matching approach and controlling for local characteristics and other managerial experiences variables. The results provide supporting evidence for a causal interpretation.

We show evidence that the effect of managerial academic experience on firm ESG performance is not an outcome of agency conflicts. In addition, academic executives actively take observable ESG-related actions, including alleviating firm pollution intensities and increasing corporate social giving. We further show that capital expenditure is one of the potential underlying mechanisms through which managerial academic experience affects firm ESG performance. Our study provides new insights into the effect of managerial characteristics on corporate ESG performance. Firms may hire young executives with academic experience to achieve higher corporate ESG performance.

Appendix A1. Variable Definitions

Pannel A: Managerial academic experience

Variable	Description
Academic%	The percentage of executives with academic experience in top management team.
SAcademic%	The percentage of executives with academic experience in the senior top management team, including CEO and board chairperson.
Dacademic	An indicator variable equals to one if at least one executive of top management team with academic experience, and zero otherwise.
Loc Avg Academic%	The average percentage of executives with academic experience in the top management teams within the same area in a given year.
Ind Avg Academic%	The average percentage of executives with academic experience in the top management teams within an industry in a given year.
Yacademic%	The percentage of young academic executives in the top management team, where young academic executives are those with age lower than the sample median among academic executives.
Oacademic%	The percentage of old academic executives in the top management team, where old academic executives are those with age higher than the sample median among academic executives.

Pannel B: ESG performance (including corporate pollution intensity and philanthropy)

Variable	Description
Env	The average daily environmental score over a given year.
Soc	The average daily social score over a given year.
Gov	The average daily government score over a given year.
AvgESG	The average of *Env*, *Soc* and *Gov* over a given year.
Ln(NO$_X$ Emission Intensity)	The natural logarithm of the kilograms of firms' nitrogen oxide emissions scaled by total sales.
Ln(SO$_2$ Emission Intensity)	The natural logarithm of the kilograms of firms' sulfur dioxide emissions scaled by total sales.
Ln(Donation)	The natural logarithm of amount of social donations.
Donation	An indicate variable, which is equal to one when the enterprises make the social donations that year and zero otherwise.
Ln(Donation/MV)	The natural logarithm of donations scaled by market value of equity.

Pannel C: Firm characteristics

Variable	Description
Education	The average level of educational degree of executives in top management team.
Age	The average age of executives in top management team.
Gender	An indicator variable equals to one if at least one executive of top management team is female, and zero otherwise.
ManagerOwn	The percentage of shares held by top management team.
High ManageOwn	An indicator variable equals one if the managerial ownership is higher than the sample median.
Ln(Asset)	The natural logarithm of the book value of total asset.
ROE	Return on equity, which equals to net income divided by the total book value of common equity.
Leverage	Total liability divided by total assets.
InstOwn	The percentage of shares held by institutions.
Cash	Cash holdings divided by total assets.
Capex	Capital expenditure scaled by total assets.
SOE	An indicator variable equal to one if the firm is state-owned and zero otherwise.

Tobin's Q	The market value of assets divided by the book value of assets where the market value of assets equals the book value of assets plus the market value of common equity less the sum of the book value of common equity.

Pannel D: Location characteristics

Variable	Description
Edu%	The percentage of people engaged in education within the same area.
Tourism	The tourism income scaled by the regional GDP.
Confucian	The natural logarithm of the total number of Confucius academies and temples during the Ming and Qing dynasties scaled by local population.
GDP	The local city GDP.

Pannel E: Other life or career experience of executives

Variable	Description
Foreign%	The percentage of executives with foreign experience in the top management team
Law%	The percentage of executives with lawyer experience in the top management team
Financial%	The percentage of executives with finance-related career experience in the top management team
R&D%	The percentage of executives with research and development working experience in the top management team

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Table 1. Summary Statistics

This table presents the summary statistics of the main variables in our analyses. They include the percentage of academic executives in the top management team (Academic%), environmental score (Env), social score (Soc), governance score (Gov), average of environmental, social and governance scores (AvgESG), education, age, gender (female=1), managerial ownership (ManagerOwn), logarithm of total assets (Ln(Asset)), capital expenditure (Capex), leverage, return on equity (ROE), cash, Tobin's Q, state-owned enterprise indicator (SOE) and institution ownership (InstOwn). For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial firms and those under special treatment. The final sample consists of 16,558 firm-year observations during 2008-2020.

Variables	Mean	SD	P25	P50	P75
Academic%	0.09	0.15	0	0	0.17
Env	0.32	0.42	0	0	0.83
Soc	0.40	0.40	0	0.45	0.81
Gov	0.24	0.41	0	0.29	0.55
AvgESG	0.43	0.37	0.25	0.52	0.70
Education	3.28	0.54	3	3.33	3.67
Age	46.71	4.27	43.83	46.67	49.56
Gender	0.57	0.50	0	1	1
ManagerOwn	0.10	0.17	0	0	0.15
Ln(Asset)	22.19	1.34	21.23	22.00	22.92
Capex	0.06	0.05	0.02	0.04	0.08
Leverage	0.43	0.20	0.27	0.43	0.59
ROE	0.07	0.12	0.04	0.08	0.12
Cash	0.05	0.07	0.01	0.05	0.09
Tobin's Q	1.99	1.21	1.24	1.59	2.28
SOE	0.33	0.47	0	0	1
InstOwn	0.46	0.25	0.26	0.48	0.66

Table 2. Managerial Academic Experience and Corporate ESG Performance

This table presents the results of regressions of ESG performance on the percentage of executives with academic experience in the top management team. The dependent variables are *Env*, defined as the average daily environmental score over a given year; *Soc*, defined as the average daily social score over a given year; *Gov*, defined as the average daily governance score over a given year; and *AvgESG*, defined as the average of *Env, Soc* and *Gov* over a given year. All ESG scores are based on the mean ESG-related news sentiment. *Academic%* is defined as the percentage of executives with academic experience in the top management team. Managerial team-level controls include *Education*, *Age*, *Gender*, and *ManagerOwn*. Firm-level controls include *Ln(Asset)*, *Capex*, *Leverage*, *ROE*, *Cash*, *Tobin's Q*, *SOE* and *InstOwn*. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) Env_{t+1}	(2) Soc_{t+1}	(3) Gov_{t+1}	(4) $AvgESG_{t+1}$
Academic%$_t$	0.139***	0.116***	0.071***	0.117***
	(4.985)	(4.354)	(2.703)	(4.900)
Education$_t$	0.024***	0.037***	0.000	0.013*
	(2.843)	(4.173)	(0.011)	(1.666)
Age$_t$	-0.001	-0.002	0.001	0.000
	(-0.651)	(-1.480)	(0.565)	(0.151)
Gender$_t$	0.020**	0.016*	0.008	0.012
	(2.414)	(1.894)	(0.953)	(1.561)
ManagerOwn$_t$	0.066**	0.132***	0.083**	0.137***
	(1.988)	(3.984)	(2.527)	(4.356)
Ln(Asset)$_t$	0.107***	0.086***	0.046***	0.058***
	(21.712)	(17.807)	(9.760)	(13.311)
Capex$_t$	0.306***	0.216***	0.159**	0.264***
	(3.928)	(2.742)	(2.055)	(3.589)
Leverage$_t$	0.006	-0.059**	-0.062**	-0.066***
	(0.212)	(-2.156)	(-2.389)	(-2.584)
ROE$_t$	0.140***	0.220***	0.514***	0.537***
	(5.191)	(7.926)	(17.446)	(17.856)
Cash$_t$	-0.056	-0.008	0.008	-0.037
	(-1.044)	(-0.153)	(0.147)	(-0.737)
Tobin's Q$_t$	0.029***	0.019***	0.007*	0.006
	(7.640)	(5.120)	(1.705)	(1.619)
SOE$_t$	0.038***	0.001	0.042***	0.052***
	(3.118)	(0.048)	(4.008)	(5.217)
InstOwn$_t$	0.013	0.065***	0.056**	0.082***
	(0.518)	(2.628)	(2.480)	(3.783)
Observations	16,558	16,558	16,558	16,558
Adjusted R-squared	0.134	0.104	0.081	0.099
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 3. Effect of Age

This table analyzes the impact of the average age of academic executives. The dependent variables are *Env*, *Soc*, *Gov* and *AvgESG*. *Yacademic%* is defined as the percentage of young academic executives in the top management team. Young academic executives are those with age lower than the sample median among academic executives. *Oacademic%* is defined as the percentage of old academic executives in the top management team. Old academic executives are those with age higher than the sample median among academic executives. Managerial team-level controls include *Education*, *Age*, *Gender*, and *ManagerOwn*. Firm-level controls include *Ln(Asset)*, *Capex*, *Leverage*, *ROE*, *Cash*, *Tobin's Q*, *SOE* and *InstOwn*. The bottom line reports the results of one-sided F-tests for significant differences between the coefficients of *Yacademic%* and *Oacademic%*. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) Env_{t+1}	(2) Soc_{t+1}	(3) Gov_{t+1}	(4) $AvgESG_{t+1}$
$Yacademic\%_t$	0.160***	0.186***	0.088**	0.162***
	(4.208)	(4.647)	(2.215)	(4.379)
$Oacademic\%_t$	0.127***	0.050	0.055	0.074**
	(2.86)	(1.235)	(1.329)	(2.033)
Controls	Yes	Yes	Yes	Yes
Observations	16,558	16,558	16,558	16,558
Adjusted R-squared	0.134	0.105	0.081	0.100
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Difference Test				
Yacademic%-Oacademic%	0.033	0.136***	0.033	0.088**
(*p-value*)	0.285	0.009	0.288	0.046

Table 4. Robustness Tests

This table presents the results of robustness tests. Panel A presents the results of using one alternative measure for executives' academic experience *Dacademic*, which is equal to one when the top management team includes at least one person with academic experience and zero otherwise. Panel B reports the results of the other alternative measure, *SAcademic%*, which is defined as the percentage of executives with academic experience in the senior top management team. The senior top management team includes two executives, i.e., the CEO and board chairperson. Panel C reports the results of adding an additional province fixed effect. The dependent variables are *Env*, *Soc*, *Gov* and *AvgESG*. Managerial team-level controls include *Education*, *Age*, *Gender*, and *ManagerOwn*. Firm-level controls include *Ln(Asset)*, *Capex*, *Leverage*, *ROE*, *Cash*, *Tobin's Q*, *SOE* and *InstOwn*. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. For brevity, the coefficients of the control variables are not reported. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Pannel A: Results based on dummy variable for academic experience

	(1) Env_{t+1}	(2) Soc_{t+1}	(3) Gov_{t+1}	(4) $AvgESG_{t+1}$
$DAcademic_t$	0.039***	0.043***	0.013	0.036***
	(4.479)	(4.818)	(1.566)	(4.454)
Controls	Yes	Yes	Yes	Yes
Observations	16,558	16,558	16,558	16,558
Adjusted R-squared	0.134	0.105	0.081	0.099
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Pannel B: Results based on academic experience of senior executives

	(1) Env_{t+1}	(2) Soc_{t+1}	(3) Gov_{t+1}	(4) $AvgESG_{t+1}$
$SAcademic\%_t$	0.042***	0.064***	0.025**	0.049***
	(3.977)	(5.914)	(2.456)	(5.071)
Controls	Yes	Yes	Yes	Yes
Observations	16,558	16,558	16,558	16,558
Adjusted R-squared	0.133	0.106	0.081	0.100
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Pannel C: Controlling for province fixed effect

	(1) Env_{t+1}	(2) Soc_{t+1}	(3) Gov_{t+1}	(4) $AvgESG_{t+1}$
Academic%$_t$	0.129***	0.094***	0.072***	0.109***
	(4.709)	(3.700)	(2.793)	(4.566)
Controls	Yes	Yes	Yes	Yes
Observations	16,558	16,558	16,558	16,558
Adjusted R-squared	0.145	0.137	0.084	0.105
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes

Table 5. Instrumental Variables Approach

This table presents the results based on the instrumental variables approach to mitigate the endogeneity problem. Panel A uses the percentage of people who work in the education section within the same area as an instrumental variable (i.e., *Edu%*). Panel B uses two instrumental variables, including (1) average percentage of executives with academic experience in the top management teams within the same area in a given year (i.e., *Loc Avg Academic%*) and (2) the average percentage of executives with academic experience in the top management teams within an industry in a given year (i.e., *Ind Avg Academic%*). Column (1) in both panels regress *Academic%_t* on the instruments. Columns (2) to (5) regress *Env, Soc, Gov* and *AvgESG* on the predicted *Academic%*, respectively. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Pannel A: Proportion of educators as an IV

	(1)	(2)	(3)	(4)	(5)
	First Stage		Second	Stage	
	$Academic\%_t$	Env_{t+1}	Soc_{t+1}	Gov_{t+1}	$AvgESG_{t+1}$
$\widehat{Academic\%}_t$		1.481**	2.652***	-0.206	1.059**
		(2.563)	(3.092)	(-0.535)	(2.373)
$Edu\%_t$	1.501***				
	(3.479)				
Controls	Yes	Yes	Yes	Yes	Yes
Observations	15,014	15,014	15,014	15,014	15,014
Adjusted R-squared	0.118	——	——	——	——
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Pannel B: Industry and local average as IVs

	(1)	(2)	(3)	(4)	(5)
	First Stage	Second Stage			
	$Academic\%_t$	Env_{t+1}	Soc_{t+1}	Gov_{t+1}	$AvgESG_{t+1}$
$\widehat{Academic\%}_t$		0.341***	0.762***	0.205**	0.458***
		(3.351)	(6.736)	(2.118)	(4.984)
Loc Avg Academic%$_t$	0.676***				
	(7.250)				
Ind Avg Academic%$_t$	0.847***				
	(16.344)				
Controls	Yes	Yes	Yes	Yes	Yes
Observations	16,558	16,558	16,558	16,558	16,558
Adjusted R-squared	0.180	——	——	——	——
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Table 6. Regressions based on Propensity Score Matching

This table reports the regression results based on a propensity-score-matching (PSM) procedure. This table presents the regression estimates based on the post-match sample. *Treated* firms are defined as those having at least one executive with academic experience. *Control* firms are defined as those with none of the executives possessing academic experience. The dependent variables are *Env*, *Soc*, *Gov* and *AvgESG*. *Academic%* is defined as the percentage of executives with academic experience in the top management team. Managerial team-level controls include *Education*, *Age*, *Gender*, and *ManagerOwn*. Firm-level controls include *Ln(Asset)*, *Capex*, *Leverage*, *ROE*, *Cash*, *Tobin's Q*, *SOE* and *InstOwn*. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) Env_{t+1}	(2) Soc_{t+1}	(3) Gov_{t+1}	(4) $AvgESG_{t+1}$
$Academic\%_t$	0.145***	0.108***	0.058*	0.113***
	(4.264)	(3.436)	(1.789)	(3.946)
Controls	Yes	Yes	Yes	Yes
Observations	7,568	7,568	7,568	7,568
Adjusted R-squared	0.147	0.102	0.071	0.085
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 7. Potential Omitted Variables

This table presents the results of regressions of ESG score on academic executives and potential omitted variables. Panel A presents the results of controlling for the local characteristics. *Tourism* is calculated as the tourism income scaled by the regional GDP. *Confucian* is the natural logarithm of the total number of Confucian academies and temples in history scaled by the local population. *GDP* is the local city GDP. Panel B presents the results of controlling for other managerial experiences. The specific measures include the percentage of executives with foreign experience in the top management team (*Foreign%*), the percentage of executives with lawyer experience in the top management team (*Law%*), the percentage of executives with finance-related career experience in the top management team (*Financial%*) and the percentage of executives with research and development working experience in the top management team (*R&D%*). The dependent variables are *Env*, *Soc*, *Gov* and *AvgESG*. Managerial team-level controls include *Education*, *Age*, *Gender*, and *ManagerOwn*. Firm-level controls include *Ln(Asset)*, *Capex*, *Leverage*, *ROE*, *Cash*, *Tobin's Q*, *SOE* and *InstOwn*. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. For brevity, the coefficients of the control variables are not reported. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Controlling for local characteristics

	(1) Env_{t+1}	(2) Soc_{t+1}	(3) Gov_{t+1}	(4) $AvgESG_{t+1}$
Academic%$_t$	0.139***	0.115***	0.071***	0.116***
	(4.714)	(4.162)	(2.607)	(4.767)
Tourism$_t$	0.013**	0.045***	-0.014**	0.008
	(2.191)	(7.289)	(-2.480)	(1.388)
Confucian$_t$	0.001	0.008***	0.003	0.006**
	(0.528)	(3.310)	(1.297)	(2.502)
GDP$_t$	-0.017	-0.223***	0.158**	0.002
	(-0.239)	(-3.147)	(2.263)	(0.033)
Controls	Yes	Yes	Yes	Yes
Observations	14,954	14,954	14,954	14,954
Adjusted R-squared	0.133	0.108	0.081	0.095
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Pannel B: Controlling for other managerial experiences

	(1) Env$_{t+1}$	(2) Soc$_{t+1}$	(3) Gov$_{t+1}$	(4) AvgESG$_{t+1}$
Academic%$_t$	0.137***	0.123***	0.075***	0.121***
	(4.820)	(4.481)	(2.754)	(4.823)
Foreign%$_t$	-0.065*	-0.037	-0.004	-0.053
	(-1.887)	(-0.961)	(-0.118)	(-1.597)
Law%$_t$	0.067	0.042	-0.054	0.026
	(1.085)	(0.669)	(-0.849)	(0.432)
Financial%$_t$	-0.050	-0.027	-0.015	-0.071**
	(-1.480)	(-0.774)	(-0.442)	(-2.036)
R&D%$_t$	0.015	-0.017	-0.012	-0.001
	(0.751)	(-0.819)	(-0.609)	(-0.077)
Controls	Yes	Yes	Yes	Yes
Observations	16,558	16,558	16,558	16,558
Adjusted R-squared	0.135	0.104	0.081	0.100
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 8. Agency Issue

This table presents the mediating role of agency issue. Panel A reports the results of regressions of ESG scores on academic executives and their interaction with managerial ownership. *High ManageOwn* equals one if managerial ownership is higher than the sample median. All the control variables are included in Eq. (1) except *ManagerOwn*. Panel B reports the direct impact of *Academic%* on the value of a firm. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Pannel A: Managerial ownership

	(1)	(2)	(3)	(4)
	Env_{t+1}	Soc_{t+1}	Gov_{t+1}	$AvgESG_{t+1}$
Academic%	0.135***	0.066*	0.052	0.068**
	(3.490)	(1.928)	(1.534)	(2.165)
High ManageOwn × Academic%	0.009	0.105**	0.040	0.103**
	(0.192)	(2.170)	(0.842)	(2.350)
High ManageOwn	0.012	0.009	0.009	0.009
	(1.188)	(0.837)	(0.836)	(0.933)
Controls	Yes	Yes	Yes	Yes
Observations	16,558	16,558	16,558	16,558
Adjusted R-squared	0.134	0.103	0.081	0.098
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Pannel B: The direct impact of percentage of academic executives on the firm value.

	(1)	(2)	(3)
	$Tobin's\ Q_{t+1}$	$Tobin's\ Q_{t+1}$	$Tobin's\ Q_{t+1}$
Academic%$_t$	0.404***	0.182*	0.182**
	(3.380)	(1.893)	(2.013)
Observations	16,558	16,558	16,558
Adjusted R-squared	0.002	0.227	0.372
Controls	No	Yes	Yes
Industry FE	No	No	Yes
Year FE	No	No	Yes

Table 9. Pollution Intensity and Philanthropy

This table presents supporting evidence for our hypotheses. Panel A reports on the environmental actions effected by executives with academic experience. *Ln*(*NO$_X$ Emission Intensity*) is measured as the natural logarithm of the kilograms of firms' nitrogen oxide emissions scaled by total sales. *Ln*(*SO$_2$ Emission Intensity*) is calculated as the natural logarithm of the kilograms of firms' sulfur dioxide emissions scaled by total sales. Panel B reports the impact of executives with academic experience on social actions. *Donation* is an indicator variable, which is equal to one when the enterprises make social donations that year and zero otherwise. *Ln(Donation)* is measured by the natural logarithm of the amount of social donations. *Ln(Donation/MV)* is calculated by the natural logarithm of donations scaled by the market equity value of corporations. The controls in Table 9 include all the control variables in Eq. (1). For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Pannel A: Firm pollution

	(1)	(2)
	Ln(NO$_X$ Emission Intensity)$_{t+1}$	*Ln(SO$_2$ Emission Intensity)$_{t+1}$*
Academic%$_t$	-0.274**	-0.195*
	(-2.110)	(-1.847)
Controls	Yes	Yes
Observations	4,604	4,604
Adjusted R-squared	0.371	0.364
Industry FE	Yes	Yes
Year FE	Yes	Yes

Pannel B: Corporate philanthropy

	(1)	(2)	(3)
	Donation$_{t+1}$	*Ln(Donation)$_{t+1}$*	*Ln(Donation/MV)$_{t+1}$*
Academic%$_t$	0.067**	0.391**	0.308*
	(2.150)	(2.235)	(1.940)
Controls	Yes	Yes	Yes
Observations	16,501	16,501	16,501
Adjusted R-squared	0.131	0.190	0.127
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Table 10. Capital Expenditure and Financial Leverage

This table presents the mediating role of capital expenditure and leverage. Capital expenditure is measured by capital expenditure scaled by total assets (*Capex*). Leverage is measured by the total liability divided by total assets (*Leverage*). Panel A reports the results of the mediating role of *Capex*. The controls in Panel A include all the control variables in Eq. (1) except *Capex*. Panel B reports the results of the mediating role of *Leverage*. The controls in Panel B include all the control variables in Eq. (1) except *Leverage*. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Capital expenditure

	(1)	(2)	(3)	(4)	(5)
	$Capex_{t+1}$	Env_{t+1}	Soc_{t+1}	Gov_{t+1}	$AvgESG_{t+1}$
$Academic\%_t$	0.007*	0.138***	0.115***	0.068***	0.115***
	(1.770)	(4.962)	(4.324)	(2.604)	(4.823)
$Capex_{t+1}$		0.384***	0.306***	0.490***	0.533***
		(4.656)	(3.816)	(6.188)	(7.292)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	16,558	16,558	16,558	16,558	16,558
Adjusted R-squared	0.202	0.135	0.105	0.083	0.102
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Panel B: Leverage

	(1)	(2)	(3)	(4)	(5)
	$Leverage_{t+1}$	Env_{t+1}	Soc_{t+1}	Gov_{t+1}	$AvgESG_{t+1}$
$Academic\%_t$	-0.042***	0.139***	0.117***	0.071***	0.117***
	(-2.618)	(4.992)	(4.394)	(2.703)	(4.900)
$Leverage_{t+1}$		0.010	-0.042	-0.071***	-0.075***
		(0.377)	(-1.610)	(-2.751)	(-2.989)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	16,558	16,558	16,558	16,558	16,558
Adjusted R-squared	0.426	0.134	0.104	0.081	0.100
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Internet Appendix

for "Academia to Action：Managerial Academic Experience and

Corporate ESG Performance"

IA Table 1. Controlling for City Fixed Effect

This table presents the results of potential omitted local feature variables. It reports the regressions of ESG scores on academic executives with city fixed effect. The corporate office address location is used in the city fixed effect. The dependent variables are *Env*, *Soc*, *Gov* and *AvgESG*. Managerial team-level controls include *Education*, *Age*, *Gender*, and *ManagerOwn*. Firm-level controls include *Ln(Asset)*, *Capex*, *Leverage*, *ROE*, *Cash*, *Tobin's Q*, *SOE* and *InstOwn*. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) Env_{t+1}	(2) Soc_{t+1}	(3) Gov_{t+1}	(4) $AvgESG_{t+1}$
Academic%	0.113***	0.083***	0.073***	0.100***
	(4.137)	(3.287)	(2.725)	(4.020)
Controls	Yes	Yes	Yes	Yes
Observations	16,549	16,549	16,549	16,549
Adjusted R-squared	0.159	0.157	0.088	0.112
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes

IA Table 2. Effectiveness of Propensity Score Matching

This table shows the regression estimates from the logit model used to estimate the propensity scores. The dependent variable, *DAcademic,* equals one if at least one executive of the top management team has academic experience and zero otherwise. Columns (1) and (2) report the pre-match and post-match diagnostic regression results, respectively. The dependent variables are *Env*, *Soc*, *Gov* and *AvgESG*. *Academic%* is defined as the percentage of executives with academic experience in the top management team. Managerial team-level controls include *Education*, *Age*, *Gender*, and *ManagerOwn*. Firm-level controls include *Ln(Asset)*, *Capex*, *Leverage*, *ROE*, *Cash*, *Tobin's Q*, *SOE* and *InstOwn*. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) Pre-match $DAcademic_t$	(2) Post-match $DAcademic_t$
Education	1.034***	-0.007
	(13.492)	(-0.086)
Age	0.065***	0.011
	(6.993)	(0.982)
Gender	0.400***	-0.032
	(5.460)	(-0.398)
ManagerOwn	1.837***	-0.391
	(6.929)	(-1.345)
Ln(Asset)	0.088*	0.055
	(1.940)	(1.121)
Capex	1.651***	0.489
	(2.669)	(0.675)
Leverage	-0.825***	0.038
	(-3.653)	(0.150)
ROE	0.059	-0.337
	(0.294)	(-1.311)
Cash	-0.725*	0.010
	(-1.944)	(0.022)
Tobin's Q	0.016	0.005
	(0.551)	(0.142)
SOE	-0.537***	0.102
	(-4.970)	(0.841)
InstOwn	0.463**	-0.001
	(2.289)	(-0.005)
Observations	16,494	7,568
Pseudo R-squared	0.116	0.043
Industry FE	Yes	Yes
Year FE	Yes	Yes

IA Table 3. Agency Issue: Results of Subsample Regressions

This table presents the subgroup regression results. This table reports the percentage of academic executives and ESG regression results of the two groups, which are grouped by the level of managerial ownership. *High ManageOwn* equals one if managerial ownership is higher than the sample median. Managerial team-level controls include *Education*, *Age*, *Gender*, and *ManagerOwn*. Firm-level controls include *Ln(Asset)*, *Capex*, *Leverage*, *ROE*, *Cash*, *Tobin's Q*, *SOE* and *InstOwn*. For definitions of the variables, please refer to Table A1 in the Appendix. All continuous variables are winsorized at the 1st and 99th percentiles. The sample includes all public companies in the Chinese A-share market and excludes financial companies and those under special treatment companies. Both year and industry fixed effects are included in the regressions. Standard errors are clustered at the firm level, and the robust t-statistics are reported in parentheses. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	High ManageOwn = 1				High ManageOwn = 0			
	Env_{t+1}	Soc_{t+1}	Gov_{t+1}	$AvgESG_{t+1}$	Env_{t+1}	Soc_{t+1}	Gov_{t+1}	$AvgESG_{t+1}$
Academic%	0.139***	0.178***	0.104***	0.178***	0.122***	0.056	0.036	0.053*
	(3.848)	(4.641)	(2.730)	(5.086)	(3.074)	(1.604)	(1.062)	(1.669)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,901	7,901	7,901	7,901	8,654	8,654	8,654	8,654
Adjusted R-squared	0.118	0.095	0.088	0.096	0.148	0.117	0.084	0.111
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes