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Local business environment, domestic CEOs and firm performance in a transitional economy: Empirical evidence from Vietnam

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ABSTRACT

This paper investigates the impact of CEO origin on firm performance in the context of a transitional country. Our analysis, which uses data from over 298,000 firms operating in Vietnam, shows that firms operating in a more favourable business environment are less likely to employ a domestic expert as their CEO. However, firms managed by a domestic CEO appear to outperform those run by a foreign peer, especially when they operate in an environment characterised by having low entry costs, low time costs, high transparency, high proactivity, adequate business support, and sufficient labour training. This result is more pronounced for larger firms. These findings are robust to various model specifications. The paper provides informative implications to market participants, policy makers, and academics.

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1. Introduction

A CEO is one of the most influential members of firms due to their capacity in utilising their unique skills, knowledge and power to shape internal processes and operational strategies in their organisations (Hambrick, 1991; Mizruchi, 1983; Roth, 1995). Choosing an appropriate CEO, who can integrate and elaborate their idiosyncratic core skills with the dynamic local business environment for value-creation purposes, is therefore vital to ensure long-term success of the business.

Globalisation provides firms with opportunities to broaden their selections and access a pool of talent beyond the narrow national border (Nielsen and Nielsen, 2013; Conyon et al., 2019). Prior studies (e.g. Miletkov et al., 2017) show that firms can benefit from hiring foreign experts due to their advanced human capital (i.e. foreign knowledge and intercultural skills) and social capital (i.e. foreign networks). However, other researchers are sceptical about the fact that firms led by a foreign CEO outperform those run by a domestic CEO, because the foreign CEO may not have sufficient wisdom, understanding or knowledge of local cultural norms and local business environment in which firms operate (Masulis

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et al., 2012). Given the fact that the international experience and networks provided by foreign CEOs can be substituted or managed through regional managers, expatriates or consultants, the ability of domestic CEOs in understanding local market and cope with continuous changes in the business environment (Lam and Yeung, 2010) casts doubts on whether a foreign CEO could be a better fit and bring real economic benefits to firms. Unfortunately, the literature on this topic is still limited.

Only a handful of recent studies evaluate the impact of the CEO origin (foreign versus domestic CEO) on firm performance and document that firms with a foreign CEO can only outperform that with a domestic CEO under specific conditions. Pandey and Rhee (2015) discover that foreign-born CEOs are only successful if they have a transformational vision and supportive executive clout. Subsequently, Georgakakis and Ruigrok (2017) find that firms with a foreign CEO only outperform that of a domestic CEO if the foreign CEO is socio-demographically similar to incumbent executives, has strong international experience or is hired in well-performing firms within stable industries. Other studies emphasise the vital role of local managers (Selmer, 2004; Lam and Yeung, 2010). Arguably, local managers can help firms to build a strong local business network, improve relations with their government, assure access to local resources, secure a better suitability with the local environment and encourage local employees (Selmer, 2004).

While existing studies provide some initial background on the CEO origin-firm performance nexus, they often encounter some drawbacks. Most previous empirical studies were conducted with a small sample, comprising firms operating within a particular industry, or publicly listed firms. As a result, it is difficult for readers to draw a broad inference from the empirical results. In addition, researchers often focus on the context of developed nations, where the business environment is characterised by high transparency and good support from the government. Despite its general prevalence, studies devoted to further understanding on how a CEO origin affects firm performance in the context of a transition economy are still scarce. In transition countries, the continuous process of economic opening presents more international business opportunities; but it also places more competitive pressure on domestic CEOs. As documented by Wei and Ling (2015), domestic CEOs are now forced to acquire more knowledge and competences in order to compete with foreign experts. Nevertheless, the high uncertainty level in this period could also provide advantages for domestic CEOs as they are more familiar with the context of ambiguous and fast-changing regulations, inconsistent law enforcement, poor infrastructure conditions, and the remnants of government intervention in business operations, compared to foreign CEOs (Bai et al., *Forthcoming*). In this regard, whether or not a domestic CEO is a better fit that could help firms to achieve better operating outcomes is still an open empirical question.

This paper contributes to the existing literature on this subject by investigating whether domestic CEOs would help firms to achieve better operating outcomes in the context of transition countries. Vietnam offers an interesting empirical setting for the purposes of this study, both due to its neglect in previous literature and also because of its unique political and economic conditions, represented by its rapid transformation from a centrally planned economy into a market-oriented mechanism during the past few decades (Vo, 2018a, 2020a,b,c).

Vietnam is a transitional economy which is in the active process toward global integration (Vo and Ellis, 2018). In the last decade, Vietnamese government has created favourable conditions to attract foreign experts and foreign investors (Nguyen et al., 2018a; Vo, 2017a,b, 2018b, 2019). Specifically, the Vietnamese government has been actively facilitating the international economic integration process, promoting the private sector and easing regulations in order to attract foreign experts to work in Vietnam. However, a number of restrictions on foreign participants, especially in several key industries like banking and utilities, are still in effect. Further, the business environment of Vietnam is still characterised by various drawbacks, such as regulatory burdens, rigid administration systems, poor-quality infrastructure, and insufficient support services (Malesky, 2018; Nguyen et al., 2018b).

Our empirical analyses are conducted using a comprehensive Annual Enterprises Survey (AES) panel dataset covering virtually all firms in Vietnam. The survey is conducted by the General Statistics Office of Vietnam (GSO) on an annual basis, and it provides comprehensive information on firm activities, including the ownership structure and financial performance. The dataset covers the period from 2009 to 2013. Our results show that firms operating in a more favourable local business environment are less likely to hire domestic CEOs. However, firms which are run by domestic CEOs outperform those led by foreign CEOs, especially when they operate in a business environment that has low entry costs, high transparency, low time costs, high proactivity, adequate business support, and sufficient labour training. This finding is more profound for larger firms.

The rest of this paper is organised as follows. In Section 2, we describe our data and model specification. Section 3 discusses the main empirical results. Section 4 provides additional analysis and Section 5 concludes.

2. Data and model specification

In this section, we describe the dataset and the main empirical models. Specifically, sub-Section 2.1 presents a model to predict the selection of domestic CEOs. In sub-Section 2.2, we utilise the panel fixed effects model to analyse how domestic CEOs and the business environment affect firm performance. The data description is then provided in sub-Section 2.3.

2.1. Propensity of having a domestic CEO

Before evaluating the role of domestic CEOs in firm performance, we first shed light on how a CEO is selected. To do so, we follow [Zhao and Ziebart \(2017\)](#), [Ho et al. \(2016\)](#), and [Cullinan and Roush \(2011\)](#) to estimate the following logit model:

$$\log \left[\frac{\Pr(\text{Domestic CEO} = 1)}{1 - \Pr(\text{Domestic CEO} = 1)} \right] = \alpha + \beta' \text{Firm characteristics}_{it} + \theta \text{PCI}_{it} + \delta_t + \varepsilon_{it}^1 \quad (1)$$

where $\log \left[\frac{\Pr(\text{Domestic CEO}=1)}{1 - \Pr(\text{Domestic CEO}=1)} \right]$ measures the likelihood that firm i has a domestic CEO to run their business in year t . $\text{Firm characteristics}_{it}$ is a set of firm characteristics that could plausibly explain the CEO selection decision. Specifically, we incorporate firm size (measured as the natural logarithm of total assets), firm age (measured as the natural logarithm of the number of years since the firm was established), equity turnover (measured as net sales divided by equity), labour (measured as the natural logarithm of the total number of employees), and tax paid (the natural logarithm of the total amount of tax paid by a company).

To thoroughly control for the business environment in which firms operate, we incorporate into the model the provincial competitiveness index (PCI) provided by the Vietnam Chamber of Commerce and Industry (VCCI) and the U.S. Agency for International Development (USAID). The PCI reflects firm's perception about the local business environment, and it was constructed to rank the economic governance quality of provincial governments in creating a favourable business environment for private sector development. The PCI is measured as a weighted combination of nine sub-indices, which are: (i) Entry Cost: the regular costs of firms entering business; (ii) Land Access: the capability of firms to access land; (iii) Transparency: transparency and access to information; (iv) Time Cost: time cost for bureaucratic compliance; (v) Informal Charge: firms' perception of paying informal charges; (vi) Proactivity: the proactivity of provincial leadership; (vii) Business support: the policies for the development of the private sector; (viii) Labour Training: provincial authorities' efforts to promote vocational training; and (ix) Legal Institution: firms' confidence in provincial legal institutions. We incorporate the time fixed effects (δ_t) in our model to control for factors affecting all firms in a specific year. ε_{it}^1 is the error term. The full list of the variable names, descriptions, and sources is provided in [Table 1](#).

2.2. The role of domestic CEO in coping with local business environment

In order to examine our main question of the impact of domestic CEOs on firm performance, we follow the similar approach adopted by [Ho et al. \(2016\)](#), [Peni \(2014\)](#), and [Adams and Ferreira \(2009\)](#). Specifically, we employ the panel fixed-effect model of firm performance on *Domestic CEO* and a number of firm characteristics (i.e. *Size*, *Firm Age*, *Equity Turnover*, *Tax Paid*, and *Labour*). We also incorporate into the model specification the measure of CEO attributes as controls, including *CEO Age*, measured as the natural logarithm of the CEO's age; *CEO Gender*, a dummy variable that takes the value of 1 if CEO gender is male, and zero otherwise; *CEO Education*, a dummy variable that takes the value of 1 if the CEO of a company receives tertiary education, and zero otherwise.

As posited earlier, the impact of domestic CEOs on firm performance may be contingent upon how they understand and cope with the local business environment. To test this conjecture, we incorporate an interaction term between the indicator for domestic CEOs and a set of local business environment indicators (i.e. the PCI and its components) into our model. The inclusion of these interaction terms provides us with some insights into how the domestic CEO affects the firm under different business environment conditions (i.e. in [Adams and Ferreira, 2009](#)). The models are specified as follows:

$$\begin{aligned} \text{Per } f_{it} = & \alpha + \gamma_1 \text{Domestic CEO}_{it} + \gamma_2 \text{PCI}_{it} + \gamma_3 \text{Domestic CEO} \times \text{PCI}_{it} \\ & + \gamma_4 \text{CEO Characteristics}_{it} + \gamma_5 \text{Firm characteristics}_{it} + \mu_i + \delta_t + \varepsilon_{it}^2 \end{aligned} \quad (2)$$

where $\text{Per } f_{it}$ is the financial performance of firm i in year t , and it is measured as return on assets (ROA) and return on equity (ROE). ROA and ROE are the two common proxies for firm performance that are often used in corporate finance literature (i.e. [Lam et al., 2013](#); [Liu et al., 2014](#)). The descriptions and sources of all the other variables are provided in [Table 1](#). μ_i represents the firm fixed effect, which captures the firm-specific characteristics. δ_t is the year fixed effect, controlling for factors affecting all firms in a specific year. ε_{it}^2 is the error term.

2.3. Data

Our analysis is based on a unique dataset retrieved from the AES conducted by the GSO over the period from 2009 to 2013. The AES is conducted on an annual basis and it provides information on some main financial and non-financial data of virtually all of the firms operating in Vietnam. Using the unique tax code, we are able to merge firms and create a comprehensive panel dataset comprising a large number of firm-year observations. In the next step, this dataset is merged with the PCI data.

Next, we follow the common practice in corporate finance literature (i.e. [Shen and Zhang, 2013](#); [Duru et al., 2016](#)) and remove financial and utility firms because: (i) there is a wide variance in the assessment of these firms' wealth and business structures; and (ii) it might be infeasible to compare the returns and operating activities of these firms with those

Table 1
Variable description.

Variable	Description	Sources
<i>ROA</i>	Net income divided by total assets	Annual Enterprise Survey by GSO
<i>ROE</i>	Net income divided by equity	Annual Enterprise Survey by GSO
<i>Domestic CEO</i>	Dummy variable that takes value of 1 if CEO nationality is Vietnamese	Annual Enterprise Survey by GSO
<i>Size</i>	The natural logarithm of total assets	Annual Enterprise Survey by GSO
<i>Firm Age</i>	The natural logarithm of the number of years since the firm appeared	Annual Enterprise Survey by GSO
<i>Equity Turnover</i>	Net sales divided by equity	Annual Enterprise Survey by GSO
<i>Tax Paid</i>	The natural logarithm of the total amount of tax paid by a company	Annual Enterprise Survey by GSO
<i>Labour</i>	The natural logarithm of the total number of employees	Annual Enterprise Survey by GSO
<i>CEO Age</i>	The natural logarithm of CEO's age	Annual Enterprise Survey by GSO
<i>CEO Gender</i>	Dummy variable that takes a value of 1 if CEO gender is male	Annual Enterprise Survey by GSO
<i>CEO Education</i>	Dummy variable that takes a value of 1 if the CEO of a company receives a tertiary education	Annual Enterprise Survey by GSO
<i>Entry</i>	Entry cost: Provincial index that measures the time it takes a firm to register, acquire land and receive all of the necessary licenses to start a business, the number of licenses required, and the perceived degree of difficulty to obtain all licenses and permits	PCI database by VCCI and USAID
<i>Land</i>	Land access: Provincial index that measures two dimensions of the access to land for entrepreneurs: how easy it is to access land and the security of tenure once land has been acquired	PCI database by VCCI and USAID
<i>Transparency</i>	Provincial index that measures whether firms have access to proper planning and legal documents necessary to run their business	PCI database by VCCI and USAID
<i>Time Cost</i>	Provincial index that measures how much time firms spend on bureaucratic compliance, as well as how often and how long firms must shut down their operations for inspections by local regulatory agencies	PCI database by VCCI and USAID
<i>Informal</i>	Informal charges: Provincial index that measures how much firms pay for informal charges and how much of an obstacle those extra charges pose for their business operations	PCI database by VCCI and USAID
<i>Proactive</i>	Proactivity: Provincial index that measures the creativity and intelligence of provincial leadership when implementing central policy, designing their own initiatives for private sector development, and working within sometimes unclear national regulatory frameworks	PCI database by VCCI and USAID
<i>Support</i>	Business support: Provincial index that measures provincial services for private sector trade promotion, provision of regulatory information to firms, business partner matchmaking, provision of industrial zone and technological services for firms	PCI database by VCCI and USAID
<i>Labour Training</i>	Provincial index that measures the efforts by provincial authorities to promote vocational training and skills development for local industries and to assist in the placement of local labour	PCI database by VCCI and USAID
<i>Legal</i>	Legal institution: Provincial index that measures the private sector's confidence in provincial legal institutions, whether firms regard provincial legal institutions as an effective vehicle for dispute resolution, or as an avenue for lodging appeals against corrupt official behaviour	PCI database by VCCI and USAID
<i>PCI</i>	Provincial Competitiveness Index: a weighted combination of the nine sub-indices: Entry cost, Land access, Transparency, Time cost, Informal charges, Proactivity, Business support, Labour training and Legal institution	PCI database by VCCI and USAID

of other industries. To attenuate the concern that our results could be driven by outliers and data errors, we eliminate firms that provide insufficient data or firms that report extreme or unbelievable values by trimming the data at 1% and 99% cut-off points. We further exclude state-owned firms because they are restricted in hiring foreign experts to run the business. It is worth noting that, while the AES was conducted on an annual basis, the information on CEO characteristics (i.e. gender, education, age and nationality) was only available for the years 2009, 2011 and 2013. For this reason, we built up our empirical examination on biennial data, comprising a maximum 494,365 firm-year observations of over 298,000 firms.

3. Empirical results

3.1. Descriptive statistics

Table 2 presents the descriptive statistics of the variables used in this paper. About 97.55% of the sample firms appointed a domestic CEO. The means (and standard deviations) of *ROA* and *ROE* are: -0.0007 (0.0810) and -0.0013

Table 2
Summary statistics.

Variable	Full sample						Domestic		Foreign	
	Observations	Mean	Std. Dev.	25th	Median	75th	Observations	Mean	Observations	Mean
ROA	494,365	−0.0007	0.0810	−0.0101	0.0025	0.0162	482,271	−0.0010	12,094	0.0111
ROE	494,365	−0.0013	0.1516	−0.0193	0.0053	0.0340	482,271	−0.0016	12,094	0.0143
Domestic CEO	494,365	0.9755	0.1545	1.0000	1.0000	1.0000	482,271	1.0000	12,094	0.0000
Size	494,365	8.3130	1.5434	7.3225	8.2235	9.2078	482,271	8.2601	12,094	10.4238
Firm Age	494,365	1.4455	0.7656	1.0986	1.3863	1.9459	482,271	1.4392	12,094	1.6941
Equity Turnover	494,365	3.2660	5.8489	0.3585	1.1812	3.3799	482,271	3.2593	12,094	3.5328
Tax Paid	494,365	3.0628	2.3756	1.0647	2.9178	4.6821	482,271	2.9908	12,094	5.9330
Labour	494,365	2.2327	1.2099	1.3863	2.0794	2.8904	482,271	2.1859	12,094	4.0973
CEO Age	494,365	3.7008	0.2353	3.5264	3.6889	3.8712	482,271	3.6966	12,094	3.8673
CEO Education	494,365	0.5367	0.4987	0.0000	1.0000	1.0000	482,271	0.5296	12,094	0.8227
CEO Gender	494,365	0.7494	0.4334	0.0000	1.0000	1.0000	482,271	0.7446	12,094	0.9394
PCI	494,365	59.8502	3.4556	57.6720	59.4313	61.9300	482,271	59.8166	12,094	61.1935
Entry	494,365	7.8806	0.7875	7.0821	8.0113	8.4766	482,271	7.8828	12,094	7.7931
Land	494,365	6.1766	0.8525	5.3449	6.2541	6.7044	482,271	6.1734	12,094	6.3031
Transparency	494,365	5.9206	0.5188	5.6391	5.8637	6.2839	482,271	5.9170	12,094	6.0634
Time Cost	494,365	6.1516	0.8415	5.4663	5.9511	6.6784	482,271	6.1458	12,094	6.3810
Informal	494,365	6.2780	1.0240	5.7646	6.0056	7.2233	482,271	6.2713	12,094	6.5427
Proactive	494,365	4.6776	1.2553	3.6919	4.6518	5.4715	482,271	4.6683	12,094	5.0508
Support	494,365	5.9131	1.3755	4.8618	6.7506	7.1416	482,271	5.9130	12,094	5.9159
Labour Training	494,365	5.5987	0.6277	5.2235	5.7066	6.2175	482,271	5.5966	12,094	5.6798
Legal	494,365	5.3754	0.8171	4.9451	5.4912	5.8875	482,271	5.3721	12,094	5.5058

(0.1516) respectively. The PCI has a mean of 59.8502 and a standard deviation of 3.4556. The descriptive statistics of other control variables indicate that the mean value of *Firm Size* is 8.3130, and the mean value of *Firm Age*, which is measured as the natural logarithm of number of years in operation, is 1.4455. The mean of the natural logarithm of total tax paid by the firm (*Tax Paid*) is 3.0628 and the mean natural logarithm of total employees (*Labour*) is 2.2327. Moreover, *CEO Age*, which is calculated by the natural logarithm of the age of the company's CEO, has a mean value of 3.7008. 53.67% of our sample firms have a CEO with a tertiary education. Interestingly, the CEO is male in 74.94% of the sample firms.

Table 3 reports the correlation matrix between the variables contained in the analysis. This table describes a preliminary overview of the relationships between variables. Initial evidence shows that there is a negative correlation between *Domestic CEO* and *PCI*, implying that firms in a more favourable business environment (indicated by having a higher score on PCI) have a lower propensity to select domestic CEOs. This table also shows that none of the correlation coefficients are higher than 0.65, hence confirming that the multicollinearity problem in regression models is relieved to some extent.

3.2. Propensity of having a domestic CEO

Table 4 presents the results of logit models to predict the likelihood of a firm having a domestic CEO. Column 1 presents the results of our baseline model (1). In columns 2–10, we break down the PCI into nine components and examine them accordingly.

The results in column 1 reveal that, while firm size, the amount of tax to be paid and the number of workers are negatively associated with the probability of having domestic CEOs, older firms and firms with higher equity turnovers appear to be more likely to hire domestic CEOs. With regard to the business environment, the results from column 1 show that firms operating in a location characterised by having a good business and political environment tend to hire foreign experts to be their CEOs rather than domestic experts. A possible explanation for this is the limited number of qualified professionals in the Vietnamese labour market (ILSSA and ILO, 2018). According to Miletkov et al. (2017), firms located in countries with a limited supply of well-qualified directors are more likely to employ foreign directors, especially those who originate from nations with better legal institutions or governance standards, since they possess a better governance skill set. With these foreign directors, firms are able to import advanced governance from other jurisdictions. In addition, professionals and entrepreneurs have a tendency to move to locations where their profession is more highly regarded and better funded, as well as where market conditions and regulatory environments are favourable for business (Carr et al., 2005). Hence, firms operating in these environments possess more opportunities to attract foreign talent. Consequently, in a business condition conducive to development, firms might tend to select foreign CEOs because of their potential contribution to strategic knowledge and their monitoring skills, which enable them to exploit the advantages of the business environment to the fullest, and ultimately facilitate firms' efforts to attain a high operating outcome.

Next, to conduct a deeper analysis on the impact of the business environment on CEO selection, we examine the components of the PCI separately. Overall, we find that firms operating in provinces characterised by high transparency, high proactivity, low time costs, and low informal charges have a lower tendency to employ domestic CEOs. Similarly, in a business environment that assists firms to access land and that offers business support, labour training and legal institutions, firms are less likely to appoint domestic CEOs. By contrast, in an environment with low entry costs, domestic CEOs are more likely to be selected by companies.

Table 3
Correlation matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1 Domestic CEO	1																			
2 Size	−0.208	1																		
3 Firm Age	−0.048	0.263	1																	
4 Equity Turnover	−0.007	0.094	0.141	1																
5 Tax Paid	−0.184	0.478	0.333	0.253	1															
6 Labour	−0.233	0.607	0.311	0.151	0.555	1														
7 CEO Age	−0.110	0.141	0.387	0.076	0.196	0.209	1													
8 CEO Education	−0.089	0.194	−0.001	−0.026	0.105	0.136	−0.145	1												
9 CEO Gender	−0.069	0.059	0.039	−0.043	0.036	0.102	0.068	0.053	1											
10 PCI	−0.061	−0.032	−0.013	0.025	0.038	−0.008	−0.025	0.018	−0.045	1										
11 Entry	0.018	−0.152	−0.018	0.081	0.093	0.110	0.039	−0.061	0.030	0.262	1									
12 Land	−0.024	−0.048	0.016	0.006	0.002	−0.043	0.071	−0.199	−0.015	0.351	−0.125	1								
13 Transparency	−0.043	−0.021	−0.005	0.028	0.047	0.064	−0.024	0.064	−0.017	0.597	0.272	−0.042	1							
14 Time Cost	−0.043	−0.100	0.035	0.057	0.082	0.064	0.103	−0.187	0.001	0.531	0.280	0.509	0.114	1						
15 Informal	−0.041	−0.119	−0.039	0.058	0.060	−0.027	0.033	−0.169	−0.028	0.469	0.303	0.604	0.071	0.563	1					
16 Proactive	−0.047	−0.013	0.033	0.017	0.041	0.035	0.075	−0.151	−0.003	0.573	0.025	0.613	0.179	0.583	0.414	1				
17 Support	0.000	0.097	−0.020	−0.046	−0.051	−0.086	−0.132	0.270	−0.042	0.061	−0.263	−0.458	0.031	−0.478	−0.423	−0.330	1			
18 Labour Training	−0.021	0.136	−0.012	−0.064	−0.090	−0.095	−0.114	0.220	−0.045	0.328	−0.454	−0.120	0.177	−0.296	−0.304	0.026	0.638	1		
19 Legal	−0.025	−0.136	−0.026	0.070	0.076	0.040	0.045	−0.127	0.003	0.353	0.542	0.323	0.117	0.483	0.577	0.275	−0.302	−0.342	1	

Table 4
Probability of having domestic CEO.

	Dependent variable: <i>Pr (Domestic CEO = 1)</i>									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Size</i>	−0.341*** (0.008)	−0.334*** (0.008)	−0.361*** (0.008)	−0.342*** (0.008)	−0.356*** (0.008)	−0.368*** (0.008)	−0.357*** (0.008)	−0.341*** (0.008)	−0.326*** (0.008)	−0.356*** (0.008)
<i>Firm Age</i>	0.373*** (0.015)	0.386*** (0.015)	0.371*** (0.015)	0.381*** (0.015)	0.371*** (0.015)	0.361*** (0.015)	0.369*** (0.015)	0.386*** (0.015)	0.393*** (0.015)	0.377*** (0.015)
<i>Equity Turnover</i>	0.038*** (0.002)	0.038*** (0.002)	0.037*** (0.002)	0.038*** (0.002)	0.038*** (0.002)	0.039*** (0.002)	0.038*** (0.002)	0.038*** (0.002)	0.039*** (0.002)	0.038*** (0.002)
<i>Tax Paid</i>	−0.173*** (0.006)	−0.176*** (0.006)	−0.171*** (0.006)	−0.176*** (0.006)	−0.171*** (0.006)	−0.164*** (0.006)	−0.170*** (0.006)	−0.176*** (0.006)	−0.179*** (0.006)	−0.171*** (0.006)
<i>Labour</i>	−0.485*** (0.010)	−0.493*** (0.010)	−0.467*** (0.010)	−0.485*** (0.010)	−0.469*** (0.010)	−0.463*** (0.010)	−0.466*** (0.010)	−0.488*** (0.010)	−0.501*** (0.010)	−0.473*** (0.010)
<i>PCI</i>	−0.082*** (0.002)									
<i>Entry</i>		0.741*** (0.023)								
<i>Land</i>			−0.240*** (0.011)							
<i>Transparency</i>				−0.371*** (0.019)						
<i>Time Cost</i>					−0.231*** (0.010)					
<i>Informal</i>						−0.342*** (0.010)				
<i>Proactive</i>							−0.165*** (0.007)			
<i>Support</i>								−0.018** (0.007)		
<i>Labour Training</i>									−0.366*** (0.017)	
<i>Legal</i>										−0.247*** (0.012)
<i>Constant</i>	13.011*** (0.166)	1.749*** (0.193)	9.412*** (0.103)	10.224*** (0.134)	9.505*** (0.101)	10.024*** (0.094)	8.804*** (0.075)	7.978*** (0.067)	9.822*** (0.107)	9.274*** (0.098)
<i>Year dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Pseudo R2</i>	0.243	0.244	0.238	0.238	0.238	0.244	0.239	0.235	0.238	0.237
<i>Observations</i>	494,365	494,365	494,365	494,365	494,365	494,365	494,365	494,365	494,365	494,365

Note: Robust standard errors in parentheses.

Significant level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

3.3. Local business environment, domestic CEO, and firm performance

Table 5 provides the regression results of the panel data regressions to examine the impact of the local business environment and domestic CEOs on firm performance. Firm performance is proxied by ROA and ROE. Columns 1 and 3 report the results of the regression model, comparing the performance of firms managed by domestic CEOs with those selecting foreign CEOs. Columns 2 and 4 exhibit the results when the interaction term between domestic CEO and the PCI is taken into consideration.

As can be seen from columns 1 and 3, the estimated coefficient on *Domestic CEO* is positive and significant, indicating that firms with domestic CEOs experience better performance than firms with foreign CEOs. Our results complement those of Lam and Yeung (2010), who argue for the beneficial effect of local staff on firm performance, due to their better relationship with the government, customers, and employees of the local areas.

The interaction term between *Domestic CEO* and *PCI* allows us to understand the manner in which having domestic CEOs benefits firms. As demonstrated in columns 2 and 4, under a favourable business environment, firms led by domestic CEOs outperform those choosing foreign CEOs. Our findings are supported by a number of arguments that emphasise the role of domestic CEOs over foreign CEOs (i.e. Masulis et al., 2012; Williams and O'Reilly III, 1998). The appointment of foreign directors can lead to an ineffectiveness in monitoring because of the large geographical distance from their country of origin and unfamiliarity with the rules, law, or management methods in the local business environment. Therefore, firms with foreign directors often experience high agency problems and eventually poor operating outcomes (Masulis et al., 2012).

Next, to gain a better understanding of the moderating impact of each economic governance area on the domestic CEO-performance relationship, we break down the PCI into its 9 components and investigate how domestic CEOs interact with each of those components and affect firm performance respectively. The results are provided in Tables 6 and 7, which use ROA and ROE as dependent variables, respectively.

Table 5
Local business environment, domestic CEO, and firm performance.

	ROA (1)	ROA (2)	ROE (3)	ROE (4)
<i>Domestic CEO</i>	0.011** (0.004)	−0.125*** (0.021)	0.014 (0.009)	−0.276*** (0.050)
<i>PCI</i>		−0.002*** (0.000)		−0.005*** (0.001)
<i>Domestic CEO * PCI</i>		0.002*** (0.000)		0.005*** (0.001)
<i>Size</i>	0.010*** (0.000)	0.010*** (0.000)	0.016*** (0.000)	0.016*** (0.000)
<i>Firm Age</i>	0.022*** (0.001)	0.022*** (0.001)	0.023*** (0.001)	0.023*** (0.001)
<i>Equity Turnover</i>	0.001*** (0.000)	0.001*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
<i>Tax Paid</i>	0.004*** (0.000)	0.004*** (0.000)	0.008*** (0.000)	0.008*** (0.000)
<i>Labour</i>	−0.000 (0.000)	−0.000 (0.000)	0.003*** (0.001)	0.003*** (0.001)
<i>CEO Age</i>	0.004** (0.002)	0.004** (0.002)	0.005 (0.003)	0.005 (0.003)
<i>CEO Education</i>	0.000 (0.001)	0.000 (0.001)	−0.000 (0.001)	0.000 (0.001)
<i>CEO Gender</i>	−0.000 (0.001)	−0.000 (0.001)	−0.002 (0.002)	−0.002 (0.002)
<i>Constant</i>	−0.128*** (0.008)	−0.002 (0.022)	−0.197*** (0.016)	0.092* (0.051)
Year dummies	Yes	Yes	Yes	Yes
Firm dummies	Yes	Yes	Yes	Yes
R-squared	0.036	0.036	0.031	0.031
Observations	494,365	494,365	494,365	494,365

Note: Robust standard errors in parentheses.

Significant level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Overall, we find consistent results that, in a business environment characterised by low entry costs, high transparency, low time costs, high proactivity, adequate business support and labour training, firms with a local CEO outperform those managed by a foreign CEO. However, firms that operate in geographic locations with better land access and low informal charges experience higher financial performance when they are run by a foreign CEO. According to [Nguyen and Van Dijk \(2012\)](#), the improvement in land access and the decrease in informal charges help to diminish perceived corruption. Moreover, corruption is harmful to firms as it diverts executives from directly productive works toward corrupt activities ([Faruq et al., 2013](#)). As a result, when the perceived level of corruption in the operating environment is low, the managerial attention will not be refocused on dealing with corruption. Instead, foreign CEOs are able to promote their competencies of providing and implementing productive strategic and tactical decisions, which in turn help to encourage growth and improve the financial performance of the firms.

4. Additional analyses

4.1. Does firm size matters?

The extant literature (i.e. [Bishop, 2012](#); [Orser, 2000](#)) documents that, as firms grow in size, their managing skill/knowledge requirements also change. Arguably, larger firms are more likely to engage in planning and need more intensive managerial skills in business planning or financial expertise ([Orser, 2000](#)). From another perspective, [Nguyen et al. \(2018\)](#) point out that the impact of certain CEO characteristics (such as CEO tenure or CEO power) varies in firms with different growth opportunities, which could be reflected to some extent by firm size ([Beck et al., 2008](#)). Therefore, if there is heterogeneity in managerial skills or knowledge between domestic and foreign CEOs, it should be reflected in the impact on performance conditional on firm size and it could be more pronounced in large firms.

In order to test this conjecture, we follow [Nguyen et al. \(2018\)](#) and divide the sample into size quantiles and re-estimate the baseline equation (2) for each quantile. The results are reported in [Table 8](#). Overall, we find that the estimated coefficients are positive and significant in the third and fourth quantiles only. This indicates that the role of domestic CEOs is stronger in coping with the local business environment and more prominent in the larger sized firms.

4.2. Educational background

Education is an important factor that helps to shape an individual's cognitive ability because it serves as an indicator of a person's knowledge, skill base, values, cognitive preference, etc. ([Hambrick and Mason, 1984](#)). Managers with higher

Table 6

Local business environment, domestic CEO, and firm performance – Breakdown by PCI components.

	ROA								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Domestic CEO</i>	−0.038*** (0.013)	0.080*** (0.014)	−0.080*** (0.015)	−0.076*** (0.014)	0.064*** (0.012)	0.000 (0.007)	−0.034*** (0.011)	−0.024 (0.019)	0.013 (0.012)
<i>Size</i>	0.010*** (0.000)	0.010*** (0.000)	0.010*** (0.000)	0.010*** (0.000)	0.010*** (0.000)	0.010*** (0.000)	0.009*** (0.000)	0.010*** (0.000)	0.009*** (0.000)
<i>Firm Age</i>	0.022*** (0.001)	0.022*** (0.001)	0.022*** (0.001)	0.022*** (0.001)	0.022*** (0.001)	0.022*** (0.001)	0.022*** (0.001)	0.022*** (0.001)	0.022*** (0.001)
<i>Equity Turnover</i>	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
<i>Tax Paid</i>	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)
<i>Labour</i>	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)
<i>CEO Age</i>	0.004** (0.002)	0.004** (0.002)	0.004** (0.002)	0.004** (0.002)	0.004** (0.002)	0.004** (0.002)	0.004** (0.002)	0.004** (0.002)	0.004** (0.002)
<i>CEO Education</i>	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
<i>CEO Gender</i>	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)
<i>Entry</i>	−0.009*** (0.002)								
<i>Domestic CEO * Entry</i>	0.006*** (0.002)								
<i>Land</i>		0.011*** (0.002)							
<i>Domestic CEO * Land</i>		−0.011*** (0.002)							
<i>Transparency</i>			−0.012*** (0.002)						
<i>Domestic CEO * Transparency</i>			0.015*** (0.002)						
<i>Time cost</i>				−0.014*** (0.002)					
<i>Domestic CEO * Time cost</i>				0.014*** (0.002)					
<i>Informal</i>					0.008*** (0.002)				
<i>Domestic CEO * Informal</i>					−0.008*** (0.002)				
<i>Proactive</i>						−0.003** (0.001)			
<i>Domestic CEO * Proactive</i>						0.002** (0.001)			
<i>Support</i>							−0.008*** (0.002)		
<i>Domestic CEO * Support</i>							0.007*** (0.002)		
<i>Labour</i>								−0.004 (0.003)	
<i>Domestic CEO * Labour</i>								0.006* (0.003)	
<i>Legal</i>									−0.001 (0.002)
<i>Domestic CEO * Legal</i>									−0.000 (0.002)
<i>Constant</i>	−0.057*** (0.015)	−0.199*** (0.016)	−0.055*** (0.016)	−0.038** (0.016)	−0.177*** (0.014)	−0.115*** (0.010)	−0.073*** (0.013)	−0.105*** (0.020)	−0.124*** (0.013)
<i>Year dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>R2</i>	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036
<i>Observations</i>	494,365	494,365	494,365	494,365	494,365	494,365	494,365	494,365	494,365

Note: Robust standard errors in parentheses.

Significant level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

education level have better ability to process complex information, analyse new situation and discriminate among a variety of alternatives (Herrmann and Datta, 2002). King et al. (2016) posit that education in management provides skills

Table 7
Local business environment, domestic CEO, and firm performance – Breakdown by PCI components.

	ROE								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Domestic CEO</i>	−0.104*** (0.029)	0.134*** (0.031)	−0.170*** (0.034)	−0.185*** (0.033)	0.089*** (0.026)	−0.010 (0.015)	−0.042* (0.023)	−0.006 (0.041)	0.007 (0.025)
<i>Size</i>	0.016*** (0.000)	0.016*** (0.000)	0.016*** (0.000)	0.016*** (0.000)	0.016*** (0.000)	0.016*** (0.000)	0.016*** (0.000)	0.016*** (0.000)	0.016*** (0.000)
<i>Firm Age</i>	0.023*** (0.001)	0.023*** (0.001)	0.023*** (0.001)	0.023*** (0.001)	0.023*** (0.001)	0.023*** (0.001)	0.023*** (0.001)	0.023*** (0.001)	0.023*** (0.001)
<i>Equity Turnover</i>	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
<i>Tax Paid</i>	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)
<i>Labour</i>	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
<i>CEO Age</i>	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)
<i>CEO Education</i>	−0.000 (0.001)	−0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)
<i>CEO Gender</i>	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.002 (0.002)
<i>Entry</i>	−0.017*** (0.004)								
<i>Domestic CEO * Entry</i>	0.015*** (0.004)								
<i>Land</i>		0.019*** (0.005)							
<i>Domestic CEO * Land</i>		−0.019*** (0.005)							
<i>Transparency</i>			−0.027*** (0.005)						
<i>Domestic CEO * Transparency</i>			0.030*** (0.005)						
<i>Time cost</i>				−0.033*** (0.005)					
<i>Domestic CEO * Time cost</i>				0.032*** (0.005)					
<i>Informal</i>					0.013*** (0.004)				
<i>Domestic CEO * Informal</i>					−0.012*** (0.004)				
<i>Proactive</i>						−0.005** (0.003)			
<i>Domestic CEO * Proactive</i>						0.005* (0.003)			
<i>Support</i>							−0.009** (0.003)		
<i>Domestic CEO * Support</i>							0.009*** (0.003)		
<i>Labour</i>								−0.001 (0.007)	
<i>Domestic CEO * Labour</i>								0.003 (0.007)	
<i>Legal</i>									−0.001 (0.004)
<i>Domestic CEO * Legal</i>									0.001 (0.004)
<i>Constant</i>	−0.065** (0.032)	−0.316*** (0.034)	−0.034 (0.036)	0.006 (0.035)	−0.279*** (0.029)	−0.171*** (0.020)	−0.143*** (0.026)	−0.188*** (0.043)	−0.191*** (0.028)
<i>Year dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>R2</i>	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.031
<i>Observations</i>	494,365	494,365	494,365	494,365	494,365	494,365	494,365	494,365	494,365

Note: Robust standard errors in parentheses.

Significant level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

that enable CEOs to manage firms effectively and achieve successful performance. As a result, the educational background of a CEO can plausibly have a positive impact on their decision making and, eventually, the firm operating outcomes.

Table 8

Local business environment, domestic CEO, and firm performance – Does firms size matter?

	ROA				ROE			
	First quantile (1)	Second quantile (2)	Third quantile (3)	Fourth quantile (4)	First quantile (5)	Second quantile (6)	Third quantile (7)	Fourth quantile (8)
<i>Domestic CEO</i>	−0.041 (0.437)	0.215 (0.348)	0.155 (0.126)	−0.098*** (0.022)	0.116 (1.057)	−0.020 (0.512)	0.406* (0.218)	−0.284*** (0.056)
<i>PCI</i>	−0.001 (0.007)	0.004 (0.006)	0.002 (0.002)	−0.002*** (0.000)	0.002 (0.017)	−0.000 (0.008)	0.005 (0.004)	−0.005*** (0.001)
<i>Domestic CEO * PCI</i>	0.001 (0.007)	−0.003 (0.006)	0.002** (0.002)	0.002*** (0.000)	−0.002 (0.017)	0.000 (0.008)	0.006* (0.004)	0.004*** (0.001)
<i>Size</i>	0.030*** (0.002)	0.014*** (0.002)	0.006*** (0.001)	−0.000 (0.001)	0.035*** (0.003)	0.021*** (0.004)	0.017*** (0.004)	0.006*** (0.002)
<i>Firm Age</i>	0.031*** (0.003)	0.008*** (0.002)	0.004** (0.002)	0.010*** (0.002)	0.028*** (0.004)	0.005 (0.004)	0.007 (0.004)	0.021*** (0.005)
<i>Equity Turnover</i>	0.002*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.000 (0.000)	0.003*** (0.001)	0.003*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
<i>Tax Paid</i>	0.010*** (0.001)	0.005*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.015*** (0.001)	0.008*** (0.001)	0.007*** (0.001)	0.006*** (0.000)
<i>Labour</i>	−0.007*** (0.002)	0.003*** (0.001)	0.003*** (0.001)	0.004*** (0.001)	−0.007*** (0.002)	0.006*** (0.002)	0.006*** (0.002)	0.011*** (0.001)
<i>CEO Age</i>	0.011 (0.007)	−0.003 (0.004)	−0.003 (0.004)	0.005 (0.003)	0.015 (0.009)	−0.014 (0.010)	−0.013 (0.009)	0.011 (0.009)
<i>CEO Education</i>	0.002 (0.002)	−0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.003)	0.001 (0.003)	0.000 (0.003)	0.000 (0.003)
<i>CEO Gender</i>	0.003 (0.004)	−0.001 (0.002)	0.000 (0.002)	0.000 (0.002)	−0.001 (0.006)	0.000 (0.005)	0.004 (0.005)	0.001 (0.005)
<i>Constant</i>	−0.237 (0.437)	−0.338 (0.349)	−0.215* (0.128)	0.058** (0.025)	−0.451 (1.057)	−0.121 (0.514)	−0.527** (0.223)	0.166** (0.065)
<i>Year dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>R-squared</i>	0.055	0.033	0.031	0.022	0.042	0.029	0.029	0.024
<i>Observations</i>	122,362	124,141	125,580	122,282	122,362	124,141	125,580	122,282

Note: Robust standard errors in parentheses.

Significant level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

We test whether the effects of domestic CEOs on firm performance are robust in our study by controlling for different educational backgrounds. The AES database provides us with the background of CEO education to some extent by classifying them into eight categories, namely (1) Untrained; (2) Trained without certificates; (3) Elementary (vocational) training; (4) Intermediate (vocational) training; (5) Vocational College; (6) Bachelor degree; (7) Post-graduate; (8) Other types of trainings/educations. Therefore, in order to affirm the contribution of CEO education to the explanation of firm performance, we generate eight respective binary variables which indicate the educational background of the firm's manager. Specifically, *Untrained* is a dummy that equals one if the CEO does not receive any training, and zero otherwise; *Trained Without Certificates* is the dummy taking a value of one for firms whose CEOs have received some training yet hold no official qualifications, and zero otherwise; *Elementary Vocational Training* is a dummy given the value of one if the CEO holds a certificate of elementary vocational education, and zero otherwise; *Intermediate Vocational Training* takes the value of one if the manager completes the vocational training at intermediate level, and zero otherwise; *Vocational College* equals one if the CEO graduates from a vocational college, and zero otherwise; *Bachelor Degree* is given the value of one for a CEO who holds a bachelor's degree, and zero otherwise; *Postgraduate* equals one if the CEO obtains a Master's or higher education degree, and zero otherwise; *Other Types of Training or Education* is a dummy equalling one if the manager receives other types of academic training, and zero otherwise. We replace the dummy for a CEO with tertiary education and higher by our set of aforementioned dummies in our baseline models and re-estimate them accordingly. To avoid perfect multicollinearity, the *Untrained* dummy is used as the base category. The results are reported in [Table 9](#).

As can be seen from the above table, most of the estimated coefficients of variables related to CEO education are found to be positive and statistically significant. The only two exceptions are *Postgraduate* and *Other*, which are insignificant. The result therefore implies that, in comparison to companies with untrained CEO, those managed by CEO who receive training and/or education enjoy a better performance to a certain extent. However, CEOs holding higher education degrees (i.e. Postgraduate) might be academically inclined rather than business minded. This, in turn, could lead to the performance of firms managed by CEOs with Postgraduate level education being less prominent than that of firms run by less academically-minded CEOs. This finding is also consistent with [King et al. \(2016\)](#) and [Gottesman and Morey \(2006\)](#), who find that firm performance is not related to whether the CEO is academically oriented.

Table 9
CEO Education background breakdown.

	ROA (1)	ROA (2)	ROE (3)	ROE (4)
<i>Domestic CEO</i>	0.011** (0.004)	−0.122*** (0.021)	0.014 (0.009)	−0.274*** (0.050)
<i>PCI</i>		−0.002*** (0.000)		−0.005*** (0.001)
<i>Domestic CEO * PCI</i>		0.002*** (0.000)		0.005*** (0.001)
<i>Size</i>	0.010*** (0.000)	0.010*** (0.000)	0.016*** (0.000)	0.016*** (0.000)
<i>Firm Age</i>	0.022*** (0.001)	0.022*** (0.001)	0.023*** (0.001)	0.023*** (0.001)
<i>Equity Turnover</i>	0.001*** (0.000)	0.001*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
<i>Tax Paid</i>	0.004*** (0.000)	0.004*** (0.000)	0.008*** (0.000)	0.008*** (0.000)
<i>Labour</i>	−0.000 (0.000)	−0.000 (0.000)	0.003*** (0.001)	0.003*** (0.001)
<i>CEO Age</i>	0.004** (0.002)	0.004** (0.002)	0.005 (0.003)	0.005 (0.003)
<i>CEO Gender</i>	−0.000 (0.001)	−0.000 (0.001)	−0.002 (0.002)	−0.002 (0.002)
<i>CEO Education</i>				
<i>Trained Without Certificates</i>	0.000 (0.001)	0.000 (0.001)	0.003** (0.002)	0.003** (0.002)
<i>Elementary Vocational Training</i>	0.007*** (0.001)	0.006*** (0.001)	0.008*** (0.002)	0.008*** (0.002)
<i>Intermediate Vocational Training</i>	0.002** (0.001)	0.002** (0.001)	0.003** (0.001)	0.003** (0.001)
<i>Vocational College</i>	0.003*** (0.001)	0.003*** (0.001)	0.005*** (0.002)	0.004** (0.002)
<i>Bachelor Degree</i>	0.002** (0.001)	0.002** (0.001)	0.003* (0.002)	0.003* (0.002)
<i>Post-graduate</i>	0.002 (0.002)	0.002 (0.002)	0.006 (0.004)	0.005 (0.003)
<i>Other Types of Trainings/Educations</i>	−0.001 (0.001)	−0.001 (0.001)	−0.001 (0.002)	−0.002 (0.002)
<i>Constant</i>	−0.132** (0.008)	−0.009 (0.022)	−0.203** (0.016)	0.085* (0.051)
<i>Year dummies</i>	Yes	Yes	Yes	Yes
<i>Firm dummies</i>	Yes	Yes	Yes	Yes
<i>R-squared</i>	0.036	0.037	0.031	0.032
<i>Observations</i>	491,656	491,655	491,656	491,655

Note: Robust standard errors in parentheses.

Significant level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

4.3. Other robustness tests

To ensure the robustness of our results, we firstly re-estimate our probability model of CEO selection using different econometric techniques. Specifically, we re-estimate Eq. (1) using linear probability models and probit models. Next, we re-estimate Eq. (1) using the conditional logit models on the matched sample of firms run by domestic CEOs and those run by foreign CEOs. To form a matched pair, we employ the propensity score matching (PSM) procedure to match one firm managed by a domestic CEO with a firm having similar characteristics (i.e. size and industry), but being run by a foreign CEO. The nearest neighbour matching technique is employed. The analysis is performed without replacement, meaning that a neighbour can merely be used once. We also impose a caliper of 1%, which implies that the maximum variation between the propensity score of the firm managed by a domestic CEO and that of its matching peer (the firm managed by a foreign CEO) does not exceed 1% in absolute value. Overall, the results estimated using alternative econometric approaches are strongly consistent with the results of the logit model reported in Table 4.

With regard to the model estimating the impact of a domestic CEO on firm performance, one may be concerned that there is a large disparity in the number of domestic and foreign CEO firm years, which can lead to interpretation bias. To mitigate this concern, we re-estimate Eq. (2) using a matched sample of firms managed by domestic and foreign CEO. We adopt a similar matching procedure previously mentioned in this section and match firms (on a one-to-one basis) by using firm characteristics (e.g. industry and size) and CEO attributes (e.g. age, gender, education) as matching variables.

Table A.1

Local business environment, domestic CEO, and firm performance – Propensity score matching estimation.

	ROA (1)	ROA (2)	ROE (3)	ROE (4)
<i>Domestic CEO</i>	0.019* (0.010)	−0.066 (0.042)	0.028 (0.024)	−0.196* (0.113)
<i>PCI</i>		−0.001** (0.000)		−0.003*** (0.001)
<i>Domestic CEO * PCI</i>		0.001** (0.001)		0.004** (0.002)
<i>Size</i>	0.012*** (0.003)	0.012*** (0.003)	0.025*** (0.006)	0.026*** (0.006)
<i>Firm Age</i>	0.046*** (0.008)	0.046*** (0.008)	0.077*** (0.018)	0.077*** (0.017)
<i>Equity Turnover</i>	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.001)	−0.000 (0.001)
<i>Tax Paid</i>	0.005*** (0.001)	0.005*** (0.001)	0.010*** (0.002)	0.009*** (0.002)
<i>Labour</i>	0.012*** (0.003)	0.012*** (0.003)	0.030*** (0.006)	0.029*** (0.006)
<i>CEO Age</i>	0.016 (0.012)	0.016 (0.012)	0.045 (0.028)	0.044 (0.028)
<i>CEO Education</i>	−0.001 (0.005)	−0.001 (0.005)	0.002 (0.011)	0.002 (0.011)
<i>CEO Gender</i>	0.029*** (0.011)	0.027** (0.011)	0.059** (0.025)	0.055** (0.025)
<i>Constant</i>	−0.354** (0.057)	−0.289** (0.062)	−0.767** (0.127)	−0.569** (0.140)
Year dummies	Yes	Yes	Yes	Yes
Firm dummies	Yes	Yes	Yes	Yes
R-squared	0.040	0.042	0.031	0.033
Observations	23 968	23 968	23 968	23 968

Note: Robust standard errors in parentheses.

Significant level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Overall, the results are mostly consistent with our earlier results provided in Section 3.3. The new results are provided in Table A.1 in Appendix.¹

In addition, we re-estimate Model 2 using pooled OLS and random effects estimators. The results provided in Tables 5 to 8 continue to hold. We also use other proxies for performance, such as sales growth and returns on sales. However, these tests are less powerful, and the results are less significant than those provided using ROA and ROE. For the interest of space, all of these tests are not reported here.

5. Conclusions

Since a CEO is usually the central decision maker in a company, it is essential that firms select executives who have attributes that enable them to function effectively in the local business environment. In this paper, we use a unique and comprehensive dataset covering virtually all of the firms operating in Vietnam to examine how domestic CEOs, with arguably better knowledge and understanding of the local business environment, affect firm performance.

Overall, the empirical results reveal that, under conducive conditions for firm dynamism and growth, firms have a greater tendency to employ a foreign CEO. However, firms run by a domestic CEO achieve better financial outcomes than those with a foreign CEO. This result is more pronounced in the case of larger firms. These results confirm previous literature about the significant role of local management, in addition to thorough understanding of local culture and business environment.

Our findings provide several important implications for corporate managers and organisations. Firstly, firms looking to promote or recruit a new CEO would be advised to be more attentive to the characteristics of individuals (e.g. nationality). In addition, while firms are more likely to hire a foreign CEO to run their business if the local business environment conditions improve, this does not necessarily bring real economic benefits for firms due to the lack of familiarity with the local business environment. Therefore, to foster firm performance, CEOs with a domestic origin remain a better option for firms for the time being.

¹ We would like to thank the anonymous reviewers for suggesting this.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix

See Table A.1.

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