



Research article

Corporate social responsibility, political connections, and barrier industry diversification: Evidence from China

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ABSTRACT

In this paper, using the data of private sector enterprises listed in China from 2009 to 2014, we study the relationships between corporate social responsibility, political connections, and barrier industry diversification among Chinese public-listed private-sector enterprises. The empirical test results reveal that establishing political connections can contribute to diversification of these firms, while engaging in corporate social responsibility helps to promote their barrier industry diversification. More engagement in corporate social responsibility makes it easier for them to establish political connections and strengthen the association between political connections and barrier industry diversification. This study provides new empirical evidence for not only understanding the relationship between political connections of these firms and access to economic resources but also a new perspective regarding their conduct related to corporate social responsibility (CSR).

1. Introduction

In China, many narratives concerning the market deviate from those found in other countries and may significantly contrast with the observations of Western scholars regarding the ‘common sense’ understanding of markets. For example, existing research demonstrates that firms can benefit from political connections, especially in countries with a weak enforcement environment [1,2]. However, a ‘black box’ persists in establishing such connections in the Chinese market, coupled with an operational mechanism involving political relationships. Scholars have also observed a significant increase in the profitability of most firms after political connections were established [2,3], but have not discerned what occurred during this period.

In this paper, we provide an analytical framework to unveil the nature of this “black box” based entirely on China’s current ideological market context, with a high degree of practical characteristics. Specifically, we examine the temporal and spatial dimensions following the Chinese market’s 1978 reform, as no market economy had traditionally existed before. Difficulties occurred during this transition from a planned economy to a market economy, in that the Chinese market is highly imperfect and characterized by the following attributes: (1) Protections for private property rights are weak. Purely private enterprises will encounter more frequent inspections than other enterprises, and although these are provided free of charge, they increase the firm’s risk of expropriation. (2) Stringent approval requirements to enter various industries, particularly in finance, energy, and transportation, where controls are more pronounced, limiting the involvement of private enterprises. (3) Ownership discrimination exists, in that the

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influence of ideological propaganda over the years has led to a questioning of the legitimacy and rationality of private enterprises. Purely private enterprises face difficulties in obtaining resources, such as land and market financing. Consequently, the private sector in this market environment must rely on the government for support to surmount these obstacles, making it a fundamental objective for all private-sector enterprises (PSEs) to establish continuous political connections with the government.

However, such political connections are rare. Firstly, establishing such connections requires the government's acknowledgement and attention. From the government's perspective, this is based on two levels of consideration: The first aspect is reputation. Given the government's long-term ideological education and institutional constraints, it is cautious to deal with the private sector. This is also because its relationship with the private sector is incidental to leading citizens to rent-seeking associations. Moreover, the prevalence of small-scale enterprises with inadequate management systems complicates matters, making financial information challenging to disclose publicly. If the government frequently interacts with these enterprises, observers tend to consider the existence of conflicts of interest between the two, regardless of whether such association is confirmed. Ultimately, this negatively impacts the promotion of local officials. The government avoids this association by remaining in contact with those in the private sector with higher reputations among various precincts of enterprises.

The second aspect of consideration involving political connections with businesses is the local economic benefit. China's local GDP growth rate remains a crucial metric in official assessments. Therefore, the private sector—which is important in local economic development—tends to receive additional support from local governments, including scarce resources that are difficult to gain in the market. Governments can also reduce the level of approval needed for various projects, and even provide businesses the opportunity to enter local high-barrier industries in exchange for continuous local investments.

Therefore, addressing the government's concerns is the first step in establishing private-sector political relationships. To respond to government concerns, firms need to make an excellent impression on their local governments. The private sector must shape a socially responsible image, in which they contribute to local economies and their residents, to gain support from local governments. It is important to note that China's political context differs from Western scholars' interpretations of the field of vision, as corporate social responsibility (CSR) in the former is specific, with highly limited connotations and concerned only with two aspects that impact official channels: taxation and employment. This is because China's private enterprises have only recently developed, while private enterprises were politically taboo as recently as the early 1980s. Taxation and employment as development tools for private enterprises can create the most direct government interests, most of which can be recognized by the community. Moreover, China's market-oriented charity system remains underdeveloped, and it is arduous for residents and the government to recognize charity as a type of CSR. This underscores the necessity of contextualizing economic terms within cultural contexts. Consequently, this paper adheres to China's research context parameters by utilizing the number of employees and taxation as primary measures of CSR in subsequent empirical discussions.

Similarly, in this paper, 'diversification' does not merely refer to conventional paths of diversification. Typically, strong private businesses discuss diversification to comprehend and develop the field and expand within the energy, finance, or transportation sectors, which are subject to government regulation and have high barriers to entry. Thus, "diversification", in this paper, is used within the context of Chinese private enterprises to specifically discuss ideology, which essentially differs from the diversified development strategies observed in a developed market economy system. 'Diversification' denotes the extent to which PSEs venture into government-regulated barrier industries.

Academia's concept of political connections primarily focuses on the analysis of a benign interaction between private-sector enterprises and government departments. Specifically, enterprises' political connections and political corruption, such as commercial bribery, have completely different connotations [2]. Most corruption originates from an exchange of power and money and misallocation of resources, which has been severely criticized in anti-corruption campaigns [4–6]. However, political connections are legitimate and reasonable when they involve entrepreneurs' political participation or the partial ownership of private-sector enterprises by the state. Such activities are encouraged and protected by existing laws and political systems.

A popular topic in current academic research involves the political connections of enterprises. Subsequently, this study discusses the relationships among CSR, political connections, and PSEs' diversification from various perspectives, including resource dependence, stakeholder, and signal theories. Moreover, this paper analyses how PSEs establish and maintain relationships with the government—whether by directly establishing political connections or engaging in CSR—to obtain the resources necessary for diversification. Hence, this paper contributes to the current literature on political connections from two perspectives. Firstly, it offers deeper insights into the mechanism by which Chinese PSEs make strategic choices in a transitional economy with imperfect political and economic institutions as they strive for development space. Secondly, it provides direct evidence that private enterprises attract the government's concern through social responsibility activities, thereby establishing political connections and ultimately breaking artificial barriers to access government monopolies.

The remainder of this paper is structured as follows: Section 2 provides a literature review, Section 3 presents the theoretical hypotheses, Section 4 describes the research design, Section 5 discusses and analyses the empirical results, and Section 6 concludes.

2. Literature review

After more than 30 years of reform and efforts to catch up to other developed countries, China has grown to be the world's second-largest economy; PSEs have been critical in the market economy's gradual prosperity [7]. Compared with economy-dominated state-owned enterprises (SOEs), PSEs have the advantages of flexibility and vigour, with outstanding contributions to China's economic prosperity by increasing employment and taxation as a driving force for economic growth and restructuring [8]. However, China's transition to a market economy is relatively recent, with its legal system still evolving and economic reforms in an exploratory

phase compared to the well-established Western market economy [9]. Thus, PSEs still face many constraints, including ownership discrimination, a lack of policy support, inadequate implementation of policies, deficient financial resources, and limited space for development [10].

Allen et al. [8] questioned how the Chinese economy—and especially its private economy—developed so rapidly given its imperfect system. These authors discovered that PSEs effectively compensate for the defects in the formal national system through an alternative mechanism based on reputation and relationships. This alternative mechanism in China is political connections, which involve mutually beneficial, positive interactions between an enterprise and the government. As China is in a transitional stage, with incomplete market orders and a powerful government [11], this government will allocate most economic resources [12]. As underscored by the resource dependence theory, Chinese enterprises must rely on the government to obtain funds, land, and the other resources needed for development. Chen et al. [13] noted that listed family firms are more likely to build political connections when local markets are less developed and the government has more power in the allocation of economic resources. Specifically, enterprises will actively build political connections with the government as an alternative mechanism for their development and to obtain preferential policies or financial resources [9,14].

As a means to develop cross-industry products or services, diversification not only helps to effectively allocate resources to enhance corporate value, but is also conducive to decentralizing business risks; hence, this gradually becomes enterprises' strategic path to pursue horizontal or vertical expansion [15,16]. However, it is difficult for private enterprises in China to diversify. Enterprises that want to enter barrier industries must obtain government departments' approval, and especially in certain important industries related to people's livelihoods that are strictly controlled [11]. Further, Chen et al. [17] found that PSEs in China are relatively limited, and primarily concentrated in such traditional industries as general processing, manufacturing, or textiles, where the market is both saturated and competitive. However, large SOEs dominate lucrative industries like finance, energy, and tobacco, creating significant barriers for Chinese PSEs looking to diversify. This market segmentation, along with entry barriers and discrimination against private property rights, are the primary obstacles hindering the diversification of Chinese PSEs. Consequently, a crucial development strategy for PSEs involves seeking government assistance and support. As Chang and Hong [18] argued that government support, such as authorizations or supportive policies, contributes to diversification, one concern involves how to establish and maintain connections with the government and gain necessary support. Simultaneously, the public has gradually become aware of, and gained an appreciation for, CSR [19–21]. Regardless of whether engaging in CSR positively affects PSEs' access to economic resources, these actions also convey a firm's successful management or reputation; these topics deserve further attention in current literature.

3. Theoretical analysis and hypotheses

Many scholars have researched political connections' effects on resource acquisition. Zhang et al. [22] distinguished two types of managerial political connections, ascribed and achieved, and theorized that these different types of ties either buffer firms from or bind firms to government demands. They found that privately controlled listed firms in China whose executives have ascribed bureaucratic connections are more likely to use their connections as a buffer from governmental donation pressure. In contrast, achieved political connections are more likely to serve a binding function that facilitates donation. Fan et al. [9] and Lu [12] found that enterprises connected with the government had better-protected private property or easier access to government subsidies [23]. Meanwhile, various advantages offered by political connections include tax benefits [24,25] and innovation benefits [26]. For example, Faccio et al. [14] observed that PSEs operated by entrepreneurs with political identities had gained tax advantages. Political connections can also help enterprises obtain government assistance when faced with bankruptcy risks [14]. For example, PSEs with political connections were found to have much easier access to loans from financial institutions [9,17,27]. Further, some researchers argued that private enterprises' political connections can signal government support and better performance [28], thus alleviating any problematic information asymmetry while portraying a positive image to banks and other financial institutions [29,30]. In fact, this type of reputation-based signal transmission can also alleviate moral hazard issues, and is helpful for PSEs to obtain the trust of financial institutions and greater financing. Moreover, Waddell [11] observed that the Chinese government controls many scarce resources needed by PSEs, and allocating such resources largely depends on a close relationship with the government. In other words, it is helpful for PSEs to establish certain political connections to acquire benefits from the government, including more economic resources [31–33].

Similarly, diversification as a type of economic resource is highly significant in developing PSEs, and many PSEs strive to attain this resource. From a resource perspective, enterprises with political connections have easier access to basic development resources—such as funds, land, tax incentives, entry permissions, and other preferential policies—that are important factors in their diversification [34] and expansion. Li et al. [35] empirically tested more than 1000 enterprises and considered the resource dependence theory to observe that management resources are a key factor influencing enterprises' diversification. Various PSEs may have entrepreneurs who are deputies of the Chinese People's Congress (CPC) or members of the Chinese People's Political Consultative Conference (CPPCC), or members on their boards of directors representing state-owned shares. These PSEs all possess important management resources, such as political connections that may positively affect their barrier industry diversification.

In the context of political connections and diversification, from the above-mentioned resource dependence theory perspective, which posits that enterprises depend on external resources for survival and growth, enterprises may rely on government relationships to access essential resources such as funding, permits, and favourable policies, which can facilitate diversification efforts. Excluding the resource dependence theory, the relationship between political connections and diversification can be analysed through stakeholder theory, signal theory, and institutional theory. Stakeholder theory suggests that enterprises should consider the interests of all stakeholders, including government entities, in their decision-making processes. Political connections can be viewed as a means of

managing relationships with government stakeholders to gain support for diversification initiatives. According to signal theory, private sector enterprises use signals to convey information about their capabilities and intentions to external parties. Political connections may serve as a signal of credibility and legitimacy to investors and other stakeholders, potentially facilitating access to resources and support for diversification projects. From the perspective of institutional theory, it emphasizes the importance of institutional pressures and norms in shaping enterprises behaviour. In environments where political connections are valued or expected, enterprises may strategically cultivate relationships with government actors to conform to institutional expectations and gain competitive advantages, including opportunities for diversification.

These theories provide valuable insights into the mechanisms underlying the relationship between political connections and diversification strategies adopted by enterprises, particularly in contexts characterized by complex institutional arrangements and government involvement in the economy. Therefore, drawing from the resource dependence theory, stakeholder theory, signal theory, and institutional theory, we propose the following hypothesis:

H1. Political connections among PSEs contribute to diversified barrier industries.

If political connections can indeed provide PSEs with the resources needed for barrier industry development as well as alternative protections for these firms, then the literature must investigate how these PSEs will seek to build such political connections. Further, what path will allow PSEs to establish government connections? We analyze these issues from the CSR perspective.

Reverte [36] discovered that the fulfillment of CSR and the disclosure of relevant information are of strategic purpose and significance. According to stakeholder theory, reasons for disclosing CSR include: changing the perspectives of stakeholders in the business, conveying beneficial information about the business's performance, enhancing stakeholders' confidence in the enterprise's growth, and transferring supervision and control of the enterprise. As an important external component in the environment to facilitate enterprises' development, the government is an indispensable and relevant stakeholder, and supervises and administrates enterprises' production and operations. Therefore, the greater the PSE's engagement in CSR, the stronger the signal to the government about its outstanding performance, and the more attention and favours these PSEs can obtain from the government. Thus, PSEs will more smoothly obtain approval from relevant government departments for licenses, preferential policies, land, or other resources. Alternatively, disclosing CSR information can signal financial institutions, suppliers, customers, and other stakeholders about a PSE's excellent performance, including its promising prospects, strong integrity, and social responsibility. This transmission mechanism alleviates any information asymmetry issues [37]. Further, this creates more powerful, trustworthy PSEs that can gain more access to credit resources [38], broader and more stable sources of supplies, or an even greater product-consumption market, forming a virtuous circle. These basic resources all facilitate diversification strategies. Therefore, we propose the following hypothesis:

H2. The fulfillment of CSR by PSEs contributes to diversified barrier industries.

Additionally, PSEs that engage in CSR and disclose relevant information are more likely to gain recognition and goodwill from the public as well as the government. Their contributions to the local economy ease pressures from local governments. Consequently, entrepreneurs or executives responsible for these enterprises can more easily be elected as local CPC deputies or CPPCC members to participate in politics. Moreover, disclosing information on CSR provides the government with a better understanding of the enterprise's strength, which enhances the government's confidence in the PSE's favourable prospects. This results in the firm obtaining the trust of various investors, even favourable state-owned shares. Chen et al. [13] considered mutual benefits and the fairness principle to posit that enterprises should get help from the government in exchange for their help in solving the government's problems. Su and He [39] found that enterprises from China can build political connections with the government through charitable activities. Given this information, we assume that PSEs' motivation to fulfill their CSR is reflected in their political strategies. Thus, we propose the following hypothesis:

H3. The fulfillment of CSR by PSEs contributes to their political connections.

It is difficult for PSEs to establish political connections with the government, and these connections facilitate access to economic resources. Thus, PSEs will actively maintain their ties with the government due to their strong corporate utility [10]. On the one hand, as engaging in CSR is an effective way to maintain those ties, the PSEs that do so will convey positive signals to obtain resources for diversified development. On the other hand, these PSEs will more easily establish and consolidate their associations with the government to gain its support. This coordinating of social responsibility and political strategies will send multiple signals—in that the firm has strong economic power as well as a strong relationship with the government [29]—thus creating practical benefits to diversify

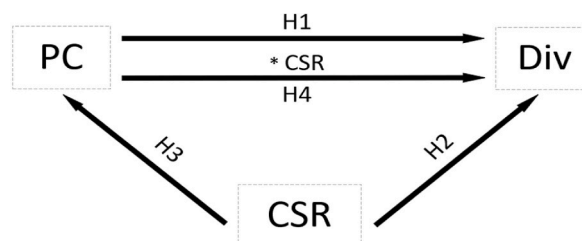


Fig. 1. Research logic and hypotheses.

the enterprise's barrier industry. Therefore, PSEs with political connections will more actively fulfill their CSR than the firms that lack such connections to enhance the positive effect of political connections on barrier industry diversification. Specifically, such connections allow these firms to break through entry barriers and gain more governmental support for diversified development. Thus, we propose the following hypothesis:

H4. The fulfillment of CSR by PSEs positively moderates the relationship between PSEs' political connections and barrier industry diversification.

The following Fig. 1 summarizes the research logic and hypotheses.

In the figure, "PC" represents political connections, "Div" means diversified barrier industries, "CSR" is corporate social responsibility, and "H1-H4" represent hypotheses 1 through 4, respectively. As shown in the above figure, according to hypothesis 1, political connections can promote the diversification of barrier industries. Similarly, hypothesis 4 tells us that the impact of political connections on barrier industry diversification is influenced by corporate social responsibility. The moderation effect is positive. This is because, according to hypotheses 3 and 4, the fulfillment of corporate social responsibility simultaneously promotes political connections and barrier industry diversification. This dual promotion can enhance the impact of political connections on barrier industry diversification in both directions. This represents the logic and interrelation among the four hypotheses described in Fig. 1.

4. Research design

4.1. Sample selection and data resources

Several types of Chinese enterprises exist as characterized by their nature and proportion of equity: (1) Wholly state-owned companies. All shares of such enterprises are state-owned and the companies' ownership belongs to the state. A state-owned assets committee supervises all levels of these companies. (2) State-held companies. These enterprises have the state-owned and private shares of mixed-ownership enterprises, but the proportion of state-owned shares is greater than the proportion of private shares to consider these as "state-held." (3) Wholly privately owned companies. These enterprises have completely private equity. In China's current market, small and medium-sized enterprises fall into this category, comprising more than 80 % of China's enterprises as of 2014.¹ (4) Private holdings companies. These enterprises have mixed ownership, with the proportion of private shares greater than the proportion of state-owned shares. This article empirically analyses a sample of this type of politically connected enterprise. Essentially, such enterprises belong to the private sector; however, the inclusion in part of state-owned shares gives these firms a different position in the Chinese market than ordinary private enterprises.

This paper samples China's A-share, private-listed firms, with the sample interval spanning 2009 to 2014. The sample firms were selected as follows: (1) Firms that received special treatment from China's Securities Regulatory Commission (CSRC), particularly those with securities codes starting with 'ST' or 'PT', were excluded from the sample. (2) Companies in the financial and insurance industries were excluded. (3) Companies were also removed that had missing data or lacked information disclosures. After the screening process, 1371 observations were obtained, including 213 in 2009, 218 in 2010, 227 in 2011, 231 in 2012, 239 in 2013, and 243 in 2014.

This study's data was primarily derived from the Chinese stock market and accounting database (CSMAR) and the Wind economic database. Specifically, the CSMAR database provided information regarding: the firms' number of employees, income tax amounts, total assets, performance, and other financial indicators, as well as the history of private enterprises' state-owned stocks. The Wind economic database provided information on entrepreneurs' political identities as well as diversification; this information was calculated using the income of each industry involved. Missing data were collected by not only manually searching the companies' annual reports, but also using an Internet search engine.

4.2. Main variable description

(1) CSR

Some Chinese scholars have used employees' average wages, corporate donations, or other indicators to measure CSR. However, employees' average wage rates are easily inflated by including executives' higher salaries. Thus, we anticipate that this index cannot accurately reflect PSEs' CSR. Alternatively, corporate donation indicators can represent firms' social mission and reflect CSR, but this does not consider China's unique situation, in that the political and social tasks in Chinese local governments involve expanding employment and increasing taxes. If these objectives are successfully met, they result in social stability and economic development.

The current coronavirus epidemic in particular indicates that with an economic downturn, the government has presented a political slogan to stabilize employment and the economy, which requires enterprises to try not to lay off any employees, which would create a poorer economic environment. Employees' salaries can be decreased as an alternative to layoffs, in that one employee's salary can instead be paid to two employees. This is not a normal corporate decision, but a political task. Similarly, the government must support the world's largest civil service system, which includes the police, to maintain social stability. Normal societal operations cannot be

¹ The data is obtained from the *China Statistical Yearbook* (2016) published by the National Bureau of Statistics of the People's Republic of China.

maintained without sufficient taxes. Mainstream Western literature commonly uses corporate philanthropy as an indicator to measure corporate responsibility, but this indicator cannot be used in China as it does not parallel the actual national situation. This is because China lacks a charitable culture with a religious background, and the government strictly controls such acts of charity. Private entrepreneurs must utilize any surplus funds effectively and lawfully, aligning with the government's principles to cultivate positive relationships with the state. Currently, employment and taxation are the most important corporate responsibilities officially recognized and promoted by the government; these are both social and political responsibilities.

Therefore, this paper measures CSR given the number of employees and the amount of taxation. The more job opportunities PSEs provide to lighten the community's employment pressures or the more taxes they generate for the government, the more these firms have fulfilled their duty as responsible members of society. Thus, PSEs' CSR can be reflected through these two indicators.

This paper defines the employment variable (*Empl*) as the logarithm ratio of the enterprise's total number of employees (*Num*) to its total assets (*Size*); as the number of jobs offered by a firm has a substantial bearing on its size, this ratio is used to eliminate firm size effects:

$$Empl = \frac{\ln Num}{\ln Size} = \log_{size} Num$$

The tax variable (*Tax*) is defined as the logarithm of corporate income tax (*Itax*):

$$Tax = \ln Itax$$

This paper uses the corporate social responsibility performance index (*CSR*) as an alternative variable in the robustness test.

(2) Diversification

Generally, 'diversification' as used in this article has a different meaning than in mainstream Western financial literature. This article defines 'diversification' as measuring the degrees of diversification in barrier industries, which require the government's approval for firms to obtain entry qualifications. If an enterprise can enter a barrier industry, it is much easier for it to enter other industries that are not as strictly controlled, in that the enterprise has more room or opportunity for diversified development.

Most literature provides three primary measurements of the degree of diversification: the number of industries the firm has entered and the Herfindahl (*HI*) and entropy indexes (*EI*). Generally, the more industries an enterprise is involved in and the lower the entropy index based on the firm's assets and sales, the higher the degree of diversification.

This paper uses the entropy index (*EI*) to measure the degree of diversification. First, we collect the number of government-controlled barrier industries (the energy, transportation, communications, financial, and urban sectors) for each enterprise according to the Wind economic database, and calculate the proportion of each firm's income. We obtain *EI* by the following formula:

$$EI = \sum_{i=1}^n P_i \ln(1/p_i)$$

where P_i represents revenue accounting for the proportion of barrier industry i in a firm's main business income, and n represents the enterprise's number of primary business sectors. The higher the degree of diversification, the greater the value of *EI*; and when the enterprise is specialized, this value is zero.

(3) Political Connections

Literature has illustrated two types of Chinese PSEs' political connections; this paper will compare the effects of these two types in a regression analysis. First, most research has adopted entrepreneurs' personal political identities as a measurement of PSEs' political connections [2,27,40]. This measurement observes entrepreneurs' political participation at a personal level, or how they intend to build government connections to gain resources from them. We use the *PI* (political identity) variable for this purpose. If the PSE's actual controller/chairperson or general manager expresses a political affiliation, such as being an incumbent CPC deputy or CPPCC member, then the value of *PI* will be one, and zero otherwise. As PSEs are typically important in local economies, the listed companies are also mostly distributed at the city level or higher; thus, the previously mentioned duties are all defined at that level.

Another important measure of political connections that has gradually attracted recent attention is partially state-owned shares. Song et al. [41] and Yu et al. [42] observed that PSEs may establish natural connections with the government by holding a certain proportion of state-owned shares. Through such ownership, PSEs build contractual relationships with the government at the institutional level, hence establishing close contact with the government and gaining the necessary access to economic resources. Song et al. [41] also discovered that establishing such relationships with the government can allow PSEs to acquire better access to economic resources—such as bank loans or entry licenses, among others—and that partial state ownership exerts an even stronger effect than entrepreneurs' personal political identities. Consequently, we measure this using the ratio of state-owned shares (*SOER*), which is formulated using CSMAR data to calculate the number of state-owned shares to the total number of shares held by the top 10 shareholders. The higher the ratio of state ownership shares, the stronger the political connection.

4.3. Model settings

We establish the following model to test Hypothesis 1. In Equation (1), we posit that PSEs' political connections contribute to their diversified development:

$$EI_{it} = \alpha_0 + \alpha_1 PC_{it} + \sum \beta Control_{it} + Year + Industry + \epsilon_{it} \tag{1}$$

Among which,

$$\sum \beta control_{it} = \beta_1 ROE + \beta_2 LEV + \beta_3 Growth + \beta_4 Size + \beta_5 Age$$

This model controls for the following financial indicators and other firm-characteristic variables: (1) The return on equity (ROE): Generally, the higher the return on equity, the better the enterprise's economic performance. Enterprises with a high ROE are more likely to be recognized as having strength and credibility, and thus, are more likely to diversify. (2) The financial leverage ratio (LEV): The ratio of total liabilities to total assets. According to the free cash flow theory proposed by Jensen and Mecklin [43], corporate debt effectively suppresses enterprises' expansion. Therefore, the greater the financial leverage, the lesser the enterprise's degree of diversification. (3) Growth: The growth rate of sales revenue. The higher the index, the better the enterprise's prospects, and thus, its expansion ability is stronger and it is easier to obtain government authorizations. (4) Size: The logarithm of total assets represents the enterprise's size. Generally, the larger the enterprise's scale, the greater the likelihood of business development, and the greater the capability for diversified expansion. (5) The years listed (Age): Generally, the longer the time the enterprise has been listed, the more mature the business and the less its room for growth. If the business experiences more difficulty in meeting its original long-term development strategy, a greater need exists for diversified expansion.

We establish the following model to test Hypothesis 2. In the following Equation (2), PSEs' fulfillment of CSR contributes to their barrier industry diversification:

$$EI_{it} = \alpha_0 + \alpha_1 Empl_{it} + \alpha_2 Tax_{it} + \sum \beta control_{it} + Year + Industry + \epsilon_{it} \tag{2}$$

Among which, $\sum \beta control_{it}$ is consistent with Model 1.

We establish the following logistic and linear models to test Hypothesis 3. In this Equations (3a) and (3b), PSEs' fulfillment of CSR contributes to their political connections:

$$PI = \ln[P_{PI} / (1 - P_{PI})] = \alpha_0 + \alpha_1 Empl_{i(t-1)} + \alpha_2 Tax_{i(t-1)} + \sum \beta control_{it} + Year + Industry + \epsilon_{it} \tag{3a}$$

$$SOER = \alpha_0 + \alpha_1 Empl_{i(t-1)} + \alpha_2 Tax_{i(t-1)} + \sum \beta control_{it} + Year + Industry + \epsilon_{it} \tag{3b}$$

Among which,

$$\sum \beta control_{it} = \beta_1 ROE + \beta_2 Growth + \beta_3 GI + \beta_4 Size + \beta_5 Age$$

Possible endogeneity exists between CSR and political connections. On one hand, PSEs may use CSR to establish political

Table 1
Definition and measurement of variables.

Variables	Definition
Diversification	
<i>EI</i>	$\sum P_i \ln(1/P_i)$, where P_i represents revenue accounting for the proportion of barrier industry i in its main business income, and n represents the enterprise's number of main business sectors. The higher the degree of diversification, the greater the value of EI, and when the enterprise is specialized, this value is zero.
<i>Empl</i>	The logarithm ratio of the enterprise's number of employees (<i>Num</i>) to its total assets (<i>Size</i>), or $Empl = \ln Num / \ln Size = \log_{size} Num$
<i>Tax</i>	A logarithm for corporate income tax, or $Tax = \ln tax$
<i>CSR</i>	$= (\text{donation} + \text{sponsorship fee} + \text{funds} + \text{environmental expenditures} + \text{cash paid to and for employees} + \text{cash paid for dividends and interest} + \text{main business costs} + \text{actual taxes paid}) / \text{main business income}$
Political capital	
<i>PC</i>	A dummy variable that equals one if any type of political capital exists, and zero otherwise
<i>PI</i>	A dummy variable that equals one if the entrepreneur/chairperson or general manager is an incumbent of CPC or a CPPCC member at the city level or higher, and zero otherwise
<i>SOE</i>	A dummy variable that equals one if state-owned shares are included in the top 10 shareholders, and zero otherwise
<i>SOER</i>	The ratio of state-owned shares among the shares held by the top 10 shareholders
Control variables	
<i>Size</i>	The natural logarithm of total assets at the end of the year
<i>LEV</i>	The asset-liability ratio, or the total liability divided by total assets at the end of the year
<i>ROE</i>	The return on equity, or the ratio of net profit to equity at the end of the year
<i>GI</i>	Government intervention, or the ratio of government expenditures to GDP in the province in which the firm is located
<i>Growth</i>	$= (\text{this year's sales} - \text{last year's sales}) / \text{last year's sales}$
<i>Age</i>	$= T_t - T_0 + 1$, among which $T_t = (2009, 2010, 2011, 2012, 2013, 2014)$; T_0 is the year of initial public offering
<i>Year</i>	A dummy variable that equals one if an observation belongs to the year, and zero otherwise
<i>Industry</i>	A dummy variable that equals one if a firm belongs to the industry, and zero otherwise

connections and obtain government favours. On the other hand, PSEs with strong connections to the government might engage in more CSR activities as a response to potential government intervention. To address this endogeneity concern, we address it by lagging CSR indicators by one year, while advancing indicators of political connections by one year.

The previously mentioned models include the following control variables: (1) Return on equity (ROE): The ROE reflects enterprises' profitability. The greater the indicator, the better the business performance, and thus, the stronger the PSE's role in local economic development, with further contributions to the creation of jobs or generation of tax revenues. Consequently, entrepreneurs can be more easily elected as CPC deputies or CPPCC members or gain the favour of state-owned shares. (2) Growth: The better the PSEs' future prospects, the more likely entrepreneurs will be elected as CPC deputies or CPPCC members or gain the favour of state-owned shares. (3) Government intervention (GI): Song et al. [10] perceived government intervention as a significant element of the institutional environment that motivates PSEs to build political connections with the government. (4) Size: Larger firms have a greater impact on local GDP growth or employment, making it easier to establish political connections. (5) The years listed (Age): The longer the duration listed, the deeper the impact on local development, and the more familiar the PSE with government officials and work processes; thus, government relationships will be more closely established.

Regarding Hypothesis 4—in that PSEs' fulfillment of CSR positively moderates the relationship between PSEs' political connections and diversification—Model 4 is established as follows in Equation (4), with the control variables as noted in Model 1:

$$EI_{it} = \alpha_0 + \alpha_1 PC_{it} + \alpha_2 Empl_{i(t-1)} \times PC_{it} + \alpha_3 Taxi_{i(t-1)} \times PC_{it} + \sum \beta Control_{it} + Year + Industry + \epsilon_{it} \tag{4}$$

Multicollinearity issues may exist due to the dummy variables in Model 4 and the product of the dummy and continuous variables. We eliminate this effect by normalizing the three variables (Empl, Tax, and PC), namely, subtracting the variables' average from the original variable values. These standardized variables are SEmpl, STax, and SPC.

Table 1 summarizes the variable definitions.

5. Empirical results and analysis

5.1. Descriptive statistics

Table 2 presents the descriptive statistics after excluding some extreme values. Regarding PSEs' social responsibility, the mean value of Empl was 0.281, while the number of employees in the original data varied, from a few people to hundreds or thousands; the minimum value of Tax was 6.576 and the maximum 20.983, demonstrating significant differences in taxes among PSEs. The mean value of PC was 0.616, which indicates that more than 60 % of the sample PSEs have established certain forms of political connections (PC). Among them, 58.7 % of these PSEs had entrepreneurs involved in political participation (PI), one-third had a certain proportion of state-owned shares, and the average ratio of state-owned shares (SOER) was 13.7 %. The average degree of barrier industry diversification (EI) was 0.271.

5.2. Correlation test

We tested the variables' correlation before conducting the regression analysis. As PI is a dummy variable and the other variables are continuous, we conducted a Spearman correlation analysis; the Spearman correlation coefficient matrix is displayed in Table 3.

Table 3 demonstrates that the Empl and Tax variables both positively correlated with EI and PC at a 0.01 significance level, respectively, while PC and EI also positively correlated at the 0.01 significance level. The previously mentioned correlation results provide preliminary support for our hypotheses. In terms of the other control variables, the effects of Size, LEV, ROE, Growth and Age were all in the same direction for EI, as expected, with most at significant levels. The GI and PC variables also positively correlated at the 0.01 significance level. Additionally, no significant correlation was discovered between other explanatory variables, ruling out the existence of a collinearity issue.

Table 2
Research variables' descriptive statistics.

Variables	Min.	Max.	Mean	S.D.
EI	0	1.995	0.271	0.738
Empl	0.126	0.477	0.281	0.063
Tax	6.576	20.983	16.513	2.019
PC	0	1	0.616	0.403
PI	0	1	0.587	0.429
SOE	0	1	0.322	0.435
SOER	0	0.363	0.137	0.039
Size	18.679	25.155	21.242	0.873
Leverage	0.010	1.176	0.372	0.868
ROE	-0.756	0.553	0.097	1.004
GI	0.122	0.461	0.199	0.363
Growth	-0.999	23.464	0.377	9.847
Age	1	21	6.735	3.658

Table 3
Spearman correlation coefficients for the research variables.

Variables	<i>EI</i>	<i>Empl</i>	<i>Tax</i>	<i>PC</i>	<i>Size</i>	<i>Leverage</i>	<i>ROE</i>	<i>GI</i>	<i>Growth</i>	<i>Age</i>
<i>EI</i>	1									
<i>Empl</i>	0.118***	1								
<i>Tax</i>	0.125***	0.032	1							
<i>PC</i>	0.218***	0.091***	0.097***	1						
<i>Size</i>	0.207***	0.126	0.167	0.143*	1					
<i>Leverage</i>	-0.214	0.016	0.019	0.011	0.017	1				
<i>ROE</i>	0.173***	0.114	0.137*	0.194*	0.036	0.013	1			
<i>GI</i>	0.027	0.022	0.038	0.056***	0.018	0.018	0.015	1		
<i>Growth</i>	0.169**	0.055	0.052	0.187*	0.026	0.021	0.039	0.024	1	
<i>Age</i>	0.174*	0.053	0.049	0.184	0.019	0.011	0.25	0.017	0.029	1

Note: *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

5.3. Univariate analysis

We then determine whether PSEs with political connections exhibit different levels of barrier industry diversification and engagement in CSR by dividing the samples into two groups based on political connections, as illustrated in Table 4. The average values for *Empl* and *Tax* were significantly higher in the group with political connections than in the group without. Similarly, the average values of *EI* for firms with political connections were significantly higher than those of the non-politically associated group. Nevertheless, no significant differences were observed for *Size*, but significant differences for *GI* between the two groups; this indicates that the institutional environment highly affects PSEs' motivation to build political connections. Overall, the univariate analysis results are consistent with the prior correlation test.

5.4. Regressions results and analysis

Table 5 displays the regression results from Models 1 and 2, in which the explained variables are both *EI*. Model 1 examines political connections' impact on barrier industry diversification. First, we test only the *PC* variable in the regression analysis. Column (1) indicates that the coefficient of *PC* is significantly positive at the 0.01 level. Hypothesis 1 is then verified, in that PSEs with political connections exhibit a higher degree of barrier industry diversification than PSEs without, and the establishment of government connections is conducive to diversification. Column (2) introduces other control variables, but *PC* is still significantly positive at the 0.01 level, indicating that PSEs' political connections are significant in promoting diversified barrier industries, even when other variables are considered. Regarding the control variables, each coefficient's sign is consistent with expectations, and *Size*, *ROE*, and *Growth* are all at the minimum 0.05 level of significance. This demonstrates that the larger the scale, the higher the profitability; the better the PSEs' future prospects, the easier their access to diversified barrier industries.

Columns (3) and (4) in Table 5 classify private enterprises' political connections as entrepreneurs' political participation (*PI*) and partial state ownership (*SOER*), with regression tests conducted for each. Column (3) reveals that the coefficient of *PI* is significantly positive at the 0.05 level; specifically, when PSEs have entrepreneurs/chairpersons or general managers as incumbents of CPC or CPPCC members at the city level or higher, these PSEs' barrier industry diversification will be superior to those with no political participation (*PI*). Regarding the control variables, the results are similar to those in Column (2). Further, Column (4) notes that *SOER* positively correlates with *EI* at the 0.01 significance level. This shows that PSEs with a certain percentage of state-owned shares have a higher level of barrier industry diversification. The control variables' results are also similar to those in Column (2).

By comparing the regression results of Columns (3) and (4), we discover that the two kinds of political connections have slightly different influences on diversified development. Further, the effect of partial state ownership (*SOER*) is more significant than political participation (*PI*). Song et al. [47] observed that having partial state-owned equity is a type of political connection based on the economic institution, and this establishes a contractual relationship between the enterprise and the government. Therefore, this association—which is guaranteed by corporate law—will be more effective than entrepreneurs' political identity, which occurs at the

Table 4
The *t*-test by group on the variables' means.

Variables	With political capital	No political capital	<i>t</i> -test
<i>Empl</i>	0.374	0.268	6.843***
<i>Tax</i>	18.593	14.385	7.478***
<i>EI</i>	0.496	0.202	4.681***
<i>Size</i>	21.508	20.468	0.859
<i>Leverage</i>	0.436	0.358	1.004
<i>ROE</i>	0.179	0.084	1.397*
<i>GI</i>	0.287	0.139	3.016***
<i>Growth</i>	0.427	0.308	1.957**
<i>Age</i>	6.748	6.659	1.069

Note: *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Table 5
Regression results from Models 1 and 2.

Explained variable: <i>EI</i>	Model 1				Model 2
	(1)	(2)	(3)	(4)	(5)
	Explanatory variables				
<i>PC</i>	1.404*** (2.892)	0.839*** (2.164)			
<i>PI</i>			0.526** (1.938)		
<i>SOER</i>				0.771*** (3.275)	
<i>Empl</i>					0.337*** (4.944)
<i>Tax</i>					0.416*** (3.607)
Control variables					
<i>Size</i>		0.527** (1.886)	0.463** (1.793)	0.504** (1.883)	0.626*** (3.153)
<i>Leverage</i>		-0.058 (-1.094)	-0.047 (-0.928)	-0.051 (-0.846)	-0.085 (-0.908)
<i>ROE</i>		1.162*** (3.705)	0.985*** (2.847)	1.007*** (3.638)	0.843** (1.895)
<i>Growth</i>		1.028** (1.799)	0.923** (2.108)	0.964** (1.975)	0.686*** (3.263)
<i>Age</i>		0.034* (1.554)	0.032 (1.387)	0.028** (1.875)	0.036** (1.904)
LR Chi ²	115.47***	123.84***	120.39***		
Nagelkerke R ²	0.206	0.224	0.217		
Adjusted R ²				0.220	0.211
F-value				21.698***	21.038***

Note: The *t*-values are noted in parentheses; *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

personal level. Therefore, relevant agencies tend to place more trust and assume greater risk when dealing with PSEs with partial state ownership (*SOER*), granting them greater access to economic resources compared to those with politically participating entrepreneurs. The previously discussed results reinforce the conclusions of prior studies, and we can conclude that *SOER* has a more significant effect on PSEs' diversification than *PI*.

Model 2 examines *CSR*'s impact on diversification, which is similar to Model 1 but replaces the explanatory variables. Column (5)

Table 6
Regression results from Model 3.

	Explained variables		
	<i>PC</i>	<i>PI</i>	<i>SOER</i>
Explanatory variables			
<i>Empl</i>	0.024*** (3.388)	0.033*** (3.106)	0.019* (1.574)
<i>Tax</i>	0.027*** (2.868)	0.046*** (2.757)	0.031** (1.762)
Control variables			
<i>ROE</i>	0.174* (1.013)	0.057 (0.894)	0.286*** (2.936)
<i>Growth</i>	0.152* (1.162)	0.107 (1.023)	0.198** (1.879)
<i>GI</i>	0.058*** (3.286)	0.062*** (3.137)	0.047*** (4.248)
<i>Size</i>	0.089 (0.743)	0.066 (0.855)	0.115 (1.202)
<i>Age</i>	0.035 (0.837)	0.034 (0.956)	0.049 (0.734)
LR Chi ²	115.47***	123.84***	
Nagelkerke R ²	0.216	0.203	
Adjusted R ²			0.209
F-value			20.381***

Note: The *t*-values are noted in parentheses; *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

of Table 5 shows that *Empl* is significantly positive at the 0.01 level, indicating that PSEs that provide more opportunities for local employment will exhibit better diversification. On the one hand, PSEs with many employees are a reflection of their strong productivity and expansion abilities, and on the other hand, provide relevant government departments with a certain degree of goodwill and confidence. Therefore, the greater the contribution to local employment, the more likely PSEs will create a diversified barrier industry. Similarly, *Tax* is significantly positive at the 0.01 level with *El*. The higher amount of taxes generated reflects the PSEs' superior production performance and operations, provides greater contributions to local government's revenue, and helps PSEs obtain approval from the government for diversified barrier industries. In summary, Hypothesis 2 is also verified, in that fulfilling CSR contributes to diversified barrier industries for PSEs.

Table 6 displays the results from Model 3, which tests whether engaging in CSR helps to establish political connections. First, the results for *PC* reveal that employment (*Empl*) and tax (*Tax*) are both conducive to establishing political connections at a 0.01 significance level. Therefore, Hypothesis 3 is verified. Specifically, *Empl* and *Tax* are both significantly positive with *PI* and *SOER*. The more jobs or taxes provided by local PSEs, the more easily their entrepreneurs are elected as CPC deputies or CPPCC members, or the more favour PSEs gain from state-owned shares. However, we also observe that PSEs engaging in CSR have stronger effects on *PI* than with *SOER*. This may be because the acquisition of political identity better parallels entrepreneurs' contributions to the local economy; consequently, entrepreneurs who provide more jobs and pay more taxes will have an easier time garnering goodwill from the government and earning a place in the political arena. Meanwhile, the state-owned shares investing in capital consider not only the PSEs' contributions to the local economy through jobs and taxes, but also their business performance or growth capacity. Therefore, CSR's effects on acquiring political identity (*PI*) are stronger than that from gaining favour from partially state-owned shares (*SOER*).

Regarding the other control variables, *ROE* and *Growth* have no significant effects on *PI*, but are significantly positive with *SOER* at the 0.01 level; this further confirms that PSEs with better performance and growth capacity can more easily gain favour from state-owned shares. The coefficients of *Size* and *Age* are positive but not significant, indicating that the PSEs' size and their time listed have no significant effects on the establishment of political connections. Further, the coefficient of *GI* is significantly positive, indicating that the greater the government intervention, the greater the PSEs' inclination to establish political connections with the government as an alternative mechanism. As local government intervention significantly impacts the market, PSEs that want to obtain the necessary resources for diversification must obtain qualifications from the government. Consequently, these businesses will be

Table 7
Regression results from Model 4.

	Explained variable: EI		
	(1)	(2)	(3)
Explanatory variables			
<i>SPC</i>	0.849*** (4.104)		
<i>SPI</i>		0.518** (1.994)	
<i>SOER</i>			0.784*** (5.485)
Interactive items			
<i>SEmpl²SPC</i>	0.007* (1.537)		
<i>SEmpl²SPI</i>		0.005** (1.807)	
<i>SEmpl²SOER</i>			0.008 (0.794)
<i>STax²SPC</i>	0.008* (1.334)		
<i>STax²SPI</i>		0.007** (0.749)	
<i>STax²SOER</i>			0.009 (0.862)
Control variables			
<i>Size</i>	0.504** (1.944)	0.484** (1.758)	0.511** (1.857)
<i>Leverage</i>	-0.057 (-0.794)	-0.049 (-0.983)	-0.052 (-0.739)
<i>ROE</i>	1.158*** (3.683)	0.992*** (2.948)	1.015*** (3.754)
<i>Growth</i>	1.024** (1.805)	0.927** (2.123)	0.958** (1.804)
<i>Age</i>	0.033* (1.449)	0.031* (1.468)	0.030** (1.907)
Adjusted R ²	0.203	0.206	0.205
F-value	19.663***	19.873***	20.271***

Note: The *t*-values are noted in parentheses; *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

more motivated to establish connections with the government through both *PI* and *SOER*.

Table 7 illustrates the regression results from Model 4, or specifically, the test for Hypothesis 4, in that PSEs fulfilling CSR positively moderates the relationship between PSEs' political connections and barrier industries' diversification. We still make *EI* the explained variable, classify political connections into two types (*PI* and *SOER*) and introduce interaction items between political connections and CSR. The results from this combination reveal that the effects of the *SPC*, *SPI*, and *SSOER* standardized variables are still significantly positive for *EI*. Thus, Hypothesis 1 is again verified, underscoring the fact that establishing a positive relationship with the government under the current highly constrained situation provides a breakthrough for PSEs seeking diversified barrier industries.

The coefficients of the three interaction terms—*SEmplx SPC*, *SEmplx SPC*, and *SEmplx SSOER*—are all positive. Among these, the coefficient of *SEmplx SPC* has a 0.1 level of significance, *SEmplx SPC* has a 0.05 level of significance, and *SEmplx SSOER* is not significant. This demonstrates that the fulfillment of CSR through employment significantly enhances political connections' positive effect on PSEs' diversification, and especially given entrepreneurial political participation's (*PI*) positive effect on diversification. However, this does not significantly enhance partial state ownership's (*SOER*) effect on diversification. This finding may relate to the previously mentioned characteristic regarding access to entrepreneurs' political identities, as these must highlight their PSEs' contributions to the government, while state-owned shares focus more on enterprises' business performance or growth capacity than CSR. As CSRs are increasingly fulfilled, the more likely that PSEs will establish political connections through entrepreneurs' political participation (*PI*) to more positively affect diversification. The results for the *Tax* variable are the same as with *Empl*. In summary, PSEs' engagement in CSR can strengthen the positive relationship between political connections and diversification, to a certain extent. In the present political and economic environment, the strategic use of CSR and political connections can positively promote the signal transmission advantages and the interactive functions of the PSEs, which are highly significant in obtaining the necessary resources or space to diversify barrier industries. Therefore, Hypothesis 4 is verified.

5.5. Endogeneity test

Although the four models in this paper provide clearer regression results, we test for any endogeneity concerns with Heckman's two-stage method for Models 1, 2, and 4; we control for the possibility of reverse causality in Model 3. In the first stage of Heckman's two-stage method, we use a probit model to analyze the full sample of the dependent variable dummy *EI*, which equals one if the enterprise has influenced barrier industry diversification, and zero otherwise. We then estimate the possibility of enterprise diversification. Meanwhile, we judge whether a sample selection bias exists by using an inverse Mills ratio (λ) as obtained from this stage. This

Table 8
Regression results from Heckman's two-stage method.

	Explained variable: E1					
	Model 1*		Model 2*		Model 4*	
	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2
Explanatory variables						
<i>PC</i>	0.353* (1.894)	0.490*** (4.042)			0.647*** (4.853)	0.724*** (3.824)
<i>Empl</i>			0.421*** (4.773)	0.385** (3.264)		
<i>Tax</i>			0.364*** (4.886)	0.405*** (3.429)		
Interactive items						
<i>SEmpl^cSPC</i>					0.016** (1.957)	0.011* (1.463)
<i>STax^cSPC</i>					0.014* (1.603)	0.012** (1.856)
Control variables						
<i>Size</i>	0.759*** (5.472)	0.673** (1.903)	0.558** (1.943)	0.622*** (5.013)	0.578*** (3.464)	0.614** (1.866)
<i>Leverage</i>	-0.036 (-0.694)	-0.028 (-0.478)	-0.037 (-0.959)	-0.024 (-0.367)	-0.075* (-1.376)	-0.054 (-0.457)
<i>ROE</i>	1.532*** (3.833)	1.057** (2.105)	1.156*** (4.587)	0.946** (2.084)	1.268*** (4.907)	1.105*** (4.934)
<i>Growth</i>	1.177*** (4.372)	0.978*** (3.934)	1.235** (1.905)	0.992*** (4.475)	1.163** (2.076)	1.255*** (2.874)
<i>Age</i>	0.078** (1.804)	0.074* (1.449)	0.053** (1.772)	0.056** (1.858)	0.081** (1.953)	0.086* (1.559)
Inverse Mill's Ratio (λ)		0.064** (1.843)		0.806*** (3.981)		0.052*** (5.364)
LR Chi ²	130.19***	124.26***	116.98***	123.03***	122.32***	135.67***
Nagelkerke R ²	0.208	0.212	0.237	0.225	0.251	0.206

Note: The *t*-values are noted in parentheses; *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

ratio is added in the second-stage regression equation as a control variable, and the three models are re-estimated using samples with the dummy *EI* equaling one. The equations for the Heckman two-stage model are displayed in Equation (1)*, Equation (2)*, and Equation (3)* as follows:

$$\begin{aligned}
 S1 : \text{Dummy } EI_{it} &= \alpha_0 + \alpha_1 PC_{it} + \sum \beta \text{Control}_{it} + \text{Year} + \text{Industry} + \varepsilon_{it} \\
 S2 : EI_{it} &= \alpha_0 + \alpha_1 PC_{it} + \sum \beta \text{Control}_{it} + \beta_6 \lambda_{it} + \text{Year} + \text{Industry} + \varepsilon_{it}
 \end{aligned}
 \tag{1 * }$$

$$\begin{aligned}
 S1 : \text{Dummy } EI_{it} &= \alpha_0 + \alpha_1 \text{Empl}_{it} + \alpha_2 \text{Tax}_{it} + \sum \beta \text{control}_{it} + \text{Year} + \text{Industry} + \varepsilon_{it} \\
 S2 : EI_{it} &= \alpha_0 + \alpha_1 \text{Empl}_{it} + \alpha_2 \text{Tax}_{it} + \sum \beta \text{control}_{it} + \beta_6 \lambda_{it} + \text{Year} + \text{Industry} + \varepsilon_{it}
 \end{aligned}
 \tag{2 * }$$

$$\begin{aligned}
 S1 : \text{Dummy } EI_{it} &= \alpha_0 + \alpha_1 PC_{it} + \alpha_2 \text{Empl}_{i(t-1)} \times PC_{it} + \alpha_3 \text{Tax}_{i(t-1)} \times PC_{it} + \sum \beta \text{Control}_{it} + \text{Year} + \text{Industry} + \varepsilon_{it} \\
 S2 : EI_{it} &= \alpha_0 + \alpha_1 PC_{it} + \alpha_2 \text{Empl}_{i(t-1)} \times PC_{it} + \alpha_3 \text{Tax}_{i(t-1)} \times PC_{it} + \sum \beta \text{Control}_{it} + \beta_6 \lambda_{it} + \text{Year} + \text{Industry} + \varepsilon_{it}
 \end{aligned}
 \tag{3 * }$$

Table 8 displays the regression results from the Heckman two-stage method; for brevity, this table only reports the explanatory variable *PC*. The results reveal that all three models' inverse Mills ratios are significant at the 0.05 level, indicating that sample selection bias exists. The second-stage regression results provide coefficients for the explanatory variables that are still significant, and the other variables' regression results are essentially consistent with our previous tests. After considering any endogeneity concerns in this study, we note that our regression results are still credible.

5.6. Robustness test

We conduct the following robustness tests to ensure our research results' reliability: (1) Firstly, we utilize the CSR index developed by Huang and Zhao [44] as an alternative variable to test our models. This is because this paper's measurement of CSR primarily depends on the enterprise's contribution to the government, which may lead to over-generalization defects. Specifically, the *CSR Index* = (Donation + Sponsorship Fee + Funds + Environmental Expenditures + Cash Paid to and for Employees + Cash Paid for Dividends and Interest + Main Business Costs + Actual Taxes Paid)/Main Business Income. We used this indicator to replace the *Empl* and *Tax* variables in the previous regression analyses, and the results were the same. (2) We also used the proportion of directors representing state-owned shares in the board of directors (*SOEBR*) to replace *SOER*, and no substantial changes were observed in the regression analyses' results. Therefore, this paper's results exhibit strong reliability and stability.

6. Conclusion

In this study, we analyze the data from China's A-share, private-listed companies spanning the period from 2009 to 2014. Our research focuses on examining the relationships among the political connections, CSR, and barrier industry diversification of PSEs. Ultimately, our work provides a reasonable economic explanation as to why PSEs have included political connections and CSR as part of their strategic development plans. The empirical test results reveal that establishing political connections helps PSEs' barrier industries further diversify and partial state ownership—which is based on an institutional-level connection—exerts more influence on diversification than entrepreneurs' political participation, as the latter occurs at the individual level. The results also show that the fulfillment of CSR facilitates the diversification of PSEs, helps establish political connections, and strengthens the association between political connections and barrier industry diversification. Our study provides new evidence for not only understanding the relationship between the political connections of these firms and access to economic resources but also a new perspective regarding their conduct related to corporate social responsibility (CSR).

From the perspective of theoretical implications, the study corroborates the resource dependence theory by demonstrating how political connections serve as a means for PSEs to access economic resources and facilitate diversification. This highlights the instrumental role of political ties in mitigating resource dependencies and enhancing organizational flexibility and adaptability. The study emphasizes the significance of stakeholder theory in understanding the multifaceted relationships between PSEs, their stakeholders, and the broader socio-political environment. By examining the role of CSR in fostering political connections and influencing diversification outcomes, the findings underscore the interconnectedness of stakeholder interests and organizational strategies. The theoretical implication of signal theory suggests that PSEs can strategically leverage CSR initiatives as a means to enhance their credibility, reputation, and stakeholder relationships. By effectively signaling their commitment to ethical business practices and societal well-being, PSEs can differentiate themselves in the market, mitigate information asymmetry, and foster long-term relationships with key stakeholders. Overall, the integration of signal theory into the study's theoretical framework highlights the importance of CSR as not only a strategic tool for enhancing corporate reputation but also as a powerful signaling mechanism that influences stakeholder perceptions and organizational outcomes. Meanwhile, the study validates the relevance of institutional theory in explaining the strategic behaviour of private sector enterprises in China. By highlighting the influence of institutional pressures and norms on enterprises' decisions to cultivate political connections and engage in CSR, the findings underscore the importance of institutional factors in shaping corporate behaviour.

In addition to its theoretical contributions, the study offers several practical implications for policymakers, managers, and practitioners. The findings offer practical insights for PSEs in China by elucidating the strategic importance of cultivating political

connections and prioritizing CSR initiatives. By recognizing the positive impact of political connections and CSR on diversification efforts, PSEs can better align their strategic development plans with prevailing institutional expectations and market dynamics. Meanwhile, policymakers and regulatory authorities can leverage the study's findings to advocate for policies that promote transparency, accountability, and responsible business practices among PSEs. By incentivizing the adoption of CSR initiatives and fostering greater transparency in political connections, policymakers can enhance market integrity and foster sustainable economic development. Additionally, investors and stakeholders can utilize the insights from the study to inform their investment decisions and engagement strategies with PSEs. By considering a company's political connections and CSR performance as integral components of its strategic positioning and risk profile, investors can make more informed decisions that align with their ethical and financial objectives.

In summary, this study not only advances our theoretical understanding of the relationships between political connections, CSR, and barrier industry diversification but also offers actionable insights for policymakers, managers, and practitioners seeking to navigate the complex landscape of corporate governance, social responsibility, and sustainable development in China's evolving market environment.

Data availability statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

CRedit authorship contribution statement

Zheng Zhang: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Methodology, Conceptualization. **Wenxue Wang:** Writing – review & editing, Writing – original draft, Methodology, Funding acquisition, Conceptualization. **Shouxun Wen:** Writing – review & editing, Writing – original draft, Resources, Formal analysis, Data curation, Conceptualization.

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.

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