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# Institutional and economic transition in Vietnam: Analysing the heterogeneity in firms' perceptions of business environment constraints

Competition & Change  
0(0) 1–20

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DOI: 10.1177/1024529420939461

journals.sagepub.com/home/cch



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## Abstract

Vietnam has experienced a gradual process of institutional transition combined with rapid economic growth since the *Doi Moi* reform in 1986. In recent years, the government has recognized the need to implement reforms to foster the development of favourable business environment conditions. In this scenario, however, the government seems to assume a uniform demand for business environment reforms, ignoring possible divergences in the constraints faced by different actors of the system. The aim of this paper is to analyse the heterogeneity in firms' perceptions of business environment constraints. Adopting discrete choice models on firm-level data and subjective assessments on business environment obstacles, we differentiate the nature and severity of firms' obstacles according to different characteristics of the enterprises, including the firm size, territorial localization and levels of performance and competitiveness. The study is useful as an

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informative base for defining public interventions calibrated on the different categories and needs of Vietnamese enterprises.

### **Keywords**

Business environment, subjective perceptions, institutions, economic transition, Vietnam

## **Introduction**

During recent decades, the Vietnamese economic transition has assumed increasing relevance in the international economic debate (OECD, 2014; UNIDO, 2012; World Bank, 2013). Notwithstanding the controversial interpretations concerning the determinants of the country's transition, the sustained economic growth associated with rapid industrialization has led many scholars to include Vietnam among the most successful development experiences of the East Asian region (Masina, 2015; Nattrass and Seekings, 2018; Tran et al., 2017). However, despite the successes achieved in the first stage of economic development, since the 2000s, the realization of the middle-income status and the intensification of the market opening processes associated with accession to the WTO in 2007 have led the country to face a new competitive context that undermines the sustainability of the industrial development trajectory. Several studies highlighted a number of structural problems specifically related to the poor quality of the Vietnamese business environment (see, e.g. Ohno, 2009; Van Tho, 2013; Vuong et al., 2016). The presence of widely diffused constraints to entrepreneurship (including the lack of skilled workforce and infrastructural endowments, malfunctions in accessing financial services and the excessive size of the informal sector) risks negatively affecting the entrepreneurial activity of Vietnamese enterprises (Ngo and Chi, 2017; Nguyen et al., 2015).

This scenario has led to the suggestion to implement government programmes to reduce the entrepreneurship constraints that characterize the Vietnamese business environment. However, business environment policies can produce asymmetric benefits in the economy as diverse categories of enterprises face different obstacles to their activity, which entails competing policy priorities (Nguyen et al., 2015). This suggests the need to identify the specific obstacles faced by different types of enterprises to define business environment policies calibrated on the diverging demands of the targets.

From this perspective, the few studies analysing obstacles to firms' activity in the specific case of Vietnam concentrate on the interplay between internal and external constraints on firms' performances (see, e.g. Santarelli and Tran, 2013). Although these analyses are important in suggesting specific policy implications for enterprises and economic development, they adopt an approach that focuses mainly on the creation of new enterprises instead of assessing the constraints on more general business activities (Cuervo, 2005). Following the World Bank's release of worldwide firm-level data in the Enterprise Surveys, it is possible to implement a more comprehensive approach for analysing constraints on entrepreneurial activity. In particular, data on the subjective assessments of firms about the severity of the external constraints are provided by the Enterprise Surveys and these constitute a

useful source of information to frame business environment conditions in less developed countries and transition economies (Hallward-Driemeier and Aterido, 2009).

This paper aims to contribute to the literature concerning business environment constraints in Vietnam in a number of ways. First, it offers an original analysis of the business environment obstacles faced by Vietnamese enterprises by using data on firms' perceptions as an informative source that has remained mostly unexploited for this purpose. Second, from a methodological standpoint, while the prevailing tendency in the literature has been to use firms' subjective assessments of the business environment as explanatory variables to estimate their impact on performance, this paper uses firms' subjective evaluations of business environment constraints as dependent variables to explore whether the different characteristics of firms are likely to influence the nature and severity of their obstacles. From this perspective, the paper investigates whether firm size, territorial localization, levels of performance and competitiveness significantly affect firms' perceptions of the severity of four main business environment obstacles: (1) inadequately educated workforce, (2) informal competition, (3) access to finance and (4) transport. Finally, our analysis is contextualized within the Vietnamese policy debate as a useful informative base for defining public interventions calibrated on the different categories and necessities of Vietnamese enterprises. Here, subjective perceptions are considered a consistent criterion for understanding the necessities of firms as well as their policy demand (Hallward-Driemeier and Aterido, 2009; Misch et al., 2014). While the approach of the Vietnamese government seems to assume a uniform demand for business environment reforms that is mainly consistent with the needs of the most influential firms (Nguyen et al., 2015), this paper represents an attempt to inform policy debate about the heterogeneity of the necessities and demands coming from different actors of the economy.

The article is organized as follows. The next section analyses the main policy reforms realized in Vietnam to address the four business environment obstacles considered in this study (i.e. inadequately educated workforce, informal competition, access to finance and transport). Then, the literature on the use of firms' subjective perceptions to analyse business environment constraints is presented. Then the data, the model and the empirical strategy adopted in the analysis are described, followed by an interpretation of the results. The final section concludes the article.

## **Business environment and transition reforms in Vietnam**

Since the beginning of the new millennium, a series of publications from the World Bank and other international institutions began to disseminate the notion of the *business environment* (World Bank, 2002, 2005). The concept covers a broad range of elements external to firms' activity that are highly significant in determining their performances and entrepreneurship development. Specifically, the business environment can be defined as a combination of policy, legal, institutional, infrastructural and regulatory conditions that influence the returns and risks associated with investment in a specific location (Stern, 2002).

In the specific case of Vietnam, since the 2000s, the removal of business environment constraints has been at the centre of a wider government programme based on *market-stimulating policies* (Lall and Teubal, 1998). Following a number of market liberalization reforms, in line with the WTO accession criteria, the Vietnamese government started to implement policies aimed at improving the business environment and favouring more effective investments in the country. As stated in Vietnam's 2011–2020 Socio-Economic

Development Strategy, which is the country's most influential planning document, the general purpose of the government is to ensure an equal business environment to sufficiently and comprehensively implement the market mechanism. In particular, four business environment dimensions appear to be priorities for the Vietnamese government: the quality of the workforce, access to finance, informal competition and transport.

Regarding the quality of the workforce, the Vietnamese government has promoted a number of directives to strengthen the education and training system to align domestic teaching, applied research and workforce training with international standards (Tran et al., 2017). The keystone of the government agenda has been Resolution no. 14/2005 that launched the Higher Education Reform Agenda 2006–2020. It aims 'to carry out fundamental and comprehensive reform of higher education, undertake a process of profound renews in the area of quantity, quality and effectiveness in order to meet all the demands of industrialization, global economic integration and society's demands for learning opportunities' (MOET, 2005). This agenda, however, seems to be oriented towards meeting the higher flexibility, mobility and qualification demands expressed by the most relevant and dynamic actors of the Vietnamese productive system (Nguyen et al., 2015). Indeed, by promoting excellence hubs, the government seems to support the burden of the training costs in exchange for its greater involvement in strategic decisions of the most important industrial actors. It is difficult to assume that these government interventions are able to mitigate the social, territorial and productive gaps, which instead would require more direct incentives to foster, for example, access to training services for workers of small enterprises or firms operating in the traditional sectors and the remote areas of the country. From this standpoint, public policy risks exacerbating the existing sectorial and territorial unbalances (Ngo and Chi, 2017).

During the same period, financial markets reform was implemented through the Securities Law (2007), which established a cohesive normative framework for the development, regulation and supervision of capital markets to improve access to finance (ADB, 2014). Several initiatives have been carried out to make the domestic financial market more transparent and reliable. In particular, the government launched the Financial Strategy until 2020, a long-term plan that conceives of financial market development as a tool to restructure the national economy and to generate greater productive activity, in line with the new market-oriented growth model (Government of Vietnam, 2012). In this context, however, government interventions that directly support the weaker actors of the economy (e.g. small and medium Enterprises (SMEs) or firms operating in traditional sectors) seem not to occupy a central role. For instance, regarding SMEs, 2 five-year development plans were released to cover 2006–2010 and 2011–2015, but they indicated only a restricted number of actions in support of small enterprises which appeared to be generally ineffective because of a substantial lack of resources allocated (Vo et al., 2011). More generally, it seems that the overall reconfiguration of the financial markets has not been primarily oriented towards mitigating the financial constraints that characterize the most marginal segment of the Vietnamese productive system (Hoang, 2016).

Regarding informal competition, the Vietnamese government has long hesitated in acknowledging the presence of a wide informal sector in the country. The issue of informal activities in the Vietnamese economy has been generally ignored in the plans for socio-economic development (Salvini, 2012). The government approach has substantially revealed tolerance towards the interference of a consistent degree of informality on legal economic activity. In this context, for example, the promotion of incentives in support of firms'

registration has never been accompanied by an explicit repression of fiscal evasion and other informal activities (Nguyen et al., 2015). This has a negative impact, especially on the economic agents that are more vulnerable with respect to informal competition practices, particularly small firms undertaking registration costs. The lack of an effective strategy aimed at compensating for the negative externalities generated by the informal economy is a persistent problem of the Vietnamese business environment.

Finally, since the 2000s, the Vietnamese government has promoted a series of reforms intended to strengthen the infrastructural endowment of the country with respect to the transport system. A Transport Sector Development Strategy to 2020 identified the improvement of Highway No. 1 (linking the country from north to south), the construction of the Ho Chi Min Highway and the enforcement of the transport network system in the Mekong River Delta region as key priorities. The strategy aimed to promote the interconnection between the two productive hubs of Hanoi and Ho Chi Min and to sustain the integration of the intermodal transport systems, mainly by strengthening the linkages between ports and export processing zones (Japanese International Cooperation Agency, 2010). Although characterized by transverse intents, the undertaken reforms tended to address the business activities of the most structured and internationalized firms as well as the productive vocations of the most developed areas. In this regard, it is interesting to note that government initiatives have not implemented measures to reduce territorial gaps, for example, by intensifying urban–rural connections and generating intermediate logistic nodes to facilitate access to the market of marginal firms located in the peripheral areas of the country.

Overall, the decline of business environment policies in Vietnam seems to generally assume a uniform demand for business environment reforms that is mainly consistent with the needs of the most influential firms and ignores possible divergences in the constraints and in the policy demands of weaker actors of the system (Nguyen et al., 2015). The next sections of the paper investigate the existence of heterogeneous business environment constraints by analysing firms' subjective perceptions.

## **Firms' subjective perceptions as a measure of business environment constraints**

In recent decades, the release of World Bank's Enterprise Surveys has allowed for the use of extensive worldwide firm-level data. Such questionnaires collect data about firms' characteristics and performances and provide firms' subjective assessments about a series of specific obstacles that constrain their operation. This information is useful in testing the extent to which the severity of business environment obstacles affects firms' growth as well as exploring the relations between firms' characteristics and the diverging constraints.

In this regard, so far, the prevailing tendency in the literature has been to use firms' subjective assessments of the business environment as explanatory variables to estimate their impact on performance. Using cross-country firm-level data, several analyses have associated firms' growth with factors such as lower perceived constraints in terms of credit, labour regulation, informal competition and corruption (see, e.g. Beck et al., 2005). This approach has raised a series of concerns. The first is related to the fact that firms' subjective assessments of single business environment dimensions risk reflecting their evaluation of the overall investment climate in the country and thus losing specificity (Clarke, 2011). In addition, firms' subjective assessments may suffer from measurement problems, such as

the so-called 'kvetch factor', which is associated with the risk of obtaining distorted evaluations derived from the respondents' willingness to alter their evaluation (Bertrand and Mullainathan, 2001). Finally, it is worth mentioning the reference point bias associated with the lack of uniformity in the respondents' evaluation criteria and, in particular, the performance bias related to the impact of firms' actual economic trends on their assessments of business environment constraints (Hallward-Driemeier and Aterido, 2009).

These elements are likely to give rise to unobserved heterogeneity as well as to endogeneity problems that may call into question the reliability of the coefficients in the estimation of their causal impact on a performance indicator.

In this paper, we use firms' subjective evaluations of business environment constraints by adopting a different perspective. Instead of investigating their causal impact on firms' performance, we use perceived business environment constraints as dependent variables to explore whether the different characteristics of firms are likely to influence the nature and severity of their obstacles.

Following Hallward-Driemeier and Aterido (2009: 7), it can be argued that firms' rankings of constraints implicitly incorporate a measure of the business environment reform priorities at the firm level. Accordingly, the divergent severity of firms' perceptions of business obstacles can be interpreted as a proxy of their needs or, in other words, of their demand for policies. In this view, firms are no longer merely considered *investment climate takers* (via government policies); in contrast, by means of their choices, they play a key role in shaping the business environment, policies and institutions, thus becoming *investment climate makers* (Batra et al., 2003; Tassinari et al., 2018). A similar approach stimulates an overturning of the perspectives; it allows for the emergence of different instances across different categories of agents and enables within-country measurements and comparisons with respect to the different dimensions of business environments.

Few studies have investigated how different firms' characteristics may influence business environment constraints at the firm level, especially with respect to single least developed countries. In this framework, the prevailing estimation instrument used is a firm response model that, by means of discrete choice methods, associates firms' heterogeneous attributes with the likelihood of reporting a significant degree of severity with respect to specific constraints (Gelb et al., 2007).

Seminal studies conducted by Schiffer and Weder (2001) and Batra et al. (2003) apply firms' response models within a worldwide firm-level analysis to evaluate the effects of firms' characteristics on the severity of the obstacles associated with different business environment dimensions. Both studies find negative relations, for example, between the size of firms and the constraints associated with access to finance and report a lower severity of obstacles in all dimensions of the business environment for foreign firms (Batra et al., 2003: 11; Schiffer and Weder, 2001: 25–36). Further studies have been performed to investigate the impact of firms' characteristics on specific dimensions of the business environment. It is interesting to note that according to some contributions, transport constraints tend to exhibit transverse effects across firms of different sizes (Schou-Zibell and Madhur, 2010). Conversely, other studies have displayed heterogeneous effects with respect to financial and institutional constraints. In particular, Beck et al. (2005) show that access to finance may act as a significant growth constraint, especially for small and medium enterprises. However, the aforementioned studies do not contextualize the analysis of the heterogeneity of the business environment constraints at the country level.

With regard to the status of studies of business environment constraints in the Vietnamese context, we are not currently aware of any other study that has explored the question by adopting our perspective. At the same time, it is useful to report on a number of relevant studies that address the question of the heterogeneity of business environment constraints in Vietnam, although these studies adopt different data, methodologies and research questions. First, Vo et al. (2011) apply discrete choice models to a sample of 200 Vietnamese enterprises to focus on the relations between specific firms' characteristics and credit rejects. These authors stress that small firms are more likely to report financial constraints relative to others. Nguyen et al. (2015) explore the evolution of the Vietnamese public discourse on the issue of the entrepreneurship environment by performing a content analysis of the policy plans implemented by the government; they underline how the perception of the main constraints and policy priorities changes depending on different agents' perspectives.

Ngo and Chi's (2017) contribution adopts multiple regression models and qualitative questionnaires to show that the differentials in terms of value added between Vietnamese enterprises are likely to be associated with specific external constraints and highlight how firms' characteristics, such as their size and sectorial collocation, are likely to affect the nature of their constraints. Finally, by making use of information from a survey conducted in the Phu Tho Province in North Vietnam, Pham (2017) adopts a probit model to estimate whether the possession of specific characteristics by firms, in terms of size, localization, networking and managerial skills, is associated with the likelihood of receiving financial support from the Vietnamese credit system. That study finds a positive incidence of managers' degree of qualification and, once again, a higher propensity of small businesses to be penalized by credit constraints.

## **Data and methodology**

### *The database and descriptive statistics*

The dataset used in this research is the World Bank's Vietnam Enterprise Survey. To date, this source represents the only publicly available database reporting micro-level information on the entire Vietnamese industry. There have been two waves of the World Bank's Vietnam Enterprise Survey, in 2009 and 2015, and the latter is the most recent database available. The two different samples consist of 1053 (for 2009) and 996 (for 2015) Vietnamese firms stratified by size, sector and region. A description of the data in terms of the distribution of firms in the sample by size, industry and geographical location (for both 2009 and 2015) is provided in Table 4 in Appendix 1. The questionnaire is structured into different sections and provides relevant information on firm characteristics and performance. In addition, the surveys report data related to managers' subjective assessments of their major obstacles with respect to 15 dimensions of the business environment. To obtain a proxy to measure the business environment at the micro-level, the analysis focuses on the following question:

To what degree is [e.g., 'inadequately educated workforce'] an obstacle to the current operations of the establishment?

**Table 1.** Business environment dimensions and their frequency in terms of degree of severity (2009 and 2015).

Business environment dimension	Frequency (2009)		Frequency (2015)	
	Non-consistent obstacle (absent or minor)	Consistent obstacle (moderate, major or very severe)	Non-consistent obstacle (absent or minor)	Consistent obstacle (moderate, major or very severe)
<b>Access to finance</b>	<b>66.10</b>	<b>33.90</b>	<b>73.08</b>	<b>26.92</b>
Access to land	83.11	16.88	83.11	16.88
Business licensing and permits	95.90	04.09	90.53	09.46
Corruption	88.39	11.60	78.77	21.23
Courts	97.35	02.65	93.66	06.33
Crime, theft and disorder	93.57	06.42	90.89	09.10
Customs and trade regulations	87.24	12.75	87.24	12.75
Electricity	83.60	16.40	83.60	16.40
<b>Inadequately educated workforce</b>	<b>74.55</b>	<b>25.45</b>	<b>73.16</b>	<b>26.84</b>
Labour regulations	90.41	09.58	83.15	16.85
Political instability	97.82	02.18	84.04	15.96
<b>Informal competition</b>	<b>68.95</b>	<b>31.05</b>	<b>61.83</b>	<b>38.17</b>
Tax administration	85.76	14.23	83.73	16.27
Tax rates	82.52	17.47	77.96	22.04
<b>Transport</b>	<b>72.65</b>	<b>27.35</b>	<b>74.97</b>	<b>25.03</b>

Source: authors. Bold entries are considered in the empirical analysis.

In this context, the manager is requested to select one alternative among the following five ordered outcomes: ‘no obstacle’, ‘minor obstacle’, ‘moderate obstacle’, ‘major obstacle’ and ‘very severe obstacle’.

Exploration of the data indicates that in both samples, the most penalizing business environment constraints for Vietnamese enterprises are related to the four dimensions of informal competition, inadequately educated workforce, access to finance and transport (see Table 1). In particular, the firms of the survey conducted in 2009 reported obstacles associated with access to finance to a major extent (33.10% of the sample expressed ‘moderate’, ‘major’ or ‘very severe’ obstacles), followed by informal competition, transport and lack of qualified workforce, while in 2015, the most problematic dimension of the business environment was informal competition (38.17% of the sample reported ‘moderate’, ‘major’ or ‘very severe’ obstacles), followed by access to finance, lack of qualified workforce and transport.

### *The model and the empirical strategy*

In this section, we assess whether and to what extent the different observable attributes of Vietnamese firms are likely to have a divergent impact on the severity of their business environment constraints. From this perspective, using the firms’ responses about the severity of business environment obstacles, we implemented a binary probit estimation.



The probit model, based on maximum likelihood estimation techniques, is widely adopted in the economics and business micro-level literature to assess the probability of occurrence of a given event on the basis of a set of selected covariates of interest (Long and Freese, 2006).<sup>1</sup>

On this basis, a firm's response model is typically specified as follows

$$y_i^* = X'_i\beta + u_i \quad i = 1, \dots, n$$

where  $X_i$  is a vector of explanatory variables and  $\beta$  is a vector of unknown parameters.

In addition

$$u_i \sim N(0, \sigma^2) \text{ and } y_i^* \sim N(X'_i\beta, \sigma^2)$$

if  $y_i^* > 0$  then  $y_i = 1$ , and

if  $y_i^* \leq 0$  then  $y_i = 0$

Given the restriction  $\sigma = 1$ , which is imposed to allow for the identification of the vector separately from the parameter  $\sigma$ , we obtain the following standardized probit index

$$\text{prob}(y_i = 1) = \Phi\left(\frac{X'_i\beta}{\sigma}\right) = \Phi(X'_i\beta)$$

where  $y_i^*$  is unobserved, while  $X$  represents the vector of covariates to be estimated and  $\Phi(\cdot)$  denotes the cumulative distribution function operator for the standard normal.

In our specification, the dependent variable  $y_i$  is tested to estimate firms' assessments of the severity of the obstacles associated with four specific dimensions of business environment, i.e. 'inadequately educated workforce', 'informal competition', 'access to finance' and 'transport'. As shown previously, these represent the four largest business environment dimensions in terms of obstacle severity in both of the samples analysed. To run a binary probit, we aggregate the five outcomes of each business environment dimension into a binary variable that takes the value of 1, i.e. 'significant constraint', if the outcome expressed by the firm corresponds to 'moderate obstacle', 'major obstacle' or 'very severe obstacle' and of 0, i.e. 'not significant constraint', if the firm selects 'minor obstacle' or 'absent obstacle' as outcomes.

Building on the model applications performed in previous studies adopting firms' response models (Angelino et al., 2016; Batra et al., 2003; Gelb et al., 2007; Schiffer and Weder, 2001), our vector  $X$  consists of three different categories of covariates (see Table 2). First, we test the effects of a series of basic firm characteristics related to firm size,<sup>2</sup> ownership and location in the two main urban areas of Hanoi and Ho Chi Min city. Second, we include the sector in which the firms operate. Third, we introduce further variables related to firm performance and competitive assets, such as total annual sales, direct and indirect export status, firms' connections to other establishments, sales concentration in one product and research and development activity. Finally, we adopt a series of controls to mitigate the effects of potential omitted variables and other factors of endogeneity, including firms' sub-national localization and the respondents' characteristics, to isolate the eventual distortive effects of misperceptions arising from the heterogeneity of the evaluation criteria. Therefore, we cannot totally exclude the issue of endogeneity in the interpretation of the coefficients.

**Table 2.** Categorization of the covariates adopted in the model.

	Variables
Firms' basic characteristics	<ul style="list-style-type: none"> <li>– <i>Small</i>: dummy variable – 1 for firms with less than 15 employees, and 0 otherwise.</li> <li>– <i>Large</i>: dummy variable – 1 for firms with more than 250 employees, and 0 otherwise.</li> <li>– <i>Firmage</i>: the number of years since the company started its operations up to 2009 and 2015.</li> <li>– <i>Foreign</i>: dummy variable – 1 if 100% of the firm ownership is foreign, and 0 otherwise.</li> <li>– <i>Public</i>: dummy variable – 1 if 100% of the firm ownership is public, and 0 otherwise.</li> <li>– <i>Main_city</i>: dummy variable – 1 if the firm is located either in Hanoi or Ho Chi Min city, and 0 otherwise.</li> </ul>
Sector	<ul style="list-style-type: none"> <li>– <i>Sector</i>: it is a categorial variable consisting of nine sectors. The baseline sector is 'Food, Beverage and Tobacco'. The aggregation of the sectors has been conceived with the purpose of catching the differences in the effects with respect to the following categories of industries: traditional inward-oriented sectors (Food, Beverage and Tobacco), labour-intensive export-oriented sectors ('Textiles', 'Garments', 'Furniture'), resource-based labour-intensive sectors ('Non-metallic mineral products', 'Wood', 'Paper'), export-oriented higher value-added sectors ('Electronics', 'Machinery'), capital-intensive sectors ('Heavy Industry') and service sectors.</li> </ul>
Firms' performance and competitiveness	<ul style="list-style-type: none"> <li>– <i>Lnsales</i>: natural log of the total sales in Vietnamese Dong registered by the firm in the year before the interview.</li> <li>– <i>Fullyexport</i>: dummy variable – 1 if the firm exports 100% of its sales, and 0 otherwise.</li> <li>– <i>Indirexport</i>: dummy variable – 1 if the share of the sales supplied to the exporters is higher than the share directly exported or sold in the domestic market, and 0 otherwise.</li> <li>– <i>Part_establish</i>: dummy variable – 1 if the firm is part of another establishment, and 0 otherwise.</li> <li>– <i>Main_product</i>: dummy variable – 1 if the firm sells just one product, and 0 otherwise.</li> <li>– <i>Res_dev<sup>a</sup></i>: dummy variable – 1 if the firm has spent on formal research and development activities over the last three years and 0 otherwise.</li> </ul>
Control variables	<ul style="list-style-type: none"> <li>– <i>Region</i>: a categorial variable that associates the firm to the administrative region in which it is localized. The baseline in 'Red River Delta'.</li> <li>– <i>Manager_gender</i>: dummy variable – 1 if the respondent is female, and 0 otherwise.</li> <li>– <i>Manager_experience</i>: a continuous variable, measuring the years of professional experience in the sector of the respondents.</li> <li>– <i>Manager_educ</i>: it is a continuous variable that measures the years of education of the respondents.</li> </ul>

Source: authors.

<sup>a</sup>The data related to the firms' R&D activity are only available for the survey of 2015.

However, the issue does not directly affect our investigation, as it is not intended to draw causal relationships related to performance but only aims to point out the substantial heterogeneous trends that characterize the different firms.

On this basis, we regress the set of covariates on each of the four selected dimensions of the business environment. We analyse the effects on both samples to obtain year specific estimations of the constraints for the years 2009 and 2015 and to identify the persistence and/or the change of specific relations within this temporal interval.

## Results

### *Interpretation of the coefficients*

In this section, the results obtained from the regression are presented and interpreted. Table 3 reports the marginal and impact effects of the covariates on the four selected business environment constraints.

With regard to the dimension of *inadequately educated workforce*, focusing on the effects at a sectoral level, in both 2009 and 2015, firms operating in textiles and garments as well as those active in the resource-based manufacturing and service sectors were more likely to consider an unskilled workforce a particularly severe constraint compared to firms operating in the traditional and inward-oriented sectors. In parallel, the data display positive coefficients for indirect exporters, indicating that this category of firms is relatively more penalized with respect to this business environment constraint (even if the positive coefficient in this case is weakly significant for both years, at only the 10% significance level, suggesting that this result should be interpreted with caution).

Interpreting the results associated with 2015, it is worth highlighting that small enterprises display a lower propensity to report significant obstacles associated with a lack of a qualified workforce. At the same time, we find an inverse relation between firms' age and the degree of severity of this type of obstacle, which is probably motivated by the progressive increase in firms' adaptive capacity with respect to human capital shortages (Bublitz et al., 2015). Moreover, it is worth stressing that direct exporters, firms located in the two urban areas of Hanoi and Ho Chi Min city as well as those investing in R&D activities, are more likely to report these types of business environment obstacles as significantly constraining. This picture seems to support the idea that human capital constraints tend to particularly affect the most dynamic and innovative segment of the economic system (Lichter et al., 2013). In the Vietnamese context, this evidence is particularly consistent in the years following the WTO accession, when the intensification of external competitive pressures forced some categories of firms (i.e. direct and indirect exporters) to improve the qualification of their inputs to upgrade the sophistication of their outputs (Nguyen et al., 2015). On the other hand, the lower degree of concern of small enterprises with respect to the issue is consistent with the lack of empirical evidence about the positive relations between workforce qualification and entrepreneurship performance in transitional contexts (Lafuente and Rabetino, 2011). The negative coefficient can also be explained by the mismatch in the demand-supply dynamics of the skilled workforce, which is a typical feature of transition economies where the central planning education and training systems may not respond to the effective skills demanded from the small businesses. From this perspective, the findings of our analysis suggest that the lack of a qualified workforce is considered less constraining for Vietnamese small enterprises compared to other dimensions of the external environment.

**Table 3.** Marginal and impact effects of firms' characteristics on obstacle severity – probit model specification.

Independent variables		Dependent variables							
		Inadequately educated workforce		Informal competition		Access to finance		Transport	
		2009	2015	2009	2015	2009	2015	2009	2015
<i>Small</i>		-0.057 (-1.40)	-0.148*** (-4.04)	0.223* (1.78)	0.013 (0.33)	0.010 (0.25)	0.030 (0.84)	-0.021 (0.050)	-0.023 (-0.65)
<i>Large</i>		0.084** (1.91)	0.017 (0.045)	-0.214 (-1.45)	-0.021 (-0.46)	0.063 (1.29)	0.005 (0.13)	0.010 (0.22)	-0.025 (-0.63)
<i>Firmage</i>		-0.001 (-1.24)	-0.003** (-2.01)	0.007* (-1.67)	-0.001 (-0.48)	-0.004*** (-3.07)	-0.002 (-1.16)	0.001 (0.32)	-0.002 (-1.53)
<i>Foreign</i>		0.082* (1.65)	0.014 (0.24)	-0.111 (-0.62)	-0.183** (-2.20)	-0.180*** (-2.90)	-0.245** (-2.61)	-0.113* (-1.74)	-0.211** (-2.55)
<i>Public</i>		-0.010 (-0.18)	0.170 (1.43)	0.071 (1.20)	0.353** (2.47)	-0.026 (-0.43)	0.037 (0.28)	0.022 (0.41)	0.140 (1.24)
<i>Main city</i>		0.050 (1.17)	0.153*** (4.17)	0.100** (2.14)	0.079** (1.99)	0.028 (0.63)	0.079** (2.17)	-0.037 (-0.84)	0.091** (2.58)
<i>Sector_Textile</i>		0.082* (1.71)	0.090** (1.92)	-0.041 (-0.71)	0.003 (0.07)	-0.059 (-1.07)	-0.032 (-0.60)	-0.006 (-0.13)	-0.135*** (-2.79)
<i>Sector_resbased manufact</i>		0.111** (2.42)	0.114** (2.50)	-0.139** (-2.58)	0.088 (1.52)	-0.024 (-0.47)	0.010 (0.20)	0.017 (0.35)	0.064 (1.20)
<i>Sector_Heavy Industry</i>		0.059 (1.19)	0.151*** (3.11)	-0.182*** (-3.27)	0.077 (1.31)	-0.008 (-0.14)	0.023 (0.44)	0.016 (0.32)	-0.032 (-0.63)
<i>Sector_Elect&amp;Machin</i>		0.038 (0.053)	0.150** (2.16)	-0.032 (-0.38)	0.121 (1.48)	0.066 (0.78)	0.114 (1.49)	-0.018 (0.25)	-0.043 (-0.63)
<i>Sector_Service</i>		0.107** (2.26)	0.126*** (3.00)	-0.123** (-2.27)	0.008 (0.15)	-0.003 (-0.07)	-0.003 (-0.07)	0.029 (0.58)	0.026 (0.54)
<i>Lnsales</i>		-0.002 (-0.23)	-0.008 (-0.86)	0.000 (0.08)	-0.040*** (-3.84)	-0.019* (-1.83)	-0.039*** (-4.15)	0.020** (1.98)	0.008 (0.90)
<i>Fullyexport</i>		0.008 (0.19)	0.114* (1.83)	-0.213*** (-3.07)	-0.124 (-1.38)	-0.150** (-2.23)	-0.093 (-1.12)	-0.024 (-0.44)	-0.008 (-0.11)
<i>Indirexport</i>		0.111* (1.92)	0.101* (1.68)	-0.016 (-0.26)	-0.007 (-0.11)	0.180*** (2.94)	0.053 (0.79)	-0.020 (-0.32)	0.076 (1.15)
<i>Part_establish</i>		0.008 (0.17)	0.000 (0.02)	-0.001 (-0.02)	-0.082 (-1.27)	0.056 (0.99)	-0.050 (-0.80)	0.041 (0.82)	-0.080 (-1.42)
<i>Main_product</i>		-0.041 (-1.44)	-0.030 (-1.16)	-0.028 (-0.94)	-0.001 (-0.06)	-0.066** (-2.19)	0.005 (0.20)	-0.003 (-0.13)	-0.028 (-1.01)
<i>Res_Dev</i>		-	0.112*** (3.39)	-	0.153*** (3.94)	-	0.056 (1.57)	-	0.103*** (3.06)
<i>Log likelihood</i>		-519.07	-497.57	-571.63	-551.45	-565.06	-493.74	-539.18	-493.02
<i>Pseudo R<sup>2</sup></i>		0.052	0.091	0.053	0.072	0.093	0.078	0.053	0.069
<i>Obs.</i>		972	934	972	910	972	915	972	936
<i>P-value</i>		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Source: authors.

Z statistics are in parentheses. Marginal effects are computed for the continuous variables. Impact effects are computed for dummy variables and factor variables.

\*Significant at 10% level, \*\*significant at 5% level and \*\*\*significant at 1% level.

Analysing the obstacles associated with *informal competition*, the data highlight that in the transition from 2009 to 2015, a series of variables loses their significance. For example, unlike 2009, the positive coefficient for small enterprises is no longer significant in 2015. This result, however, should be interpreted with caution due to the weak statistical significance of the coefficients. An additional tendency involves the loss of significant effects at the sectoral level; in particular, in the regression of 2015, the baseline category related to the traditional and inward-oriented sectors does not result in a greater penalty compared to the rest of the sectors. Focusing specifically on the results of 2015, public enterprises are more likely to indicate informal competition as severe constraints, while foreign firms seem to report problems associated with this business environment dimension to a lower extent than domestic firms.<sup>3</sup> In parallel, firms located in urban areas as well as those that invest in R&D exhibit higher concerns with respect to this obstacle more frequently than the others. Furthermore, the data indicate a negative correlation between the market dimension of the firms measured in terms of total annual sales and informal competition constraints. In this regard, it is possible to observe that a positive variation of 1 percentage point in total annual sales is associated with a reduction of approximately 3.7 points in the probability of reporting informal competition as a significant constraint. From this perspective, the results indicate that the practices of informal competition result in greater penalization for small-scale companies. The higher incidence of informal competition constraints on small enterprises is reflected in a series of previous theoretical and empirical contributions (see, e.g. Gonzales and Lamanna, 2007), suggesting that formal small businesses are the most vulnerable agents with respect to the incidence of informal activity. In addition, the absence of significant effects at the sectoral level seems to contrast with the findings of other empirical analyses that indicate that firms operating in industries with high fixed and entry costs (i.e. resource-based manufacturing, heavy industries, electronics and machinery) have a lower propensity to report obstacles associated with informal competition (Gonzales and Lamanna, 2007). On the other hand, the positive coefficient on the firms located in Hanoi and Ho Chi Minh City confirms that informal competition constraints are particularly significant in urban areas (Cling et al., 2011). Finally, the positive relation between firms' innovation activity and informal competition concerns may be ascribable to the issue of trademark and copyright violation, which is a common phenomenon in the context of the Southeast Asian market (OECD, 2014).

The third dimension analysed is related to *access to finance*, which is generally recognized as a particularly penalizing constraint for small enterprises (Beck et al., 2006). Similar conclusions are partially confirmed in our analysis. In both regressions, the parameter associated with total sales exhibits a negative coefficient, implying that an increase of 1 percentage point in the total sales of firms is likely to be related to a reduction in the propensity of reporting significant financial constraints of 1.9 percentage points in 2009 and 3.9 in 2015. From this standpoint, while our analysis shows that there is no statistically significant effect for small and large firms when firm size is measured in terms of employees, a size effect is found when size is defined in terms of sales (this result is also confirmed in the case of transport in 2009), indicating that the way in which firm size is defined may affect the result. In addition, in both years, foreign firms report being less penalized by financial constraints compared to domestic ones. Similar evidence may be due to their higher availability of internal funds as well as their reliance on international financial markets that prevent them from incurring the inefficiencies of the local credit systems (Beck et al., 2006). In the transition from 2009 to 2015, the coefficients associated with the direct and indirect

exporters, respectively, of negative and positive signs no longer have predictive power with respect to the severity of the financial constraints. Focusing on the results of 2015, it is worth noting that firms located in Hanoi and Ho Chi Minh City display a higher probability (approximately 7.9% more than firms located elsewhere) of reporting significant financial constraints. Similar evidence indicates that the credit supply in the two cities still does not mitigate the over-competition dynamics in access to credit (Vo et al., 2011).

Regarding the dimension of *transport*, it is possible to observe that in both 2009 and 2015, foreign enterprises tended to consider this type of constraint less significant. The negative coefficient may be essentially explained by two stylized facts. First, more than 70% of the overall volume of freight traffic in 2015 occurred via maritime and inland waterway channels (GSO, 2017); second, the foreign direct investment (FDI) share in the volume of freight traffic is negligible (GSO, 2017), indicating that foreign firms tend to be located in proximity to ports, resulting in less penalization by the inefficiencies of national transport systems. On the other hand, the data for 2015 show that firms located in the two largest cities were more likely to report transport constraints compared to others. This may be the result of the consistent traffic and congestion problems characterizing Vietnamese urban areas. In a similar context, the strong productive polarization and the lack of intermediate logistic knots seem to generate market unbalances between freight transport demand and supply in the country's urban areas. This is likely to produce substantial transaction costs that obstruct the development of productive linkages and hamper market access (Hollweg et al., 2017). Moreover, the regression results report a positive sign for the coefficients associated with R&D firms, suggesting that the most innovative firms are more likely to exhibit transport constraints. As suggested in the literature, such concerns may arise from their more complex logistic needs that are rarely addressed by the Vietnamese transport system (Scott and Garofoli, 2011). Finally, focusing on sectoral effects, it is worth stressing that enterprises that operate in export-oriented sectors, such as textiles and garments, seem to be less likely to report these kinds of problems compared to traditional and inward-oriented industries. Similar evidence may be affected by the presence of specific sectoral effects associated with the lower logistic and transport costs that characterize the textile industry with respect to the other sectors (Huong, 2017).

### **Diagnostic tests**

In this section, we report the statistics from diagnostic tests applied to evaluate the sensitivity and the effectiveness of the estimations realized in the previous section. The results are presented in Table 5 in Appendix 1. For each of the probit regressions, we tested whether the model was able to correctly classify the true positives and negatives. By means of the Stata command *estat class*, we obtained classification tables for each regression to provide information on the sensitivity, i.e. the proportion of positives that are correctly identified as such, and the specificity, i.e. the proportion of negatives that are correctly identified as such, adopting an automatic cut-off at 0.5. At the selected cut-off, all the dimensions displayed low levels of sensitivity, implying a low ability of the model to correctly classify the true positives. However, we retested the model on the basis of optimal cut-offs obtained from the interception between the sensitivity and specificity curves of graphs of sensitivity *versus* risk score and specificity *versus* risk score (Long and Freese, 2006). The optimal cut-offs found for the dimensions of 'inadequately educated workforce', 'informal competition', 'access to

finance' and 'transport' lead to more balanced levels of sensitivity, implying good levels of accuracy of the results.

In addition, we calculated the aka *c*-statistic to test how well our model discriminates between cases and non-cases and obtained reasonable *c*-statistics of approximately 0.7 for all the models.

Finally, we calculated the Hosmer–Lemeshow test to assess whether the predicted probability of the event associated with each observation fits the real observations. In terms of its interpretation, if the chi-square statistic is significant ( $<0.05$ ), it means that the model does not fit the data well. All the models tested reported insignificant chi-square statistics.

## Conclusions

In recent decades, Vietnam has experienced a significant process of industrial development and institutional transition towards a market-friendly context. Since the 2000s, the government has implemented a number of reforms aimed at improving the country's entrepreneurship and business environment. However, the formulation of the entrepreneurship and business environment policies in Vietnam seems to have assumed a uniform demand for reforms that is mainly consistent with the needs of the most influential firms and stakeholders, ignoring the heterogeneity of the economic agents and their divergent necessities.

This paper has analysed the heterogeneity in the perception of business environment constraints faced by Vietnamese enterprises. Binary discrete choice models of firms' data and subjective assessments have been adopted to evaluate whether and to what extent the attributes of the firms matter in determining the degree of severity and the nature of their business environment constraints in four specific dimensions (i.e. inadequately educated workforce, informal competition, access to finance and transport).

The results, based on approximately 1000 firms in Vietnam, show that the differences in firm characteristics are likely to generate substantial heterogeneities in business environment constraints. In this regard, we observed a dualistic structure of the Vietnamese productive system. On the one hand, a more proactive and dynamic segment, consisting of large internationalized enterprises operating in higher value-added sectors and located in urban areas, is more likely to suffer from human capital constraints as a consequence of the rising international competitive pressures that require higher productive specialization and output sophistication. On the other hand, a less integrated and performing component, mainly represented by small and not internationalized firms operating in the traditional and inward-oriented sectors and located outside the urban areas, tends to be less affected by the lack of quality of the workforce and more concerned with the constraints of informal competition, access to finance and transport. In terms of policy implications, these findings call for the identification and implementation of diversified policy instruments that target the effective external barriers to local entrepreneurship and the specific constraints faced by different categories of enterprises. In this context, our analysis sheds light on the need for greater political awareness about the heterogeneous needs of Vietnamese enterprises as a crucial condition for sustaining entrepreneurship as well as the economic and social development of the country.

Our study also presents some limitations that should be highlighted to draw potential research lines. While firms' perceptions of business environment constraints represent important preliminary information that is useful for planning public policies, they may constitute a limited point of view to properly understand the obstacles to economic

development. In this regard, our analysis could be enriched by taking into account, for example, ‘more objective’ data on the obstacles to entrepreneurship that can be compared with ‘perception’ data to complement the informative background necessary for decision-making processes. Moreover, the final decision concerning goals, targets and tools to be adopted to improve business environment conditions should be based on the consideration of a plurality of perspectives, where the perceptions expressed by the enterprises (though important) constitute just one of the building blocks of the analysis. In fact, public policy risks responding to particular interests and opening up non-virtuous spaces for rent-seeking activities that can even degenerate into dynamics of corruption and clientelism (Barbieri et al., 2019; Di Tommaso et al., 2017; Tassinari et al., 2019). For this reason, great attention must be paid to the mechanisms for defining public intervention and for assessing the heterogeneity of the interests that are at stake (Barbieri et al., 2020; Di Tommaso and Schweitzer, 2013; Tassinari, 2019; Di Tommaso et al., 2020a, 2020b). Future studies in this field could be devoted to addressing and mitigating these crucial and complex issues.

### **Acknowledgement**

We would like to express our gratitude to the anonymous reviewers for providing very useful inputs and insights.

### **Declaration of Conflicting Interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

### **Funding**

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was conducted within the framework of the project ‘Emilia-Romagna International School of Policy’ (CUP: E45J19000150004) funded by Emilia-Romagna regional government.

### **Notes**

1. In contrast to the linear probability model, the binary probit estimation does not suffer from heteroscedastic standard errors. The construction of the probit estimator makes use of a latent continuous dependent variable  $y_i^*$  and associates it with an observable binary variable  $y_i$ , which assumes the value of 1 if the event occurs and 0 otherwise. Furthermore, the assumption of normal distribution of the residuals allows for the utilization of the standard normal cumulative distribution function in the interpretation of the standardized probit index.
2. For the purpose of the empirical analysis, in this paper we define as ‘large’ enterprises that employ more than 250 persons (this is consistent with the notion of large firms provided, for example, by the European Commission, 2015: 3). We consider ‘small’ firms to be those that employ fewer than 15 employees (consistent with the definition of small firms provided, for instance, by the Australian Fair Work Act of 2009: 60). These definitions establish a significant stratification of our samples for the empirical analysis (see also Table 4 in Appendix 1).
3. As indicated in Table 2, we define a firm as foreign if 100% of its ownership shares are foreign. This perspective finds its rationale in the fact that, as argued by Dikova and van Witteloostuijn (2007: 1019), several empirical studies have generally confirmed the hypothesis that firms with advanced proprietary technologies are inclined to opt for entry transition economies via wholly owned



affiliates rather than subsidiaries with shared ownership. Indeed, maximally controlled ventures are preferred because of the risk of opportunism on the side of the foreign partner and the potential loss of proprietary technology after its transfer to a jointly owned venture. In the case of the underdeveloped institutional framework in transition economies, the transfer of knowledge may be of particular concern because of the insufficient abilities of institutions to provide protection of intellectual property rights.

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## Appendix I

**Table 4.** Description of the sample data – 2009 and 2015.

Regional stratification	Size stratification	Traditional inward-oriented sectors (Food, Beverage and Tobacco)		Labour-intensive export-oriented sectors (Textiles, Garment, Furniture)		Export-oriented higher value-added sectors (Electronics, Machinery)		Resource-based labour-intensive sectors (Non-metallic mineral products, Wood, Paper)		Capital-intensive sectors (Heavy Industry)		Service sectors		Grand total
		09	15	09	15	09	15	09	15	09	15	09	15	
Red River Delta	Year	09	15	09	15	09	15	09	15	09	15	09	15	15
	Small	2	8	11	6	1	1	9	8	6	19	25	36	302
	Medium	27	29	45	38	8	7	52	31	47	41	40	47	
North Central Area and Central Coastal Area	Large	5	3	17	7	3	2	21	12	10	4	4	3	
	Small	5	9	4	8	1	0	9	7	12	16	25	27	240
	Medium	20	18	14	24	4	5	44	39	14	23	48	38	
South East	Large	3	9	8	12	1	0	10	1	2	1	3	3	
	Small	5	6	14	20	1	6	6	8	5	14	25	41	306
	Medium	26	16	82	41	5	3	44	38	42	36	34	35	
Mekong River Delta	Large	8	10	39	15	8	0	24	9	8	3	3	5	
	Small	11	11	1	3	0	0	1	2	5	9	16	11	148
	Medium	9	18	1	17	1	3	11	13	22	20	23	24	
	Large	5	6	5	6	1	0	0	1	1	3	1	1	
		126	143	241	197	34	27	231	169	174	189	247	271	1053
														996

Source: adapted from World Bank and General Statistics Office of Vietnam.

Note: Stratification was defined as follows: small (fewer than 15 employees), medium (15–250 employees) and large (more than 250 employees).

**Table 5.** Statistics on probit model 2009 and 2015 correct classification.

	Cut-off 0.5				Optimal cut-off				Hosmer–Lemeshow test P-value			
	Sensitivity (%)		Specificity (%)		Sensitivity (%)		Specificity (%)		Aka c-test			
	2009	2015	2009	2015	2009	2015	2009	2015	2009	2015		
Inadequately educated workforce	4.92	13.78	98.63	94.34	59.43	61.02	63.05	67.66	0.69	0.70	0.7645	0.9860
Informal competition	7.57	39.35	96.11	83.99	67.11	67.75	58.08	56.42	0.69	0.69	0.4170	0.3195
Access to finance	31.42	11.38	89.08	96.79	64.35	58.13	63.34	66.87	0.70	0.69	0.8087	0.8597
Transport	5.28	11.86	98.30	97.36	60.75	63.14	61.10	64.66	0.69	0.69	0.7600	0.9702

Source: authors.