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**Assessment of Industrial Cluster Policies in Viet Nam:  
The Role of Special Economic Zones in Attracting Foreign  
Direct Investment\***

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**Abstract:** *Special economic zones (SEZs) are considered as one of important regional industrial policies to attract foreign investment in developing countries such as Viet Nam. The review of SEZs development in Viet Nam including the comprehensive review of infrastructure and business environment in SEZs are presented in this paper for the first time. Moreover, the paper gives novel non-parametric evidence to indicate the positive causal linkage between the zoning policies and the attraction of foreign investment at district-level in the country during the period 2011–2015.*

**Keywords:** Viet Nam, Special Economic Zones (SEZs), Foreign Direct Investment (FDI).

**JEL codes:** O16, O25, F21, R10

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## 1. Introduction

Since 1994, Viet Nam has been introducing favourable economic policies for foreign investors and has consequently been one of the most attractive destinations for foreign direct investment (FDI) in the Association of Southeast Asian Nations (see e.g. Figure 17 in World Bank, 2018). FDI projects and FDI-registered investments in manufacturing accounted for the majority of total FDI flows in the economy from 1998 to 2014 – 54.9% and 64.3%, respectively (see Table 1). Attracting FDI is important for a developing country such as Viet Nam because FDI sectors boost employment and inject large amounts of capital into the economy. From 2005 to 2014, the number of employees in FDI sectors in Viet Nam tripled, and total capital in FDI sectors increased about six-fold (General Statistics Office of Vietnam [GSO], 2016). FDI firms have played a key role in the country's export growth. For example, FDI firms produced 70% of the country's total export goods in 2018 compared to only 40% in 2008, with the remaining 30% coming from local firms (World Trade Organization and International Trade Center, Vietnam Chamber of Commerce and Industry, 2018).

**Table 1: Foreign Direct Investment by Sector in Viet Nam, 1998–2014**

Sector	Number of projects		Registered investment	
	Project	(%)	(\$ million)	(%)
Agriculture	521	2.6	3,654.9	1.3
Construction and real estate	1,264	6.3	10,893.8	3.9
Services	7,271	36.2	86,192.1	30.5
Manufacturing	11,013	54.9	181,141.2	64.3
Total	20,069	100.0	281,882.0	100.0

Source: General Statistics Office of Vietnam (2016), *Effectiveness of Business of FDI Enterprises in the Period 2005–2014*, Hanoi: Statistical Publishing House.

<https://www.gso.gov.vn/default.aspx?tabid=422&idmid=&ItemID=15808> (accessed 4 March 2020).

Table 2 shows capital stocks invested by FDI firms in two-digit manufacturing industries (as a percentage of total capital stocks in each industry) in Viet Nam from 2011 to 2015. FDI firms play a key role in capital stocks investment in the manufacture of computer, electronic, and optical products (98.5%); motor vehicles, trailers, and semi-trailers (80%); leather and leather products (87.3%); and other manufacturing (84.73%). With regard to capital stocks investment by FDI firms during 2011–2015, the highest growth rates were recorded in the manufacture of beverages, printing, recorded media, and pharmaceutical products; while the sharpest decrease was seen in

the manufacture of chemicals, papers, and tobacco products. The average growth rate during the period under study was 0.23%.

**Table 2: Capital Stocks Invested by Foreign Direct Investment Firms in Two-Digit Manufacturing Industries, 2011–2015**  
(% of total capital stocks in the industry)

Two-digit industry	2011	2012	2013	2014	2015	Growth (2011–2015)
<b>Chemicals</b>	42.33	31.74	33.29	36.88	28.41	<b>-13.92</b>
Paper	41.11	33.36	33.90	36.67	35.32	-5.79
Tobacco	16.98	12.42	10.95	12.62	11.63	-5.36
<b>Fabricated metal</b>	61.42	61.67	64.12	61.76	57.58	<b>-3.84</b>
Furniture	56.17	55.20	54.05	55.80	52.58	-3.59
<u>Other transport equipment</u>	67.47	66.38	67.82	66.85	64.52	<b>-2.96</b>
Food	41.18	39.45	41.18	40.00	38.86	-2.32
Wearing apparel	60.54	58.06	57.03	59.13	58.42	-2.13
Textiles	73.16	72.45	69.35	71.00	71.64	-1.52
Wood and cork	25.65	26.20	25.88	32.76	24.36	-1.29
Leather	86.71	87.61	87.34	87.23	87.30	0.59
Other manufacturing	84.06	84.16	84.14	83.00	84.73	0.68
<b>Machinery and equipment</b>	75.69	73.43	77.02	77.67	77.00	<b>1.31</b>
<u>Motor vehicles, trailers, and semi-trailers</u>	79.36	89.23	80.32	82.07	80.78	<b>1.42</b>
<b>Basic metals</b>	41.42	52.20	47.30	31.95	43.27	<b>1.85</b>
<b>Non-metallic minerals</b>	27.25	27.57	25.68	26.02	29.14	<b>1.89</b>
<b>Computer, electronic, and optical</b>	96.23	97.08	97.87	98.26	98.50	<b>2.26</b>
Coke and refined petroleum	1.34	2.12	2.61	2.35	3.82	2.48
<b>Rubber and plastic</b>	55.46	55.20	53.80	57.52	58.69	<b>3.24</b>
<b>Electrical equipment</b>	68.96	69.80	72.23	73.48	72.20	<b>3.25</b>
<b>Pharmaceuticals</b>	34.50	31.57	31.76	33.20	43.54	<b>9.04</b>
Printing and recorded media	9.20	12.65	15.81	15.49	18.42	9.22
Beverages	33.83	36.60	40.28	43.08	44.55	10.72
<b>Average</b>	<b>51.31</b>	<b>51.14</b>	<b>51.03</b>	<b>51.51</b>	<b>51.53</b>	<b>0.23</b>

Note: Capital stocks are fixed asset values in Vietnam Enterprise Survey data. Growth in capital stocks is equal to the percentage of foreign direct investment capital stocks in total capital stocks of the industry between 2011 and 2015. The two-digit industry classification as well as other details can be found in the International Standard Industrial Classification Revision 4 introduced by the United Nations. United Nations (2008), 'International Standard Industrial Classification of All Economic Activities [ISIC], Rev. 4', *Statistical Papers Series M No. 4, Rev. 4*. New York: United Nations.

Industry names in bold are priority manufacturing industries for foreign direct investment attraction to enhance value-added and regional competition in Viet Nam during 2018–2030, as recommended by the World Bank and the Ministry of Planning and Investment of Viet Nam. Industries in italics and underlined are short-term priorities for competition success, while bold and underlined industries are middle-term priorities for market openness and high-skilled improvement. See details in World Bank (2018), *Draft of Strategies and Strategy Highlights for the Facilitation of New Generation FDI in Vietnam for the Period from 2018 to 2030*. Washington, DC: World Bank.

Source: Authors' calculation using General Statistics Office of Vietnam (2011–2015), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office.

<https://www.gso.gov.vn/default.aspx?tabid=512&idmid=5&ItemID=9774> (accessed 1 March 2019).

For the period under study, Table 2 shows high growth rates of FDI capital stocks in some manufacturing industries suggested as priorities for FDI attraction in the 2018–2030 master plan (World Bank, 2018), including rubber and plastic (3.24%), electrical equipment (3.25%), and pharmaceuticals (9.04%). Other industries in the priority group – such as the manufacture of chemicals and fabricated metal – show negative growth (-13.92% and -3.84%, respectively), while others – such as non-metallic minerals and the manufacture of computer, electronic, and optical products – only achieved a growth rate of 1.31%–2.26%. The decline in the FDI ratio growth rate in some industries might be due to the characteristics of a specific industry,<sup>1</sup> national protection of some conditional domestic industries (for FDI entry), export targets, the better performance of domestic industries, or the greater attraction of other industries such as real estate (for incumbent FDI firms).<sup>2</sup> Annual surveys of provincial competitiveness (VCCI and United States Agency for International Development [USAID], 2011–2014) reveal the growing pessimism of FDI firms; for example in 2011, only 38% of surveyed FDI firms were optimistic about their expansion in Viet Nam in the next 2 years (VCCI and USAID, 2011), while optimism rose in 2015 (VCCI and USAID, 2015).

Regional disparities in FDI inflows are shown in Charts 1 and 2, which present the concentration of FDI projects and FDI-registered investment, respectively, by province in Viet Nam during 1988–2016. Ho Chi Minh City leads in terms of FDI attraction and accumulation, followed by Hanoi, Binh Duong, Dong Nai, and Ba Ria Vung Tau. Thirty-five percent of FDI projects and 48% of registered FDI were allocated to other provinces. Governments are implementing place-based policies to allocate FDI inflows not only to developed regions but also to undeveloped and remote areas.

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<sup>1</sup>Another reason for this is the typical size of firms entering different industries. When a large manufacturer, such as Samsung, invests in electronics, it can boost the FDI growth rate for that year.

<sup>2</sup> See the discussion about national control of some strategic industries in the Investment Policy Review of Vietnam prepared by the United Nations (2008). During 2011–2015, the 2005 Law on Investment was applied, according to which three types of industries are under national control: five prohibited investment industries for all investors, nine conditional investment industries for all investors, and 14 conditional investment industries for only foreign investors. The law was adjusted in 2014 to reduce the number of prohibited investment industries.

In conjunction with the other place-based policies, zoning policy<sup>3</sup> is playing a crucial role for priority industries in the policy framework facilitating regional FDI in Viet Nam (see World Bank, 2018). The definition and regulation of zoning policies in Viet Nam currently follows government decree No.82/2018/NĐ-CP, which came into force in 2018.<sup>4</sup> According to this decree, an ‘industrial zone (park)’ is an area enclosed by definite boundaries, specialising in the production of industrial goods and provision of services satisfying industrial production needs, and established in conformity with the conditions, procedures, and processes prescribed in this decree. Industrial zones are classified into different types such as export-processing zones, auxiliary industrial areas, and eco-industrial zones. An ‘economic zone’ is an area defined by geographical boundaries, including functional zones, and established to serve the purpose of calling for investment, promoting socioeconomic development, and maintaining national defence and security. Economic zones encompass coastal economic zones and border-gate economic zones, and are hereinafter referred to simply as economic zones, unless particular regulations otherwise apply to each classification.<sup>5</sup> In this paper, special economic zones (SEZs) refer to both industrial and economic zones. The economic results of SEZ policies can be considered the results of regional economic experiments before nationwide application.

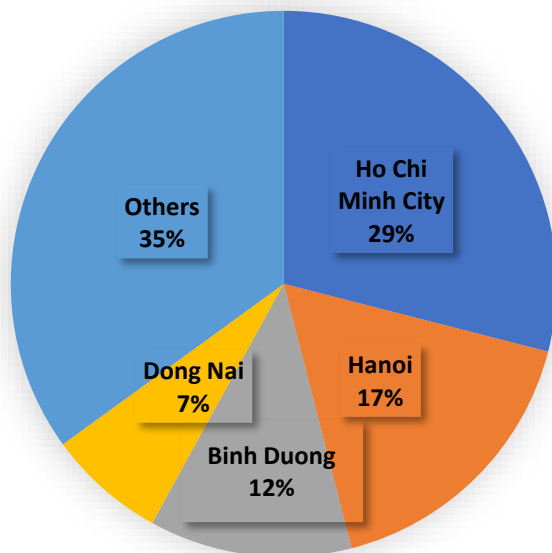
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<sup>3</sup> The regulation of zoning policies in Viet Nam currently follows government decree No.82/2018/NĐ-CP, which defines the relevant terms.

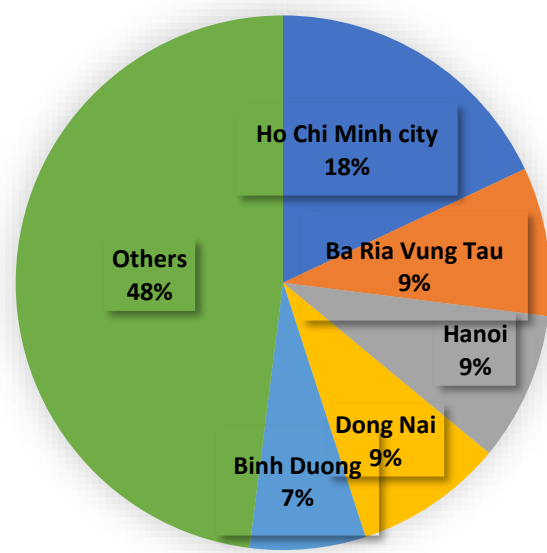
<sup>4</sup> This decree replaces the older regulations of zones in government decree No. 29/2008/NĐ-CP (dated 14 March 2008) regulating industrial parks, export-processing zones, and economic zones; government decree No.164/2013/NĐ-CP (dated 11 December 2013) amending and supplementing government decree No. 29/2008/NĐ-CP; and government decree No. 114/2015/NĐ-CP (dated 9 November 2015) amending and supplementing Article 21 of decree No. 29/2008/NĐ-CP.

<sup>5</sup> These definitions closely follow the text of the decree translated into English by *LawSoft*, 2018.

**Chart 1: Foreign Direct Investment  
Projects by Province  
(1988–2016)**



**Chart 2: Foreign Direct Investment  
Registered Investment by Province  
(1988–2016)**



Source: World Bank (2018), *Draft of Strategies and Strategy Highlights for the Facilitation of New Generation FDI in Vietnam for the Period from 2018 to 2030*. Washington, DC: World Bank.

From 2006 to 2010, FDI projects and registered FDI in SEZs accounted for 30% of total FDI projects and 24.85% of registered FDI in the country. By the end of 2018, 8,000 FDI projects in SEZs had invested \$145 billion in Viet Nam (see Table 3).

**Table 3: Accumulated Foreign Direct Investment in Special Economic Zones by Year (2005–2014)**

Year	FDI projects	Registered investment (\$ billion)
1991–1995	155	1.55
1996–2000	588	7.2
2001–2005	1,377	8.1
2006–2010	1,860	36.8
By the end of 2018	8,000	145

Note: Values of registered and implemented investment are rounded up.

Sources: The authors collected data from Kim, P. Agency for Regional Industry and Trade (in Vietnamese). [http://arit.gov.vn/tin-tuc/giai-phap-thu-hut-dau-tu-fdi-vao-cac-khu-cong-nghiep-b3f62894\\_2805/](http://arit.gov.vn/tin-tuc/giai-phap-thu-hut-dau-tu-fdi-vao-cac-khu-cong-nghiep-b3f62894_2805/) (accessed 1 March 2019); Linh, K. (2018), Total FDI Capital into Industrial Parks and Economic Zones reached US\$145 Billion. VN Economy (in Vietnamese). <http://vneconomy.vn/tong-von-fdi-vao-khu-cong-nghiep-khu-kinh-te-dat-145-ty-usd-20181130140726452.htm> (accessed 1 March 2019); General Statistics Office of Vietnam (2016), *Effectiveness of Business of FDI Enterprises in the Period 2005–2014*, Hanoi: Statistical Publishing House. <https://www.gso.gov.vn/default.aspx?tabid=422&idmid=&ItemID=15808>. (accessed 4 March 2020).

SEZs play an important role in creating specialisation hubs for manufacturing industries in the country. Empirically, the SEZ policy was connected with the formation of district industrial clusters in Viet Nam during 2005–2010 (Francois and Nguyen, 2017). According to Wong and Buba (2017), who investigated the performance of SEZs and their spillover effects in Viet Nam, the economic performance of an SEZ is influenced positively by its size, but negatively by its maturity and distance to the largest cities (i.e. Hanoi and Ho Chi Minh City). In addition, the empirical results show that high-technology zones in remote areas do not perform well because of limitations in local capacities and resources (Wong and Buba, 2017). Wong and Buba (2017) also determined the average positive effects of SEZs on the economic performance of neighbouring areas in the studied countries (including Viet Nam). Nevertheless, the literature has not yet provided empirical evidence about either the role of SEZs in attracting FDI flows to Viet Nam or the connection amongst FDI firms and their customers and suppliers.

This report provides novel descriptive and empirical evidence about SEZs in Viet Nam. The report first analyses policies for business environment enhancement in SEZs, before investigating linkages amongst firms in SEZs and firms not in SEZs. Most importantly, this report analyses the causal link between SEZ experiments and FDI attraction in manufacturing industries in specific districts where SEZs have been assigned.

We exploit firm-level data of manufacturing industries from 2011 to 2015 (Yearly Survey from the GSO) and annual district-level data of SEZs between 1991 and 2013 (Ministry of Investment and Planning of Vietnam [MPI], Zones Management Department, 2011 and 2013). In addition, data about the suppliers and customers of manufacturing firms from the Survey of Technology Used in Manufacturing in Vietnam, which is managed by the GSO (2014), are exploited to study further the linkages amongst manufacturing firms in SEZs and their counterparts not in SEZs (customers and suppliers).

Different estimation methods are applied in this report. First, a logit estimation is used to estimate the probability of satisfaction on the part of FDI firms in SEZs in 2012. This shows that FDI firms in SEZs have a higher probability of responding relatively favourably to government policies compared to FDI firms not in SEZs. This

result might indicate that SEZs provide a better business environment for FDI firms. In addition, the Kernel estimation results, which apply the non-parametric method and use data from 2011–2015, show that (i) domestic producers located in SEZs have a denser distribution of customers (both FDI and domestic) than do FDI firms in SEZs, domestic firms, and FDI firms not in SEZs; and (ii) FDI suppliers are better connected with FDI partners (both inside and outside SEZs) than with domestic partners. Finally, the Kernel estimation results demonstrate that a higher density of districts with SEZs obtained FDI investment in capital stocks than did districts without SEZs. In addition, the results of propensity score matching (PSM) reveal that the assignment of SEZs stimulates FDI at the district level.

The report is arranged as follows. Section 2 reviews the development of zoning policies in Viet Nam since 1991 in the context of attracting FDI to the country. Section 3 describes the data used in the report. Section 4 evaluates the satisfaction of FDI firms in SEZs compared to FDI firms not in SEZs. Next, section 5 shows evidence for linkages between firms in SEZs and firms not in SEZs. Section 6 presents novel empirical results relating to SEZ policies and facts about FDI attraction to manufacturing industries in Viet Nam. The final section concludes.

## **2. Zoning Policies in Viet Nam**

Viet Nam's zoning policy is an important industrial mixed policy that targets creating employment, attracting FDI, and encouraging exports. Key economic tools applied under this policy include (i) more favourable corporate income tax, land rent, and fees; (ii) better infrastructure; and (iii) the simplification of administrative management. SEZs are often located close to ring roads, expressways, and national highways connecting regions of Viet Nam (see Figure 1 for a map of SEZ locations and the transportation system in Ho Chi Minh City and seven southern provinces). Local governments also implement SEZs to complement provincial infrastructure development (e.g. roads, energy, telecommunications, and internet) and attract FDI. Figure A1 shows that most provinces in the country with better infrastructure development also reach a higher index level with regard to the implementing pf zoning policies.



SEZs in Viet Nam have been developed over the course of five main epochs during which traditional EPZs have been shifted towards SEZs to facilitate FDI: (i) in 1991–1994 the first processing zone (Tan Thuan) was established; (ii) in 1994–1997 industrial zones were built for export orientation; (iii) in 1997–2003 high-technology zones were developed (such as Hoa Lac, 1998) along with cross-border economic zones (such as Mong Cai, 1996); (iv) in 2003–2009 open economic zones and coastal economic zones were established to enhance heavy industries in coastal regions; and (v) in 2009–present information technology central parks and agricultural high-technology parks were set up to encourage the application of high technology to information technology and agriculture.<sup>6</sup>

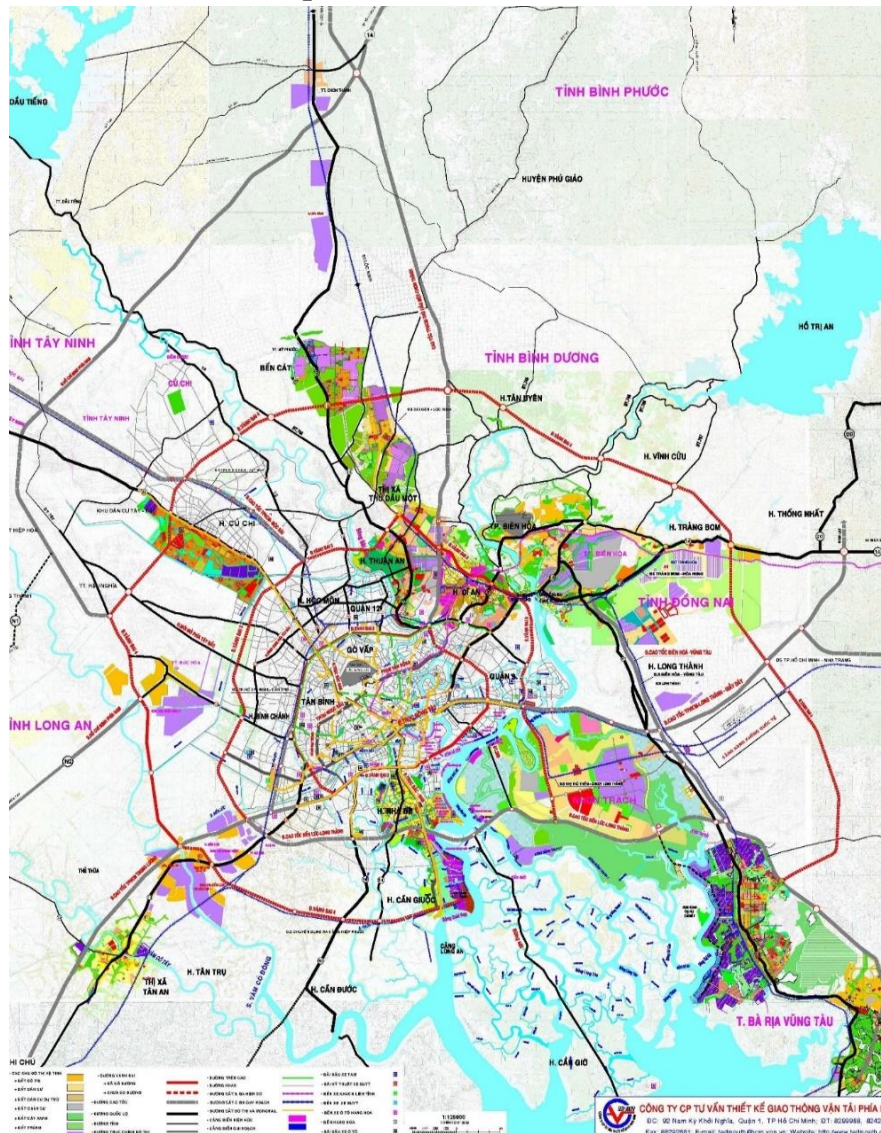
Since 1991, 18 coastal economic zones and 325 industrial zones have been established in Viet Nam. Figure 2 shows that, between 1994 and 2013, SEZs appeared in 63 of Viet Nam’s 64 provinces. In 2014, the Tay Bac economic zone was established in Dien Bien (in the remote northern region of Viet Nam), the last province in the country to receive a SEZ. Similar to SEZs in China (Wang, 2013; Figure 2), SEZs in Viet Nam were established in coastal provinces earlier than in remote areas (see Figure 2); however, the evolution of SEZs in Viet Nam lagged about 1 decade behind that of SEZs in China.<sup>7</sup> Figure 3 shows a further investigation of SEZs at the district level in Viet Nam. In 2013, nearly 50% of all districts in the country had been assigned an SEZ.

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<sup>6</sup> This paragraph closely follows the presentation by Dao (2018) in the Conference of Finance Policies for SEZs organised by the Ministry of Finance of Vietnam.

<sup>7</sup> See Wang (2013) for more details of the development of SEZs in China.

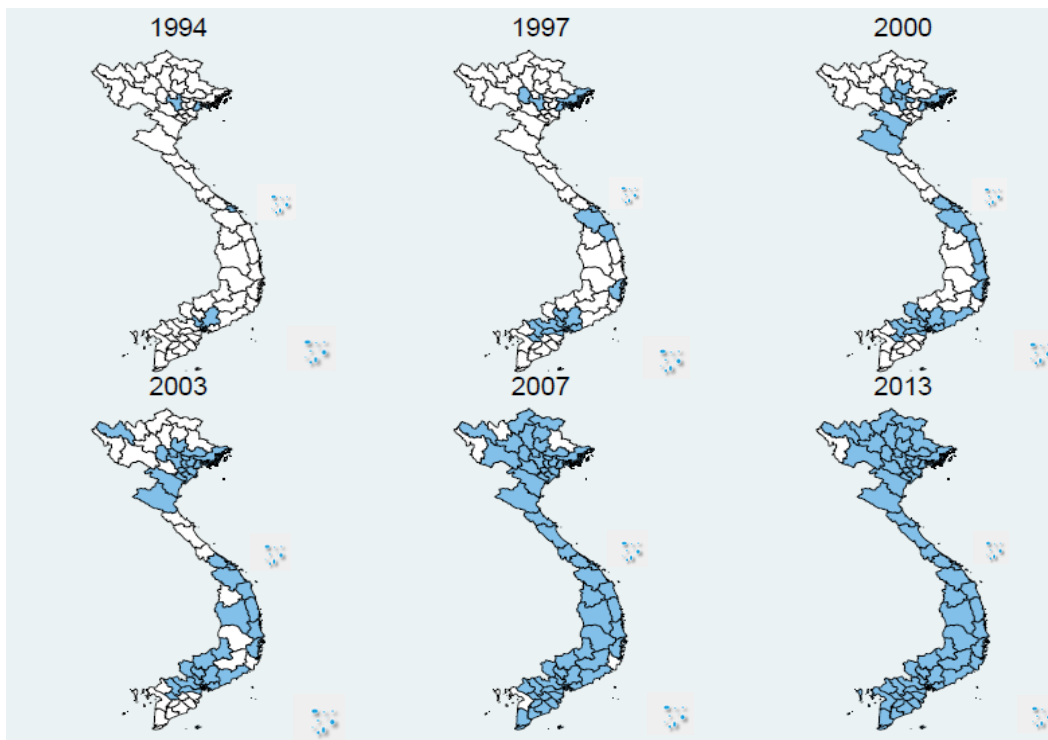
**Figure 1: Map of Transportation System in Ho Chi Minh City and Seven Southern Provinces in 2020, and Vision 2020 with the Presence of Special Economic Zones**



Note: Special economic zones are coloured purple, expressways are highlighted in grey, national highways are drawn in black, and ring roads are in red.

Source: Transport Engineering Design Joint Stock Incorporated South Company (2013), following the Decision of the President No. 568/QĐ-TTg (2013).

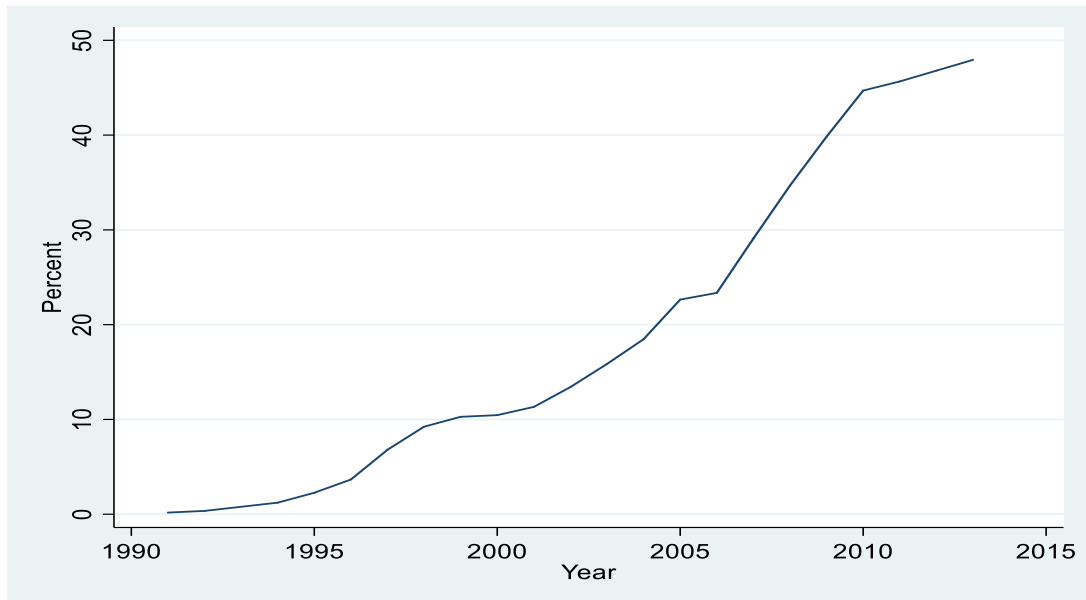
**Figure 2: Evolution of Special Economic Zones in Viet Nam by Province**



Note: Provinces with special economic zones are coloured blue. Some islands belonging to Viet Nam are not mapped due to the limitations of the province shape file.

Source: Authors' visualisation using Ministry of Planning and Investment of Vietnam (2011, 2013), *Annual Reports of SEZs from the Zones Management Department*. Mimeo. Hanoi: Ministry of Planning and Investment of Vietnam.

**Figure 3: Proportion of Districts with Special Economic Zones in Viet Nam**



Note: The total number of districts in Viet Nam was 574 in 1996 and 1995, 673 in 2006, 698 in 2011, and 703 in 2013 (see Ministry of Home Affairs, Institute for State Organizational Science (2019), 'Some Issues of Adjustment of Administrative Boundaries in our Country Today').

<http://isos.gov.vn/Thongtinchitiet/tabid/84/ArticleId/817/language/> (accessed 1 July 2019).

Sources: Authors' calculation using special economic zone reports from 2010 and 2013; Ministry of Planning and Investment of Vietnam (2011, 2013), *Annual Reports of SEZs from the Zones Management Department*. Mimeo.

### 3. Data

In this study, we compile three data sets for our analysis. Specifically, we exploit the Vietnamese Enterprise Survey (VES) data provided by the GSO (2011–2015) and district-level zoning data (ZONE) from the annual reports of the MPI from 1995 to 2013.<sup>8</sup> We also use data from the Survey of Technology Used in Manufacturing in Vietnam (TECH) managed by the GSO (2014). The VES is the main data set and is linked with the other two data sets.

Rich information from the VES firm-level data set allows us to calculate firm-level labour productivity by dividing total output by the total number of employees. The tax ratio can be measured as equal to the total tax bill divided by total profit at the firm level. Some information is given only for specific years. For example, in 2012, data reporting firms' satisfaction with the business environment is provided, while the surveys in 2011, 2013, and 2014 provide information about firms' land fees. VES data can also be used to analyse economic indicators at the district level by aggregating firm-level data within a specific district, such as number of employees, value of fixed assets, corporate tax bill, wage bill, output, and export values.

Moreover, the district-level zoning data provide information about the location and establishment year of each zone, which are not available from the VES firm-level data (in Viet Nam, a district is an administrative unit smaller than a province but bigger than a commune or ward). The VES data (GSO) and district-level data (MPI) can be merged using location codes (at the district level) and year. The firm-level data are then compiled into a panel data set. However, the VES data set only provides a sample of non-FDI firms in SEZs, since only certain firms were randomly chosen to answer the question about SEZs. Hence, to compare FDI firms and non-FDI firms on such dimensions as their performance, further investigation of the data may be necessary. In this study, SEZs encompass both industrial and economic zones (see section 1 of this report for the definition of zones according to legal documents).

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<sup>8</sup> See Ha and Kiyota (2014) for a description of the VES data from 2000–2009, Dao and Nguyen (forthcoming 2019) for an additional discussion of the VES in the same period, and Francois and Nguyen (2017) for the use of district-level data in analysing SEZs.

We also use TECH data from 2014 to investigate linkages amongst firms both within and outside SEZs (in terms of manufacturers' customers and suppliers). These data, which were compiled from a survey of a group of processing manufacturers in 2012, provide relevant and novel firm-level information about firm types, technology application and suppliers, number and firm types of intermediate suppliers, and final customers, amongst other things. The VES and TECH data are linked using the firms' identification key, year code, and province code.

#### **4. Business Environment and Foreign Direct Investment Firms in Special Economic Zones (2012)**

We assess the satisfaction with the business environment of FDI firms in SEZs in 2012 (see Table 4) and compare this with the satisfaction of FDI firms not in SEZs. We exploit data from firms surveyed regarding the 'level of advantage and difficulty of main issues for business activities of enterprise in 2012' in the VES. This yields a novel result about the assessment of the business environment by FDI firms in SEZs in Viet Nam that has not yet been presented in existing studies due to data limitations.<sup>9</sup>

Importantly, the probability that FDI firms in SEZs would assess the business environment as relatively favourable ranges from 12.9% to 27.8%, compared to 10.6–22.2% of FDI firms NOT located in SEZs (Tables 4 and 5). In particular, Table 4 indicates that 88%–97% of FDI firms in SEZs agreed that government administrative management, tax office management, customs office management, electricity and water services, transportation infrastructure, credit services supply, and supportive government policies probably do not create challenges for their business activities (according to the total possibility agreed by FDI firms for relatively favourable and normal policies). There was a very low probability that FDI manufacturers would report that issues in the business environment were seriously challenging their production (maximum 0.09%). Table 5 shows that the probability of FDI firms not in SEZs agreeing that these categories do not create challenges for their business ranges from 85.0% to 96.3%. Table 5 also indicates a very low probability that FDI firms not in SEZs would report that the business environment seriously challenges their production (a maximum probability of 2%).

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<sup>9</sup> Annual reports of Viet Nam's provincial competitiveness index (VCCI and USAID, 2011–2015) also provide information about obstacles and risks for FDI firms in Viet Nam, but not in SEZs specifically.

**Table 4: Advantages and Difficulties of Business Activities Experienced by Foreign Direct Investment Firms in Special Economic Zones in 2012 (% probability)**

	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7
Relatively favourable	0.182*** (28.76)	0.210*** (31.40)	0.162*** (26.13)	0.278*** (37.93)	0.207*** (34.87)	0.136*** (32.72)	0.129*** (31.33)
Normal	0.785*** (148.83)	0.759*** (132.96)	0.794*** (171.98)	0.679*** (110.71)	0.696*** (182.25)	0.746*** (272.28)	0.751*** (271.08)
Challenging	0.0297*** (19.42)	0.0292*** (20.24)	0.0386*** (19.87)	0.0389*** (23.12)	0.0880*** (28.60)	0.105*** (31.58)	0.103*** (30.74)
Very challenging	0.00311*** (8.49)	0.00254*** (8.14)	0.00549*** (12.11)	0.00420*** (10.25)	0.00896*** (13.88)	0.0133*** (17.90)	0.0162*** (19.45)
<i>N</i>	26337	26358	26008	26345	26326	26297	26262

Note: Category 1: government administration management, Category 2: tax office management, Category 3: customs office management, Category 4: electricity and water services, Category 5: transportation infrastructure, Category 6: credit services supply, Category 7: access to supportive government policies. Ordinary logit regression is applied; t statistics are in parentheses; robust standard errors are calculated.

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors, using General Statistics Office of Vietnam (2012), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office.

<https://www.gso.gov.vn/default.aspx?tabid=512&idmid=5&ItemID=9774> (accessed 1 March 2019).

**Table 5: Advantages and Difficulties of Business Activities Experienced by Foreign Direct Investment Firms NOT in Special Economic Zones in 2012 (% probability)**

	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7
Relatively favorable	0.150*** (18.55)	0.186*** (20.99)	0.136*** (18.17)	0.222*** (23.14)	0.150*** (23.86)	0.111*** (22.63)	0.106*** (21.96)
Normal	0.809*** (135.56)	0.777*** (110.40)	0.811*** (170.97)	0.721*** (103.21)	0.713*** (242.00)	0.744*** (252.88)	0.749*** (242.58)
Challenging	0.0370*** (14.84)	0.0337*** (15.80)	0.0467*** (15.70)	0.0515*** (17.35)	0.123*** (23.37)	0.128*** (23.98)	0.125*** (23.56)
Very challenging	0.00391*** (7.89)	0.00295*** (7.59)	0.00671*** (10.68)	0.00564*** (9.45)	0.0131*** (12.90)	0.0167*** (15.25)	0.0202*** (16.34)
<i>N</i>	26337	26358	26008	26345	26326	26297	26262

Note: Category 1: government administration management, Category 2: tax office management, Category 3: customs office management, Category 4: electricity and water services, Category 5: transportation infrastructure, Category 6: credit services supply, Category 7: access to supportive government policies. Ordinary logit regression is applied; t statistics are in parentheses; robust standard errors are calculated.

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Source: Authors' calculation using General Statistics Office of Vietnam (2012), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office.

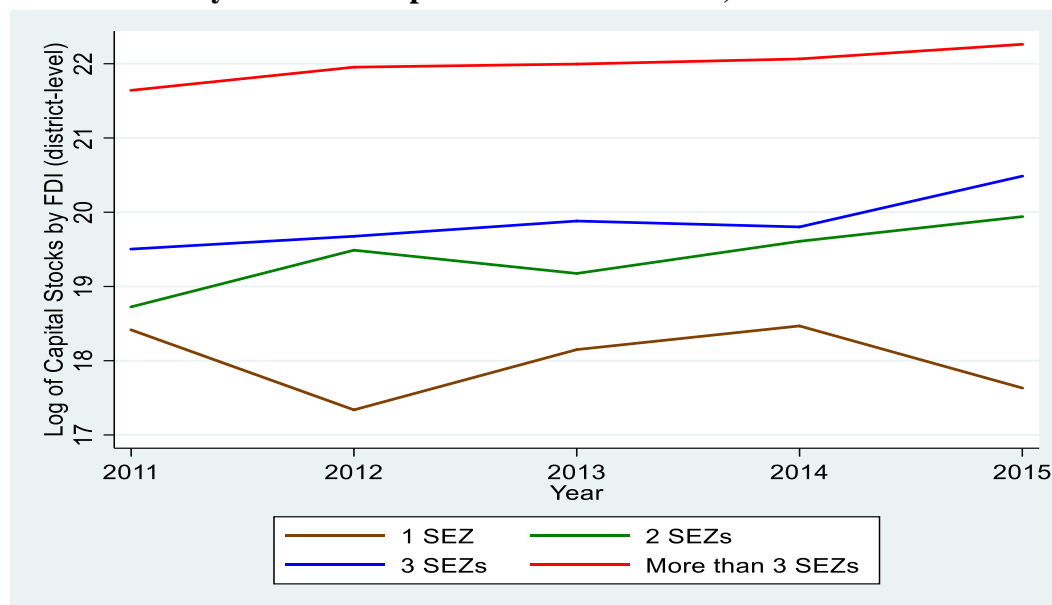
<https://www.gso.gov.vn/default.aspx?tabid=512&idmid=5&ItemID=9774> (accessed 1 March 2019).

## 5. Number of Special Economic Zones and Foreign Direct Investment

While the empirical model is designed consistent with the data used in the PSM method, it is difficult to use the non-parametric results to interpret covariates in the model, such as to answer the question of whether a higher number of SEZs is correlated with a larger amount of FDI at the district level. Due to the lack of data before 1995 when the first SEZ was established in Viet Nam, it is also not possible to use the difference-in-difference (DID) method to evaluate a causal link between SEZ density and a district's FDI.

Figure 4 shows a more ample flow of FDI in districts assigned a higher number of SEZs during the studied years. While a trend of increasing inflows of FDI capital stocks is seen in districts with more than one SEZ, the opposite trend is seen in districts with only one SEZ. This result is in line with the positive and significant FDI effects of SEZ intensity seen in China, which increase from the assignment of one SEZs to two and three SEZs, as estimated by Wang (2013).

**Figure 4: District-Level Capital Stocks by Foreign Direct Investment – Grouped by Number of Special Economic Zones, 2011–2015**



FDI = foreign direct investment, SEZ = special economic zone.

Note: Capital stocks are in log values.

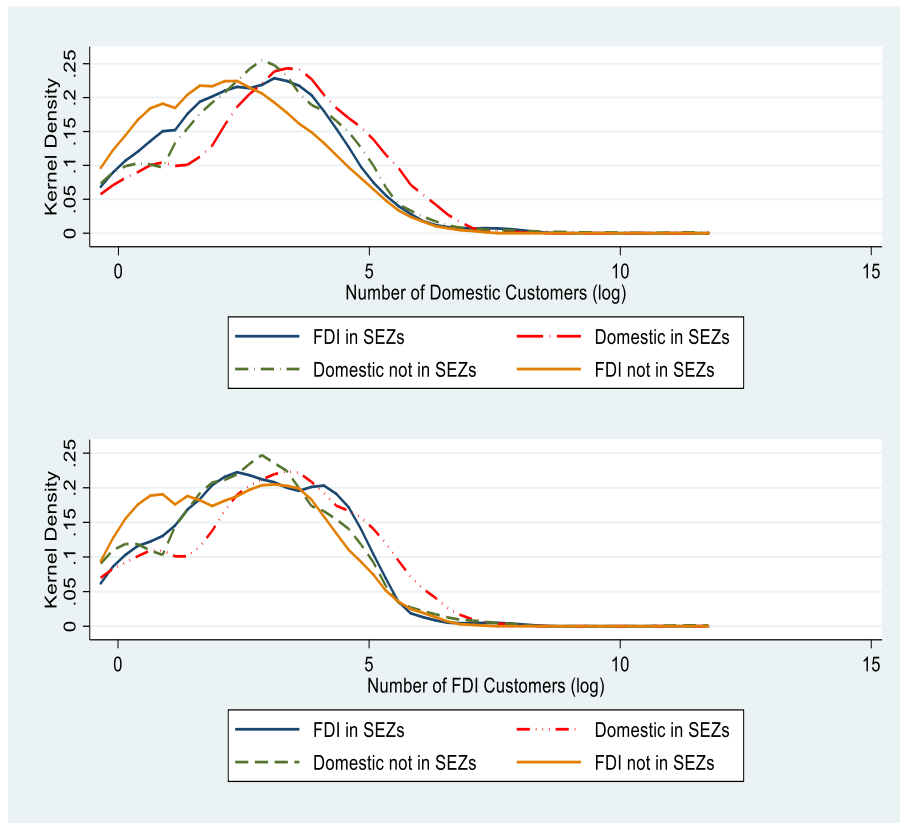
Sources: Authors' visualisation using data from General Statistics Office of Vietnam (2011–2015), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office. <https://www.gso.gov.vn/default.aspx?tabid=512&idmid=5&ItemID=9774> (accessed 1 March 2019); Ministry of Planning and Investment of Vietnam (2011, 2013), *Annual Reports of SEZs from the Zones Management Department*. Mimeo. Hanoi: Ministry of Planning and Investment of Vietnam.

## 6. Linkages Among Firms in Special Economic Zones and Firms not in Special Economic Zones (Customers and Suppliers)

Using firm-level data from 2014 compiled from the Survey of Technology Used in Production (GSO, 2014) and the VES (GSO, 2014) and applying the Kernel estimation, we visualise the results regarding the distribution of suppliers and customers (FDI and domestic) of firms (FDI and domestic) in SEZs compared to their counterparts not located in SEZs. This approach takes advantage of information in the survey about both domestic and foreign customers and suppliers that is not discussed in the literature about manufacturing linkages amongst FDI firms or amongst FDI firms and domestic-owned firms in Viet Nam.

Figure 5 shows a denser distribution of customers (both FDI and domestic) for domestic producers located in SEZs than for their FDI counterparts in SEZs, domestic firms not in SEZs, and FDI firms not in SEZs as of 2014.

**Figure 5: Customers of Foreign Direct Investment and Domestic Manufacturers (in Special Economic Zones and not in Special Economic Zones) in 2014**



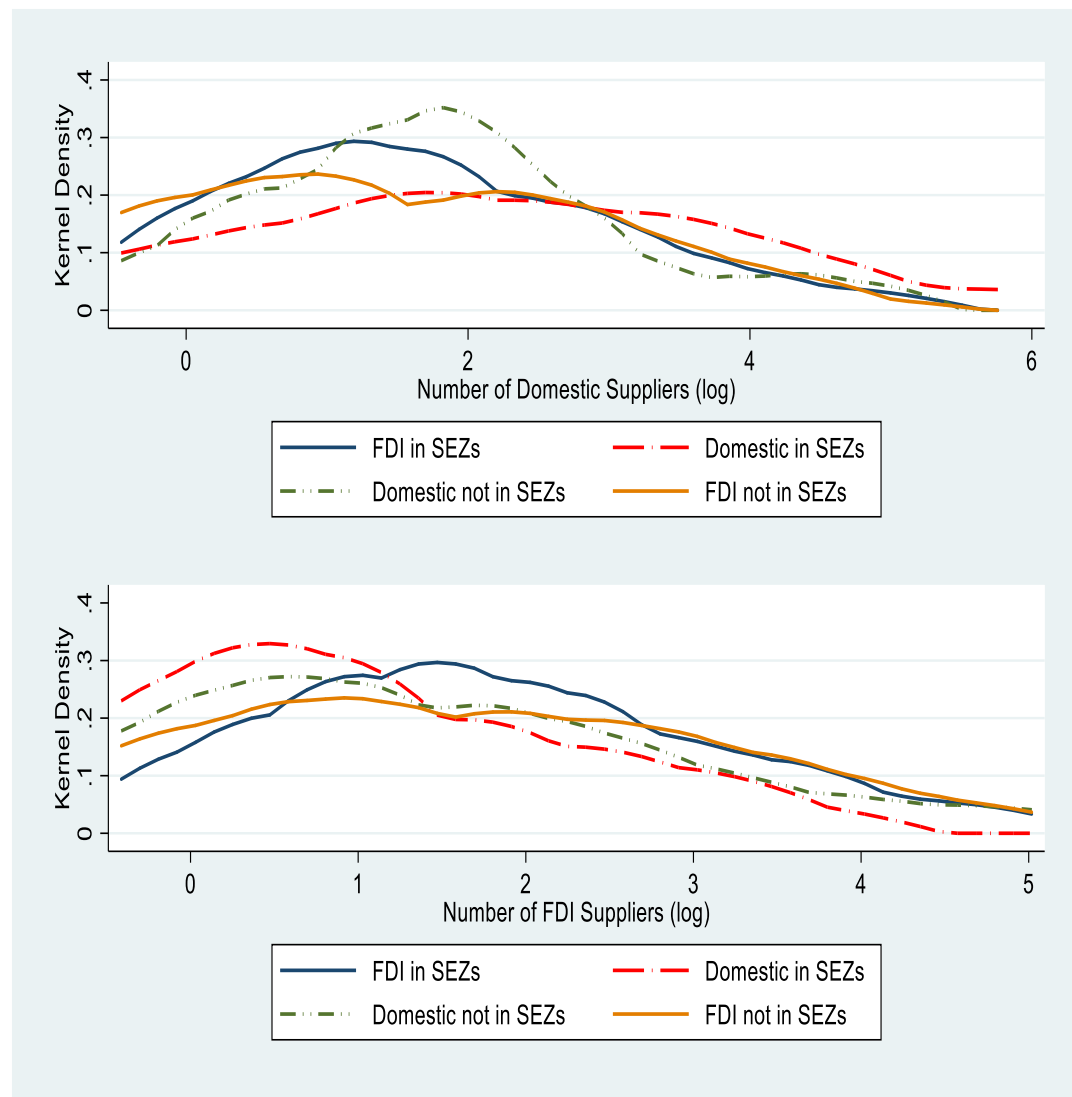
FDI = foreign direct investment, SEZ = special economic zone.

Sources: Authors' visualisation using data from General Statistics Office of Vietnam (GSO) (2014), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: GSO; GSO (2014), *Survey of Technology Used in Manufacturing in Vietnam*. Mimeo. Hanoi: GSO.



A different pattern is seen for the distribution of manufacturers' suppliers in 2014 (Figure 6). FDI suppliers are more closely connected with their FDI partners (both in and not in SEZs) than with their domestic partners. Meanwhile, domestic manufacturers in SEZs are more closely linked with domestic suppliers in terms of the number of suppliers compared to other firm types. FDI firms both in and not in SEZs have a similar density of domestic suppliers.

**Figure 6: Suppliers of Foreign Direct Investment and Domestic Manufacturers (in Special Economic Zones and not in Special Economic Zones) in 2014**



FDI = foreign direct investment, SEZ = special economic zone.

Sources: Authors' visualisation using data from General Statistics Office of Vietnam (GSO) (2014), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: GSO; GSO (2014), *Survey of Technology Used in Manufacturing in Vietnam*. Mimeo. Hanoi: GSO.

This pattern shows the weak connection between FDI firms and domestic firms. The results are in line with the results in the VCCI and USAIDS report (2011–2015). Moreover, the results clarify the linkages of FDI firms both in SEZs and non-SEZs with their partners.

## **6. Zoning Policies and Foreign Direct Investment Attraction**

In this section, we apply the non-parametric method to investigate the causal inference of SEZ experiments and the attraction of FDI capital stocks relative to total capital stocks in districts that have been assigned SEZs.

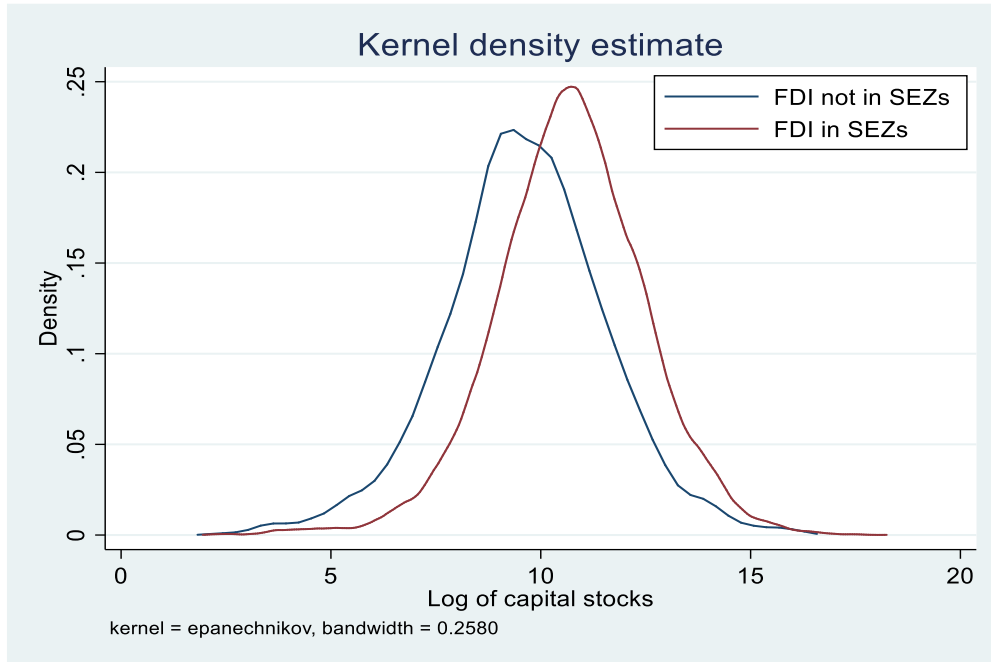
First, the Kernel estimation is applied to show the difference in FDI capital stocks between SEZs and non-SEZ areas. However, the first step only describes the statistical distribution of FDI capital stocks and does not provide evidence of causal inference on the part of SEZs. Next, PSM is used to present the causal link between SEZs and district-level FDI attraction.

### 6.1. Foreign Direct Investment in Special Economic Zones and Not in Special Economic Zones (Kernel Estimation)

#### a) Firm-Level Analysis

Figure 7 shows that FDI firms in SEZs invested higher capital stocks compared to FDI firms not in SEZs during 2011–2015.

**Figure 7: Capital Stocks of Foreign Direct Investment Firms, 2011–2015**



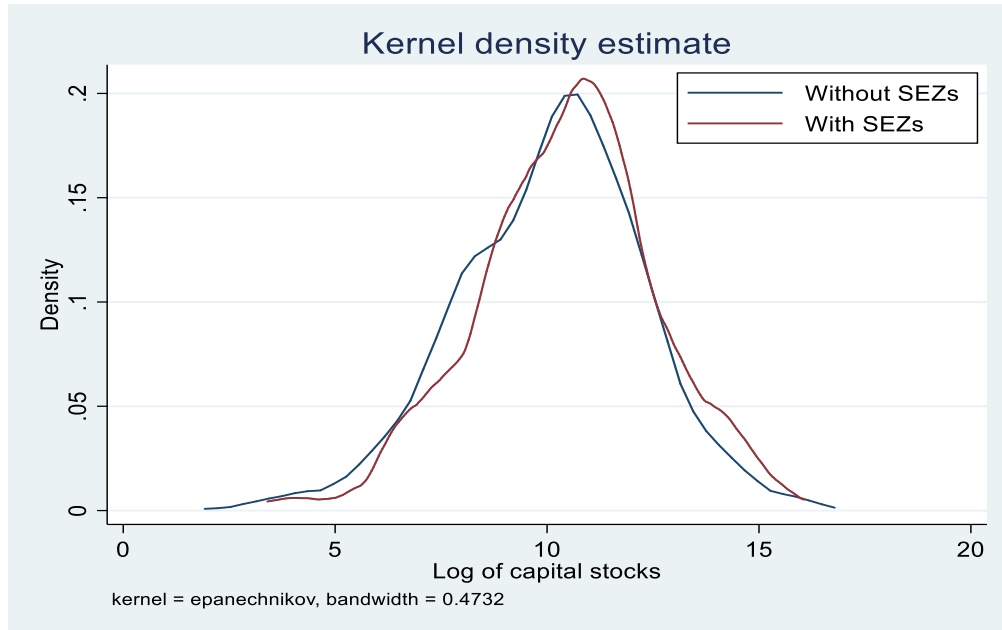
FDI = foreign direct investment, SEZ = special economic zone.

Source: Authors, using General Statistics Office of Vietnam (2011–2015), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office of Vietnam.

#### b) District-Level Analysis

The Kernel density graphs in Figure 8 indicate that districts with a greater density of SEZs show higher values of capital stocks (in log) compared to districts without SEZs during 2011–2015. Causal inference of SEZ experiments and FDI capital stocks is presented in more detail in section 4.2.

**Figure 8: Capital Stocks of Foreign Direct Investment Firms by District with Special Economic Zones and Without Special Economic Zones, 2011–2015**



SEZ = special economic zone.

Note: Capital stocks are fixed asset values.

Sources: Authors, using General Statistics Office of Vietnam (2011–2015), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office of Vietnam; Ministry of Planning and Investment of Vietnam (2011, 2013), *Annual Reports of SEZs from the Zones Management Department*. Mimeo. Hanoi: Ministry of Planning and Investment of Vietnam.

## 6.1 Effects of Special Economic Zones on Foreign Direct Investment Attraction (Propensity Score Matching)

We analysed the data to determine how FDI capital stocks are attracted to a specific district in the context of SEZs. The effects of SEZs on FDI attraction have been studied in the literature using a DID estimation, for example, in case studies of SEZs in China (Wang, 2013) and India (Chakraborty, Gundimeda, and Kathuria, 2017). However, we cannot trace the ‘pre-treatment’ effects since the first survey of firm-level data was carried out in 2000 while the first SEZ in Viet Nam was established in 1991. Therefore, instead of using the DID method, we apply the PSM and exploit district-level panel data (this application also closely follows Wang, 2013). The PSM allows us to evaluate the impacts of SEZ experiments on FDI attraction at the district level by matching districts with treatment (with SEZs) and districts without treatment (without SEZs) that have similar covariates of probability that the SEZs treatment is assigned.

In particular, we apply the PSM to estimate the ATET (average treatment effects on treated). This yielded the average expected effects of SEZ experiments on FDI in districts with SEZs (proxied by the ratio of FDI capital stocks to total capital stocks in the district). This is presented in the following equation:

$$ATET_{d,t} = E [ Y_{d,t} (1) - Y_{d,t} (0) | (SEZ_{d,t} = 1, X_{d,t}) ]$$

where  $d$  = district and  $t$  = year.  $Y$  is  $FDI_{d,t}$ , which is the ratio of capital stocks invested by FDI firms to total capital stocks of district  $d$  at year  $t$ .  $SEZ$ , the dummy variable = 1 if district  $d$  has SEZs.  $X_{d,t}$  is other control variables at the district level, such as tax rate (enterprise income tax), rate of debt in total equity, output per worker, financial fee per unit of debt used, and land fee per unit of revenue. As we lack data for the number of citizens by district, we calculate statistics per worker instead of per capita, as introduced in Wang (2013).

**Table 6: Description of District-Level Data (2011–2015)**

Variable	Observation	Mean	Std. Dev
FDI capital stocks ratio (log[1+ratio])	2,423	0.171	0.234
Output per worker (log)	2,427	6.138	1.125
Tax rate (%)	2,417	0.303	1.554
Debt/equity rate (%)	2,409	1.760	21.371
Financial fee per unit of debt (log)	1,273	-4.224	1.906
Land fee per unit of revenue (log)	1,227	-4.516	2.857

FDI = foreign direct investment, Std. Dev. = standard deviation.

Note: Capital stocks are fixed asset values. Information about land fee per unit of revenue is available only for 2011, 2013, and 2014.

Sources: Authors, using General Statistics Office of Vietnam (2011–2015), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office of Vietnam; Ministry of Planning and Investment of Vietnam (2011, 2013), *Annual Reports of SEZs from the Zones Management Department*. Mimeo. Hanoi: Ministry of Planning and Investment of Vietnam.

The PSM is applied by pooling data from all years during 2011–2015 and from each year. Table 7 shows that the average effects of SEZ experiments on FDI in districts with SEZs are positive. The results with the log values of dependent variables, as seen in Table A1, also show that the assignment of SEZs has a positive effect in attracting district-level FDI.

**Table 7: Average Effects of Special Economic Zone Experiments on Capital Stocks by Foreign Direct Investment in Districts with Special Economic Zones**

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
FDI capital stocks ratio	All years	2011	2012	2013	2014	2015
ATET	0.215***	0.216***	0.162***	0.226***	0.208***	0.215***
(SEZs = 1)	(12.47)	(5.49)	(3.87)	(6.19)	(6.12)	(5.37)
Observations	1,270	239	188	274	297	272

ATET = average treatment effects on treated, FDI = foreign direct investment, SEZ = special economic zone.

Notes: t statistics in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

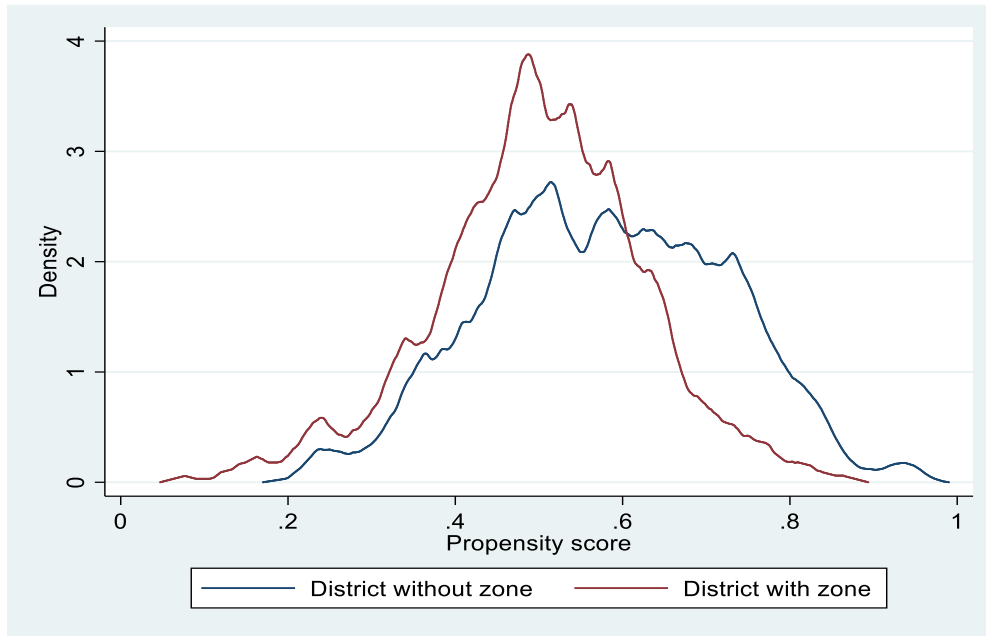
An overlap test is applied. Variables are in log value, except for tax rate and debt/equity rate. As FDI investment to a district can equal zero, we calculate the FDI capital stocks ratio =  $\log(1 + \text{FDI capital stocks}/\text{total capital stocks})$ .

When not controlling for year fixed effects, the coefficient in column (1) is 0.218\*\*\*.

Source: General Statistics Office of Vietnam (2011–2015), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office of Vietnam.

In Figure 9, we plot the estimated densities of the probability of zone assignment (district with or without a SEZ) to check the overlap assumption, that is,  $0 < \Pr(\text{SEZ}_d, t = 1, X_d, t) < 1$ .

**Figure 9: Estimated Densities of the Probability of Zone Assignment (Overlap Check)**



Sources: Authors, using General Statistics Office of Vietnam (2011–2015), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office of Vietnam; Ministry of Planning and Investment of Vietnam (2011, 2013), *Annual Reports of SEZs from the Zones Management Department*. Mimeo. Hanoi: Ministry of Planning and Investment of Vietnam.

We add a new variable – cost for land use by unit of output (available for 2011, 2013, and 2014 in the PSM estimation) – confirming the positive average effects of SEZs on capital stocks by FDI (see Table 8).

**Table 8: Average Effects of Special Economic Zone Experiments on Capital Stocks by Foreign Direct Investment in Districts with Special Economic Zones (cont.)**

Dependent variable	(1)	(2)	(3)
FDI capital stocks ratio	2011	2013	2014
ATET (SEZs = 1)	0.193*** (3.52)	0.226*** (5.11)	0.203*** (4.17)
Observations	202	253	278

ATET = average treatment effects on treated, FDI = foreign direct investment, SEZ = special economic zone.

Notes: t statistics in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

An overlap test is applied. Variables are in log value, except for tax rate and debt/equity rate. As FDI investment to a district can equal zero, we calculate FDI capital stocks ratio =  $\log(1 + \text{FDI capital stocks} / \text{total capital stocks})$ .

Source: General Statistics Office of Vietnam (2011, 2013, 2014 [years in which land fees data are available]), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office.

<https://www.gso.gov.vn/default.aspx?tabid=512&idmid=5&ItemID=9774> (accessed 1 March 2019).

In short, the results reported in Tables 7 and 8 show that the average expected effects of SEZ experiments on district-level FDI capital stocks are positive.

## 7. Conclusion

This report provides a rich summary of information about SEZs and FDI attraction in Viet Nam that may be useful for place-based policy enhancement in the country. It includes a brief review of the development of SEZs in Viet Nam, from 1991 when the first SEZ was established, through 2015 when SEZs appeared in all 64 provinces, including the policy updates introduced.

In general, FDI firms in SEZs assessed the business environment in SEZs as relatively favourable, with an 18.2%–27.8% probability in 2012 (0.23%–0.57% higher than FDI firms not in SEZs). The lowest probability that FDI firms would assess SEZs as relatively favourable is estimated in customs services, credit services supply, and access to supportive government policies. Meanwhile, FDI firms appreciate local governments' great efforts to control tax office management, electricity and water services, and transportation infrastructure. Regionally, districts with a larger number

of SEZs attract more FDI capital stocks. More importantly, novel empirical evidence from a non-parametric estimation of district-level data indicates that SEZ assignment attracted a greater amount of FDI capital stocks (relative to total capital stock in the industry) in manufacturing from 2011 to 2015. Thus, SEZs in Viet Nam play a role in successfully attracting FDI. Nevertheless, in 2014 linkages amongst FDI firms in SEZs and their customers and suppliers were weaker than those of their domestic counterparts, except for their connection with FDI suppliers.<sup>10</sup> This could prevent spillovers from FDI firms to domestic firms (VCCI and USAID, 2011–2015). At the industry level, FDI capital stocks in some industries (relative to total capital stocks in the industry) still show negative growth rates, especially in the FDI priority group (indicated in the World Bank’s 2018 drafted plan for FDI attraction and facilitation in Viet Nam [2018–2030]), such as the manufacture of chemicals (-13.92%) and fabricated metal (-3.84%). The FDI capital stock ratio in other industries in the FDI priority group is growing slowly, for example, at rates of 1.31%–2.26% for non-metallic minerals and the manufacture of computer, electronic, and optical products. Possible reasons for this reluctant growth include characteristics of firms in a specific industry (such as firm type or initial fixed asset installment), national protection of some conditional domestic industries (for FDI entry), export orientation, the better performance of domestic industries, or the greater attraction of other industries such as real estate (for incumbent FDI firms).

Given these circumstances, we offer some suggestions to attract more FDI in SEZs. First, regarding the business environment, SEZs in Viet Nam should improve customs services, credit services supply, and access to supportive government policies. Second, to accelerate FDI flows by encouraging the establishment of more SEZs, other fiscal incentives apart from corporate income tax exemptions, such as land rent exemptions to enhance the capacity of zone developers, should be considered because the construction and operation of infrastructure in SEZs qualify as a special incentive industry under current favourable tax incentive regulations. Third, linkages amongst FDI firms in SEZs and other firms regionally can be enhanced by the development of domestic small and medium-sized enterprises in supporting industries. Fourth, policies

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<sup>10</sup> These results are in line with the general results of surveys of FDI firms regarding the business environment in Viet Nam (VCCI and USAIDS, 2011–2015).



to accelerate FDI flows to specific industries could be implemented in conjunction with the regional SEZ development plan (2006–2020), taking into consideration the comparative advantages of each region.<sup>11</sup> In particular, according to the SEZ development plan, the manufacture of chemicals and chemical products (which was experiencing a negative growth rate in terms of FDI capital stock industry) is targeted in regions such as the northern midlands and mountains, Red River delta, central coast, southeast, and Mekong River delta; and textiles, in which FDI capital stocks grew at a low rate, is a targeted industry in the Red River delta, the central coast, and the southeast regions. FDI giants capable of boosting an industrial-level FDI growth rate and bringing a new generation of investment should also be a priority for FDI attraction in the SEZs. Finally, provincial governments in remote areas (with poor economic conditions) may not aim to attract FDI when establishing SEZs but may prioritise job creation, higher local wages, and the development of local export-oriented industries. The assignment of SEZs in underperforming areas (such as Phu Yen, Cao Bang, and Bac Kan provinces) might be supportive of FDI investors together with other, more important regional infrastructure conditions such as roads, internet, and energy and telecommunication services (see Figure A1). Although providing corporate tax incentives has not been effective at changing the disparity in regional FDI, it may be possible to encourage the establishment of SEZs in remote areas through less expensive land rent and better infrastructure and administration.<sup>12</sup> Such policies require cooperation between the provincial governments and SEZ developers. Providing more favourable fiscal incentives to investors, such as less expensive land rent, reduces the budget burden of local governments.

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<sup>11</sup> See

<http://www.chinhphu.vn/portal/page/portal/chinhphu/noidungcackhucongngghiepkhuchexuat?categoryId=879&articleId=10001189> (accessed 1 March 2019).

<sup>12</sup> The corporate tax rate in industrial and export-processing zones in regions facing socioeconomic difficulties is the same as in the regions, and the tax rate in economic zones and high-technology parks in regions facing especially difficult socioeconomic conditions is the same as in the regions.

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## Appendix

We calculate the dependent variables using the [log of foreign direct investment (FDI) capital stocks ratio] instead of the [log of (1+ FDI capital stocks ratio)]. The positive effects of increasing district-level FDI capital stocks induced from the assignment of special economic zones are confirmed in Table A1.

**Table A1: Average Effects of Special Economic Zone Experiments on Capital Stocks by Foreign Direct Investment in Districts with Special Economic Zones**

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
FDI capital stocks ratio	All years	2011	2012	2013	2014	2015
ATET (SEZs = 1)	1.755*** (9.67)	1.927*** (3.81)	2.497*** (4.13)	1.507*** (4.30)	2.200*** (5.21)	2.082*** (6.21)
<i>N</i>	1034	180	150	225	248	231

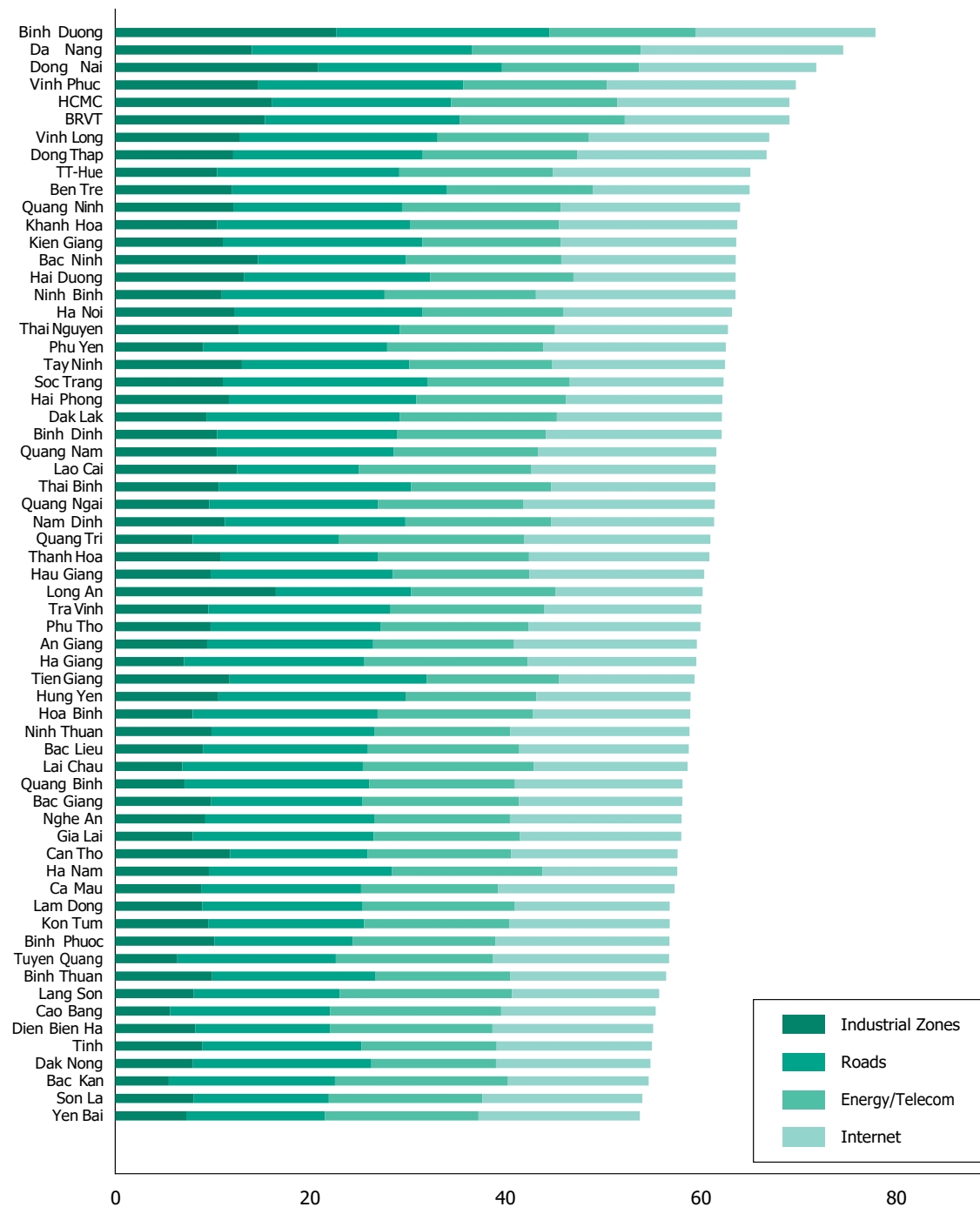
ATET = average treatment effects on treated, FDI = foreign direct investment, SEZ = special economic zone.

Notes: t statistics are in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

An overlap test is applied. Variables are in log value, except for tax rate and debt/equity rate. We calculate the FDI capital stocks ratio =  $\log(\text{FDI capital stocks}/\text{total capital stocks})$ .

Source: General Statistics Office of Vietnam (2011–2015), *Vietnamese Enterprise Survey*. Mimeo. Hanoi: General Statistics Office of Vietnam.

**Figure A1: The 2015 Infrastructure Index**



BRVT = Ba Ria Vung Tau, HCMC = Ho Chi Minh City, Telecom = telecommunications, TT-Hue = Thua Thien Hue.

Source: Vietnam Chamber of Commerce and Industry and United States Agency for International Development (2015), *The Vietnam Provincial Competitiveness Index Report*. Hanoi: Vietnam Chamber of Commerce and Industry and United States Agency for International Development.

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