How Foreign Direct Investment Impacts Domestic Productivity: The Case of Vietnam

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Abstract

Foreign direct investment (FDI) has long been known as a vital driver of economic growth in many developing countries by providing capital boosts, generating employment, and introducing advanced technology. This paper focuses on a more long-term economic impact of FDI — the productivity spillover effect — in the specific case of Vietnam. Using firm-level data from the Vietnam's Enterprise Survey from 2013 to 2022, I conduct a regional analysis to investigate 1) how foreign presence affects the productivity of firms in the region, and 2) how engagement in international activity further boosts firms' productivity. Findings indicate that both domestic and foreign firms experience a statistically significant productivity boost as the level of foreign presence in the province increases, with domestic firms seeing a more substantial positive impact. Overall, my study aims to present a comprehensive picture of the dynamic between FDI and domestic productivity, thereby offering insights into how foreign investment can shape Vietnam's economic landscape. This research can help inform Vietnam's strategic FDI policies to foster technological advancement and strengthen its global economic integration, which has become a critical priority as the country navigates an unprecedented influx of high-tech foreign investment spurred by the ongoing US-China trade war.

JEL classification: F21; F43; O30; O33

Keywords: FDI, Productivity, Knowledge Spillover, Vietnam, Economic Development

1. Introduction

The relationship between foreign direct investment (FDI) and economic growth in developing countries is a subject of significant academic interest, offering insights into how international capital flows can influence development trajectories. On one hand, foreign investment serves as a critical driver of economic growth by providing substantial capital for infrastructure and industrial development, creating new employment opportunities, and introducing advanced technologies that enhance productivity in local industries. Additionally, FDI can drive the development of physical and social infrastructure such as transportation and education, as well as help domestic companies access new markets and integrate into global supply chains. On the other hand, large foreign firms might outcompete local businesses and perpetuate monopolistic practices, especially in developing countries with less stringent antitrust laws. Foreign investors also have an incentive to withhold knowledge transfer to local workers in order to preserve their competitive edge; instead, they might choose industries that prioritize manual over skilled labor, thus contributing minimally to the development of the local workforce's quality. Therefore, while the immediate economic benefits of FDI are evident, these opposing forces at play make the dynamic between FDI and domestic productivity a much more complex issue.

My paper delves into the impact of foreign presence on domestic productivity in Vietnam, focusing on 11 provinces (out of 63 total) that historically received the highest levels of FDI. Vietnam makes a fascinating case study for three reasons. First, while it stands out as a dynamic growth story in the Southeast Asia region, unlike the Asian Tigers that have relatively matured in their development trajectories, Vietnam is still in its pivotal stage — a "sweet spot" that provides a rich ground for observing technological progress and industrial transition. Second, Vietnam's significant dependence on FDI and attractiveness to foreign investors are noteworthy. In 2023,

FDI accounted for 4.3% of Vietnam's GDP, a comparatively high figure compared to the world's average of 0.7% (World Bank, 2025). This investment influx is enthusiastically supported by the Vietnamese government's proactive stance, which includes economic reforms and appealing tax incentives for foreign investors. Third, Vietnam is poised to see a significant increase in FDI as the US - China trade war intensifies and more companies seek to relocate operations away from China. This first occurred in 2018 when the Trump administration started to impose heavier tariffs on China — by 2019, the average tariff on Chinese exports to the US had risen to 21% compared to just 3% in 2017 (Peterson Institute for International Economics, 2023). Vietnam's proximity to China, similar cultural and economic traits, competitive labor costs, and political stability made it an attractive destination for firms seeking to diversify their supply chains. With Trump's return to office, the trend is now re-emerging: in March 2025, the United States raised the tariff rate on Chinese imports to 20% (Business Insider, 2025), and as of April 11, 2025, this figure has surged to 145% (NBC News, 2025). This makes investigating the impact of foreign presence on Vietnam's domestic economy even more relevant and necessary.

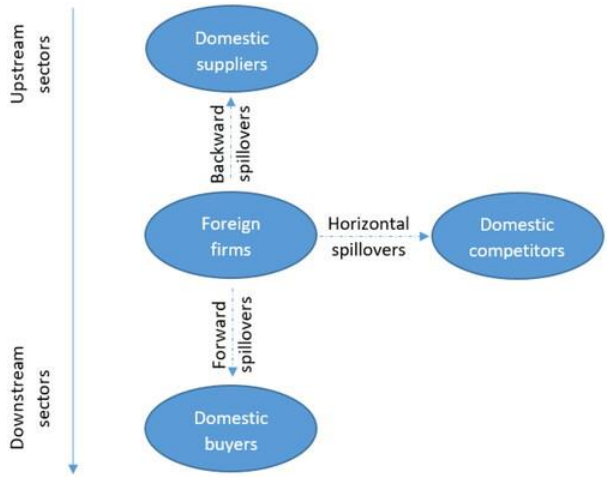
Through my study, I want to explore two following questions: 1) how foreign presence impacts domestic productivity, and 2) how engagement in international activity is related to firms' productivity. Addressing these questions is important for guiding Vietnam's future economic development strategies. By understanding the dynamic between FDI and domestic productivity, policymakers can allocate resources more efficiently, such as developing specialized training programs to enhance the local workforce's skills in key sectors or investing in infrastructure to support the most prospective regions. Moreover, policymakers can tailor new FDI policies to attract the right types of foreign investments that foster productivity spillover. Ultimately, this

research aims to provide a foundation for informed decision-making to maximize the benefits of foreign presence for Vietnam's economic growth.

2. Literature Review

Numerous studies have been conducted on FDI productivity spillover effects in various countries. The most prevalent approach is to categorize different channels of spillover and measure them separately. There are two primary forms of spillover: horizontal and vertical. Horizontal spillovers occur within the same industry, where domestic companies might imitate their foreign competitors, hire experienced employees from foreign firms, or intensify their innovation efforts to better compete with foreign entrants (OECD, 2009). Meanwhile, vertical spillovers take place between different industries, typically between manufacturers and distributors. Forward linkages allow productivity to flow from foreign manufacturers to domestic distributors, while backward linkages enable domestic manufacturers to benefit from the advanced technologies or materials provided by their foreign distributors (OECD, 2009).

Figure 1. Channels of productivity spillover (OECD, 2009)



In current literature, the effects of horizontal spillovers are commonly measured as the level of foreign presence within each industry. This provides a quantifiable way to assess the intensity of foreign involvement and its potential impacts on local firms operating in the same market. The influence of foreign presence within a sector is often calculated in one of three ways: the proportion of output produced by foreign firms relative to total industry output, the share of labor employed by foreign firms versus total labor in the industry, or the ratio of capital in foreign firms to the industry's total assets. The first method is used by Du, Harrison, and Jefferson (2012) to study horizontal spillovers in China's manufacturing sector, where they find that the productivity spillover is insignificant. Similarly, Aitken and Harrison (1999) adopt this method for Venezuelan manufacturing firms and observe that while foreign presence boosts productivity for other foreign-owned plants, it negatively impacts domestic-owned plants due to competitive pressures. The second approach, which focuses on foreign employment share, is applied by Kugler (2006) for Colombian manufacturing, where no significant horizontal spillover effects are identified. Konings (2001) also uses employment as a measure in Eastern European manufacturing and reports limited positive spillovers, alongside some negative effects from competition. Lastly, the third method of measuring foreign participation using share of industry capital is less common compared to the previous two. Kolasa (2008) studies Polish manufacturing with this framework and reveals positive spillovers, especially in industries with higher foreign capital, with the extent of spillover varying with firms' absorptive capacity.

Vertical spillovers are harder to measure because they require detailed data on intermediate input transactions between industries. Researchers would use different proxies based on data availability in their country of interest, but most studies generally rely on data that reflects the flow of inputs and outputs between upstream and downstream industries, such as manufacturing census

data or input-output tables. Interestingly, the findings are quite consistent across countries despite variations in contexts and methodologies: vertical spillovers — both forward and backward — are generally found to be positive. Regarding forward linkages, Schoors and Van der Tol (2002) investigates the relationship between the presence of foreign firms in Hungarian upstream industries and the performance of local downstream firms and reports positive effects. Kugler (2006) also indicates positive forward spillovers from analyzing the share of inputs sourced from foreign firms in upstream sectors of Columbia. Regarding backward linkages, Javorcik and Spatareanu (2008) use firm-level data from Romania and calculate the share of output in downstream industries produced by foreign firms, weighted by the proportion of inputs supplied by upstream industries. They find positive spillovers to domestic suppliers, especially when the foreign distributors are from countries with strong traditions of technology transfer like Japan and the United States. Blalock and Gertler (2008) also report positive backward spillovers when analyzing plant-level data from Indonesia's annual manufacturing surveys, where they evaluate backward linkages as the share of inputs purchased from foreign firms in upstream industries. Havranek and Irsova (2011) take a broader perspective by conducting a meta-analysis of 57 studies across 47 countries. They measure backward spillovers by examining the share of output sold by foreign firms to domestic suppliers and conclude that spillovers are significant, with stronger effects in open economies and those with underdeveloped financial systems. Moreover, foreign investors from countries with technological advantages tend to generate larger spillovers.

Within the context of Vietnam, there has also been extensive research on the impact of FDI spillovers on domestic firms' productivity. Most studies rely on firm-level panel data from Vietnam's General Statistics Office, with periods ranging from 2000 to 2017. Due to the lack of production output data, revenues are commonly used as a proxy for output. The extent of horizontal

spillovers is typically measured by the share of revenues generated by foreign firms relative to total industry revenues, while vertical spillovers effects are often calculated with input-output tables. The findings show general agreement on the significance of backward linkages but mixed results for horizontal spillovers and forward linkages. Nguyen et al. (2008) find positive backward spillovers in Vietnam's manufacturing sector but report no horizontal or forward spillovers in this industry. Similarly, Le and Pomfret (2011) report positive backward spillovers but find negative horizontal spillovers and no significant forward spillovers. Nguyen (2024) also identifies positive backward and forward linkages, highlighting productivity benefits for domestic firms interacting with foreign enterprises, but finds no horizontal spillovers. Meanwhile, Newman et al. (2014) find positive forward spillovers, where domestic firms gain from sourcing inputs from foreign suppliers, but observe no significant horizontal spillovers and mixed effectiveness of backward linkages depending on industry and firms' absorptive capacity.

In addition to the above methodologies, some studies employ more innovative approaches to explore the productivity spillover effect. Haskel, Pereira, and Slaughter (2002) bypass the traditional division of spillovers into horizontal and vertical channels and instead emphasize the overall impact of foreign presence on the productivity of domestic plants. Using plant-level panel data in the UK manufacturing sector, they measure foreign presence as the share of labor employed by foreign firms. Their findings reveal significant positive spillovers at the industry level, aligning a 10% increase in foreign presence with a 0.5% boost in domestic TFP, but report no significant spillovers at the regional level. Similarly, Moussa et al. (2019) investigate the impact of foreign presence on domestic manufacturing firms in Cameroon, using employment share, capital share, and sales share of foreign firms as different proxies for foreign involvement. Their study shows that FDI has a negative impact on the productivity of domestic-owned manufacturing firms: a 1%

increase in the productivity of foreign firms results in a 4.4% decline in the productivity of domestic firms, while a 1% increase in the presence of multinational corporations decreases domestic firms' sales growth by 0.1%. Lastly, Jordaan (2017) also uses the same approach for Malaysia's manufacturing sector and shows positive productivity spillovers from both high-skilled and low-skilled foreign workers, with stronger impacts observed in labor-intensive, export-oriented industries.

Inspired by Haskel, Pereira, and Slaughter (2002), I want to take a holistic approach in investigating the dynamic between foreign presence and domestic productivity, instead of separating the effects into horizontal and vertical linkages. My paper aims to contribute to the current literature on FDI's productivity spillover in two ways. First, in the context of Vietnam, most studies follow the traditional analysis of horizontal versus vertical spillover, while few employ this integrative framework. Nevertheless, I believe separating spillovers into channels risks overlooking the interconnectedness of industries and the broader systemic impacts of foreign investment. This broader approach should allow for a more thorough understanding of the impact of FDI. Second, my paper examines foreign presence from a geographic perspective rather than the common industry-specific angle, i.e. how foreign presence in a province can affect the productivity of all firms in that region. Foreign investment can drive developments of infrastructure, business regulations, and workforce education, which can benefit all firms in the province regardless of industry. Indeed, co-agglomeration patterns reveal that cross-industry interactions can drive regional synergies, such as shared labor markets, innovation clustering, and knowledge spillovers (Ellison, Glaeser, and Kerr, 2010). By integrating these dimensions, my study aims to uncover the nuanced ways in which foreign investment influences domestic

productivity and offers a comprehensive picture of how foreign investment can shape Vietnam's economic landscape.

Section 3 describes my dataset and data cleaning process. Section 4 presents my methodology and regressions. Section 5 reports empirical results and discusses their implications. Section 6 concludes.

3. Data Description

To analyze the impact of foreign presence and international activity on domestic productivity, I measure each firm's productivity alongside the level of foreign presence in its province. This analysis requires data on each firm's ownership structure, involvement in international activity, revenues, number of workers, industry, and province.

My primary dataset is the 2013 - 2022 Vietnam Annual Enterprise Survey of firms in the 11 provinces (out of 63 total) that historically received the highest levels of FDI, namely Hanoi, Ho Chi Minh City, Hai Phong, Bac Ninh, Bac Giang, Vinh Phuc, Hung Yen, Dong Nai, Ba Ria - Vung Tau, Binh Duong, and Long An. Conducted annually by the General Statistics Office of Vietnam (GSO), the survey offers firm-level data on ownership structure, number of employees, fixed assets, revenues, and whether the firm had interactions with foreign partners. It is worth noting that while the dataset includes all firms in these provinces for every year, a lot of data were actually GSO's imputations. GSO surveyed all firms in 2016 and 2020; for other years, they only surveyed a sample of firms, then imputed revenues, labor, and fixed assets for all non-surveyed firms. Such imputation leads to many zero and missing values; however, to avoid bias, I do not do any further imputations. My only modification to revenues and fixed assets is converting them to

real terms, with 2013 as my base year, using Vietnam's consumer price index data from the International Monetary Fund. All summary statistics can be found in the Appendix.

I categorize firms as domestic or foreign based on their responses to the ownership type question in the survey. From 2013 to 2020, the survey clearly differentiated domestic firms from foreign firms, where foreign is defined as having any percentage of foreign ownership, even if the foreign investors do not hold controlling shares. In 2021 and 2022, the ownership type question no longer made this distinction, but there is now additional data on each firm's percentage of foreign ownership. To maintain consistency with previous years' definitions, I thus identify foreign firms in 2021 and 2022 as those whose percentage of foreign ownership is larger than zero. My assumption is that even if foreign investors do not hold a majority stake, firms that receive any amount of foreign investment are likely to be inherently different from 100%-domestic firms, as their productivity can be influenced either by foreign-driven organizational changes or their own efforts to attract or satisfy foreign investors. For 2021 and 2022, the average percentage of foreign ownership among foreign firms is 95% and the median is 100%. In total, 96.5% of all observations in my dataset are domestic firms and 3.5% are foreign.

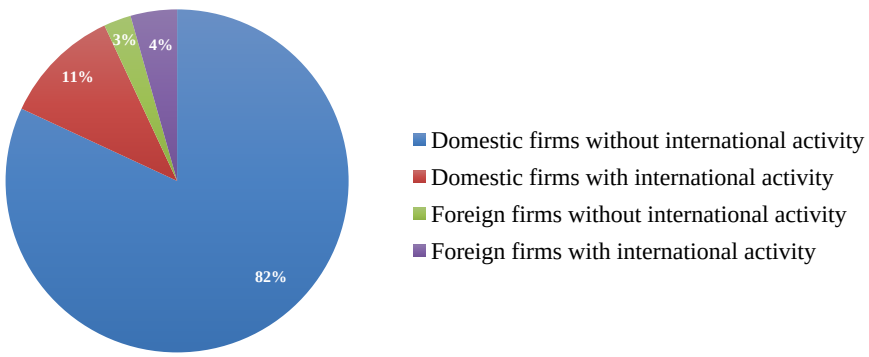
I also consider whether firms engage in any international activities to assess the impact of such interactions on their productivity. I define international activity as any import/export or direct goods assembly with foreign partners, based on the yes/no questions in the GSO survey. Among observations with data for both questions, 86.71% declared neither activity, 0.9% stated both activity, 12.32% indicated import/export but no direct goods assembly with foreign partners, and 0.07% reported direct goods assembly with foreign partners but answered no for any import/export. However, there are a lot of missing data because these questions are not consistently available across years and are missing entirely in 2016. Since GSO did not impute this data, I use

firms' Tax IDs to infer missing values. If a firm explicitly stated no international activity in any prior years or subsequent years, I deduce that it would not have international activity in the missing year as well. These imputed no's account for 6.46% of all the no's and 5.46% of all non-missing data. If a firm reported international activity in previous years, I count it as having international activity in the missing year under the assumption that even if the firm's relationship with foreign partners is discontinued, the foreign partner's impact on productivity would be long-lasting. These imputed yes's constitute 25.61% of all the yes's and 3.97% of all non-missing data. If a firm indicated no international activity in prior years but answered yes in subsequent years, I leave the data as missing. Overall, the imputed data comprises 9.43% of all non-missing data, and after imputing, 56.99% of the dataset still have missing data.

Table 1. Summary of Imputations

	Before imputing	After imputing	Imputed	% Non-missing Data
Missing data	2,550,281	2,380,836		
Non-missing data	1,627,392	1,796,837		
Intl_Activity = 0	1,420,147	1,518,246	98,099	6.46% of 0's, 5.46% of all
Intl_Activity = 1	207,245	278,591	71,346	25.6% of 1's, 3.97% of all
Total	4,177,673	4,177,673	169,445	9.43%

Figure 2. Breakdown of Firm Types



For observations with data, in total 81.92% are domestic firms without international activity, 11.13% are domestic firms with international activity, 2.58% are foreign firms without international activity, and 4.38% are foreign firms with international activity. Among domestic firms, 11.96% have international activity, while the proportion is 62.92% among foreign firms.

Furthermore, I organize industries into 21 categories using the first-level classification of the Vietnam Standard Industrial Classification (VSIC), which is based on the first two digits of the industry codes. Industry codes from 2013 to 2017 are interpreted using the VSIC 2007 table while codes from 2018 to 2022 are translated using the VSIC 2018 table. Nevertheless, the 21 industry categories are consistent across all years.

Finally, to control for other factors that can affect firms' productivity, I include a time trend, province fixed effects, industry fixed effects, and the Provincial Competitiveness Index (PCI). Annually developed by the United States Agency for International Development and the Vietnam Chamber of Commerce and Industry, the PCI score measures the capacity of a province to cultivate a conducive business environment. It is a weighted sum of ten sub-indices: entry costs for business, access to land and security of business premises, transparency of business environment, time requirements for bureaucratic procedures and inspections, informal charges, policy biases for state versus private versus foreign firms, proactivity of leadership in solving problems for businesses, quality of business support services, labor training policies, and the fairness and effectiveness of legal procedures for dispute resolution. I select the PCI score as my control because it is a reliable and comprehensive measure of business environment quality that helps me avoid the collinearity issue that can arise from using several controls.

4. Methodology

My study has two main goals: to examine 1) how foreign presence impacts domestic productivity and 2) how international activity further boosts firm's productivity. Accordingly, my outcome variable is each firm's productivity and my main predictor variable is the level of foreign presence in each firm's province. Using domestic firms with no international activity as my benchmark, I add three dummy variables for domestic firms with international activity (*DomesticFirm_IntlActivity*), foreign firms with no international activity (*ForeignFirm*), and foreign firms with international activity (*ForeignFirm_IntlActivity*).

4.1. Measuring Productivity

I measure productivity as value added per worker using the formula:

$$(1)\ \text{Productivity}_{ijkt} = \frac{\text{Revenues}_{ijkt}}{\text{Number of workers}_{ijkt}}$$

(Firm i, industry j, province k, year t)

I use this measure over the commonly-used Total Factor Productivity (TFP) formula primarily because my dataset has no data on production output and lots of zero values for fixed assets. Additionally, the TFP measure is reliant on the output elasticities of capital and labor, but existing parameters in the literature are not tailored to Vietnam's growth patterns and labor-intensive economy. Finally, as 93.8% of Vietnam's firms are micro or small-sized (Vietnam Ministry of Planning and Investment, 2023) and more than half of all observations show zero fixed assets, it is likely that in the context of Vietnam, value added per worker is more meaningful than value added per capital unit. Micro and small-sized firms might not own significant fixed assets and instead opt to rent or rely on communal resources. Moreover, one of Vietnam's key

competitive advantages is low labor costs. For these reasons, I believe that value added per worker is a reliable and relevant measure of productivity for my study.

For each firm's number of workers, my dataset has each firm's employee count at the beginning and end of every year. However, there are 142,575 missing values for beginning-of-year labor but only 12 missing values for end-of-year labor, likely because GSO prioritized imputing the latter over the former. A t-test also shows that the average end-of-year employee count is significantly greater than the average beginning-of-year figure. Therefore, I use the end-of-year labor to proxy for the number of workers because it has considerably fewer missing values and because it leads to a more conservative measure of productivity.

4.2. Measuring Level of Foreign Presence

For similar reasons as above, I measure the level of foreign presence as the share of labor in foreign firms relative to the total labor in province *k*, year *t*:

$$(2)\ \text{Level\_of\_ForeignPresence}_{kt} = \frac{\text{Total Labor in Foreign Firms}_{kt}}{\text{Total Labor}_{kt}}$$

Moreover, I propose that foreign presence impacts domestic and foreign firms through different mechanisms — domestic firms might benefit most from knowledge spillovers and exposure to global networks, whereas foreign firms, which often already have access to these advantages, might gain more from ecosystem synergies and supply chain strengthening. Hence, to better capture the potentially different impact of foreign presence on foreign firms, I add an interaction term for *ForeignFirm* and *Level_of_ForeignPresence*.

$$(3)\ \text{ForeignFirm\_x\_ForeignPresence}_{ijkt} = \text{ForeignFirm}_{ijkt} \times \text{Level\_of\_ForeignPresence}_{kt}$$

(Firm i, industry j, province k, year t)

It is worth noting that there is a double counting issue with this interaction term since foreign firms are already included in the calculation of foreign presence. Nevertheless, assuming that foreign firms are often situated in areas with a high concentration of other foreign firms, this double counting should not significantly bias the results.

4.3. Two-Stage Least Squares Setup with Bartik Shift-Share Instrument

The relationship between foreign presence and domestic productivity may be subject to endogeneity. For instance, foreign firms might be attracted to more productive provinces. Similarly, there might be unobserved factors like local government policies or infrastructure improvements that affect both the level of foreign presence and firms' productivity. Therefore, I employ the two-stage least squares method with a Bartik Shift-Share instrument. The Bartik instrument is constructed as follows:

$$(4)\ \text{BartikIV}_{kt} = \sum_{j} \text{Industry\_FDI\_growth}_{jt} \times \text{Initial\_FDI\_share}_{jk}$$

$$(5)\ \text{Initial\_FDI\_share}_{jk} = \frac{\text{Total labor in foreign firms in industry j, province k, year 2013}}{\text{Total labor in industry j, province k, year 2013}}$$

$$(6)\ \text{Industry\_FDI\_growth}_{jt} = \frac{\text{Total labor in foreign firms in industry j, year t}}{\text{Total labor in foreign firms in industry j, year (t-1)}}$$

(Industry j, province k, year t)

Initial_FDI_share is calculated in the base year 2013 to capture the initial share of FDI that each industry *j* in province *k* attracted. This reflects the structural reliance on foreign labor of each industry in each province. *Industry_FDI_growth* measures the time-varying global or sector trends in foreign investment, independent of province-specific characteristics. By weighting industry trends by industry-province-specific shares, the Bartik instrument captures variation in

the level of foreign presence that is driven by initial structural conditions rather than local endogeneity.

The Bartik instrument satisfies the two key criteria of an instrument variable. First, it fulfills the relevance condition, as confirmed by the first-stage F-statistic and its strongly significant coefficient (see Table 3 in Appendix). Second, it meets the exclusion restriction, as *Initial_FDI_share* is exogenous to subsequent provincial changes and *Industry_FDI_growth* introduces external variation from broader industry trends, leaving out local confounding factors.

4.4. Regression Equations

My two-stage least squares regression is set up as follows:

$$(7)\ \text{Level\_of\_ForeignPresence}_{kt} = \alpha_0 + \alpha_1 \text{BartikIV}_{kt} + \varepsilon$$

$$(8)\ \text{Productivity}_{ijkt} = \beta_0 + \beta_1 \widehat{\text{Level\_of\_ForeignPresence}}_{kt} + \beta_2\ \text{ForeignFirm}_{ijkt} + \beta_3 \text{ForeignFirm\_×\_ForeignPresence}_{ijkt} + \beta_4 \text{DomesticFirm\_IntlActivity}_{ijkt} + \beta_5 \text{ForeignFirm\_IntlActivity}_{ijkt} + \beta_6\ \text{BusinessEnvironment\_Index}_{ijkt} + \text{Time\_Trend} + \text{IndustryFE} + \text{ProvinceFE} + \mu$$

(Firm i, industry j, province k, year t)

Specifically, β_1 captures the impact of foreign presence on the productivity of domestic firms without international activity. β_2 represents the inherent productivity difference between domestic and foreign firms. The sum ($\beta_1 + \beta_3$) reflects the effect of foreign presence on the productivity of foreign firms without international activity. Finally, β_4 quantifies the additional productivity boost from international activity for domestic firms, while β_5 measures this added impact for foreign firms.

In addition, I run two other regressions to ensure the robustness of the results. Equation (9) experiments with province-specific time trends, while Equation (10) excludes province fixed

effects to test the impact of business environment on productivity, which is likely absorbed into the province fixed effects in Equation (8).

$$(9)\ \text{Productivity}_{ijkt} = \beta_0 + \beta_1 \text{Level\_of\_}\widehat{\text{Foreign}}\text{Presence}_{kt} + \beta_2\ \text{ForeignFirm}_{ijkt} + \beta_3 \text{ForeignFirm\_}\times\text{\_ForeignPresence}_{ijkt} + \beta_4 \text{DomesticFirm\_IntlActivity}_{ijkt} + \beta_5 \text{ForeignFirm\_IntlActivity}_{ijkt} + \beta_6\ \text{BusinessEnvironment\_Index}_{ijkt} + \text{Province\_Time\_Trend} + \text{IndustryFE} + \text{ProvinceFE} + \mu$$

$$(10)\ \text{Productivity}_{ijkt} = \beta_0 + \beta_1 \text{Level\_of\_}\widehat{\text{Foreign}}\text{Presence}_{kt} + \beta_2\ \text{ForeignFirm}_{ijkt} + \beta_3 \text{ForeignFirm\_}\times\text{\_ForeignPresence}_{ijkt} + \beta_4 \text{DomesticFirm\_IntlActivity}_{ijkt} + \beta_5 \text{ForeignFirm\_IntlActivity}_{ijkt} + \beta_6\ \text{BusinessEnvironment\_Index}_{ijkt} + \text{Time\_Trend} + \text{IndustryFE} + \mu$$

(Firm i, industry j, province k, year t)

5. Findings

5.1. Regression Results

Table 2. Regression Results

Variables Productivity	Equation 8 *main regression*	Equation 9 *province-specific time trend*	Equation 10 *without ProvinceFE*
Level of Foreign Presence	46166.58*** (4616.843)	398092.7*** (44046.03)	-46695.24*** (4469.703)
Foreign Firm *(dummy)*	2415.801*** (486.15)	5855.601*** (751.193)	-9318.374*** (913.201)
Foreign Firm x Foreign Presence *(interaction term)*	-5535.44*** (486.642)	-22550.41*** (2285.986)	39557*** (3911.103)
Domestic Firm with Intl Activity *(dummy)*	1597.118*** (116.084)	633.8683*** (151.959)	663.950*** (141.345)
Foreign Firm with Intl Activity *(dummy)*	742.794* (384.58)	1097.361*** (377.47)	-134.167 (427.052)
Business Environment Index	-303.613*** (37.108)	-1785.407*** (210.635)	238.045*** (18.264)
Industry Fixed Effects	Yes	Yes	Yes
Province Fixed Effects	Yes	Yes	No
Time Trend	496.483*** (33.163)		409.9705*** (26.479)
Province x Time Trend *(interaction term)*		25.73631*** (2.578)	
Constant	11422.157*** (1740.162)	60782.89*** (7494.702)	1457.108* (842.126)
Number of obs	1,715,245	1,715,245	1,715,245
R-squared	0.0028	-0.0789	-0.0559
Prob>chi2	0.0000	0.0000	0.0000

Robust standard errors in parenthesis.
**** p<.01, ** p<.05, * p<.1*

First and foremost, the coefficient for *Level_of_ForeignPresence* is positive and highly significant with p-value less than 0.001, which suggests that foreign presence in the region has a strong positive impact on the productivity of domestic firms without international activity. For foreign firms, on average they inherently exhibit higher productivity than domestic firms, as reflected in the positive coefficient for *ForeignFirm*. Foreign presence in the province further enhances their productivity (the sum of the coefficients for *Level_of_ForeignPresence* and *ForeignFirm_x_ForeignPresence* is highly positive). Nevertheless, the negative coefficient for *ForeignFirm_x_ForeignPresence* shows that this productivity boost is smaller for foreign firms than for domestic firms.

Besides being exposed to foreign presence in the province, engaging in international activity is also correlated with higher productivity for both domestic and foreign firms. Both coefficients for *DomesticFirm_IntlActivity* and *ForeignFirm_IntlActivity* are positive and strongly significant, with respective p-values of 0.000 and 0.053. As the former coefficient is more than double the latter, domestic firms experience much greater productivity boosts from these international interactions than foreign firms.

Finally, while the coefficient for the control *BusinessEnvironment_Index* is negative, this is likely because its impact on productivity has been absorbed into the province fixed effects. Indeed, when the regression is run without province fixed effects (see Equation 10 regression results), the coefficient for *BusinessEnvironment_Index* becomes positive and strongly significant.

5.2. How Foreign Direct Investment Impacts Domestic Productivity in Vietnam

The findings suggest that foreign presence has had a strong positive impact on the productivity of domestic and foreign firms in the selected 11 provinces of Vietnam. First, the influx

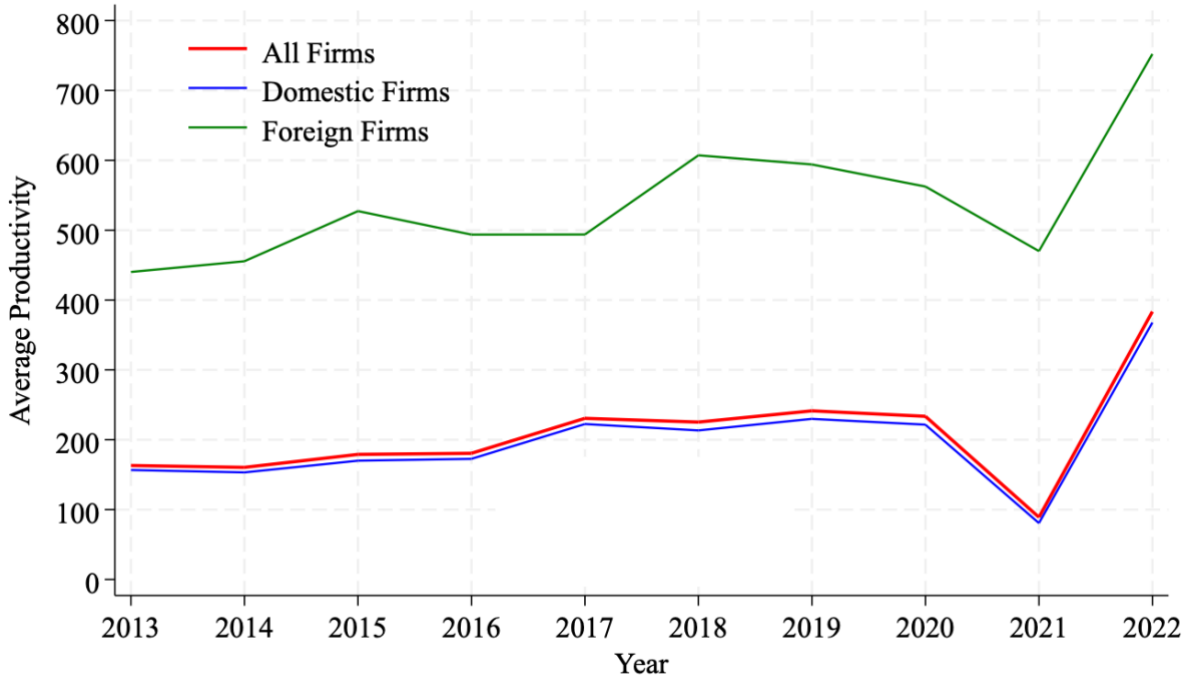
of foreign firms motivates domestic firms to improve efficiency in order to remain competitive. Foreign firms also often demand higher product quality from local suppliers, which push domestic firms to upgrade their processes. Second, knowledge spillovers can occur through the introduction of advanced technologies and production techniques, as well as via exposure to modern business cultures and management practices. Third, foreign firms' training of local workers can raise the overall skill level of the workforce and benefit domestic firms in the area when these trained workers move to new employers. Last but not least, domestic firms can gain access to global markets through the international connections and trade opportunities that foreign firms bring, which help integrate local firms into global supply chains and improve their growth potential.

Foreign firms also benefit from a higher level of foreign presence in the area, though to a lesser extent compared to domestic firms. While having foreign ownership often already allows these firms to have access to advanced technology and global markets, they still gain from the broader developments driven by foreign presence. These include enhanced infrastructure, improved regulatory frameworks, and higher-skilled labor force. Additionally, strong foreign presence can foster industrial clusters that promote resource sharing, collective problem-solving, and mutual growth opportunities, as well as strengthen local supply chains and expand market opportunities for all firms in the region.

At the same time, it is important to acknowledge that foreign presence does not necessarily lead to productivity gains for all domestic firms. Since 93.8% of firms in Vietnam are micro or small-sized (Vietnam Ministry of Planning and Investment, 2023), domestic firms can struggle to match the economies of scale or the lower prices of foreign products and services. Increased demand from foreign firms for local inputs can also drive up prices, which further hinders domestic firms' ability to stay in the market. Moreover, foreign firms might take up critical resources like

land, capital, and government incentives, while also attracting skilled workers by higher wages and better benefits, leaving domestic firms with fewer resources and a less qualified workforce. Given these circumstances, when domestic firms can no longer compete with foreign ones, they might resort to becoming suppliers of low-value components to foreign firms. This shift restricts their capacity to innovate and move up the value chain and reinforces their reliance on foreign technologies, further hindering long-term growth. Despite these challenges, my regression consistently shows highly positive results, suggesting that the spillover effects of foreign presence may outweigh the competitive pressures. Note that there might be self-selection bias in this result, where only the most productive domestic firms remain in the market and skew the results positively. However, this also indicates that while some firms are crowded out, the remaining domestic firms are making proactive efforts to adapt and compete, which ultimately fosters a more resilient and dynamic economy that can better sustain long-term growth.

Figure 3. Average Firm Productivity 2013 - 2022



Besides the benefits of having foreign presence in the area, firms also experience a strong correlation between engaging in international activity and achieving higher productivity. This relationship often involves a self-reinforcing dynamic, where more productive firms are better positioned to engage in international activity, and such engagement further enhances their productivity. On one hand, attracting foreign partners typically requires efficient operations, high-quality products that meet international demands, and the ability to differentiate themselves. Thus, firms that are able to import, export, or assemble goods with foreign partners are likely to have been productive before engaging in these activities. These firms are also likely to possess the experience or the capacity to scale, which is a crucial factor for succeeding in international markets where consistency and the ability to handle increased demands are essential. On the other hand, engaging in international activity enhances these firms' productivity by exposing them to international quality standards that drive further improvements in operations and output. Collaborating with foreign partners also provides access to advanced technologies, best practices, and innovative ideas. Moreover, building relationships with foreign partners expands firms' global networks of collaborators, suppliers, and buyers, thus opening doors to new strategic opportunities.

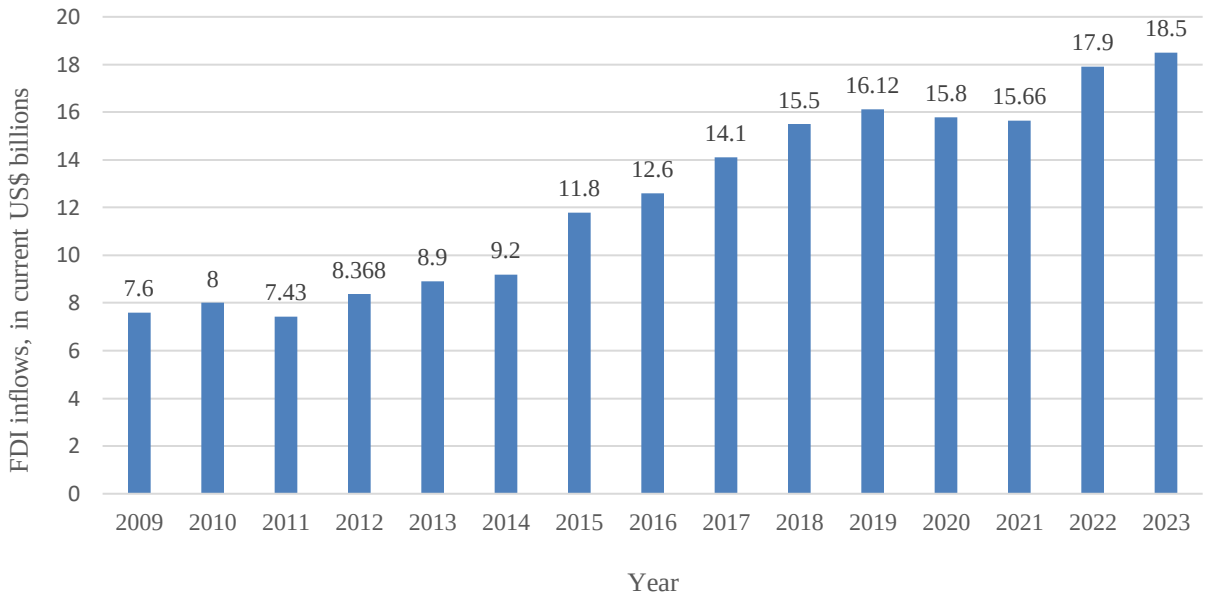
Overall, these findings align with and support the Vietnamese government's ongoing efforts to encourage trade and attract FDI inflows into the country. However, there remains potential to further refine FDI policies to fully harness and maximize productivity, thereby ensuring that FDI can effectively contribute to long-term economic development.

5.3. Future Outlooks for Vietnam's FDI Landscape

2018 saw a significant shift in global supply chains, when the Trump administration began imposing heavy tariffs on Chinese goods as part of the escalating US-China trade war. There were

three tranches of tariffs: the first one in July 2018 imposed a 25% rate on $34 billion worth of goods, the second one in August added a 25% tariff on $16 billion, and the third one in September applied a 10% tariff on $200 billion (Office of the United States Trade Representative, 2018). By 2019, the average tariff on Chinese exports to the US had risen to 21%, compared to just 3% in 2017, targeting over $350 billion worth of Chinese goods (Peterson Institute for International Economics, 2023). This dramatic increase pushed many companies to relocate operations away from China. Vietnam then emerged as an attractive destination for these companies due to its geographic proximity to China, similar cultural traits, political stability, low labor costs, and preferential trade agreements with major global markets. Indeed, Vietnam's share of U.S. imports notably doubled from 2% in 2017 to 4% in 2022. The country has also been shifting towards more upstream, less labor-intensive sectors, as shown in its move away from textile manufacturing in favor of electronic component production (Alfaro and Chor, 2023).

Figure 4. Foreign Direct Investment Inflows into Vietnam 2009 - 2023, in current US$ billions



(World Bank, 2025)

A similar pattern is unfolding now, as the US once again escalates tariffs on Chinese imports. Less than a month into his second term, in February 2025, Trump signed an executive order to institute a 10% tariff on all Chinese imports, which he doubled to 20% just a few weeks later (Business Insider, 2025). The tension escalated dramatically in April. On April 2, widely known as “Liberation Day”, Trump announced a 34% tariff on all Chinese imports, raising the effective rate to 54% (CNN, 2025). China responded with a matching 34% tariff. After threatening further hikes and receiving no concession from China, Trump raised tariffs to 125% on April 9, prompting China to raise theirs to 84%. The next day, the White House clarified the effective US rate had reached 145%, including an additional 20% linked to China's alleged role in the fentanyl trade. China again matched the US with a 125% tariff. As of April 11, 2025, US tariffs on Chinese goods stand at 145%, and Chinese tariffs on US goods are at 125% (NBC News, 2025).

Beyond the US-China dramatic escalation, many other countries were also severely hit by tariffs following Trump’s Liberation Day announcement. He imposed a sweeping 10% baseline tariff on all US imports, plus higher individualized reciprocal tariffs on countries with which the US has the largest trade deficits. Countries facing the highest tariff rates include Cambodia (49%), Laos (48%), Madagascar (47%), Vietnam (46%), Sri Lanka (44%), Myanmar (44%), and Bangladesh (37%) (White House, 2025). The European Union, a key US trading partner, was hit with a 20% tariff on all imports, which they retaliated with a 25% tariff on certain US products like steel, aluminum, tobacco, and soybeans (Euronews, 2025). However, on April 9, Trump authorized a 90-day pause on reciprocal tariff rates for all countries except China, Canada, and Mexico. This means most countries will only be subject to the 10% baseline tariff for the next three months (CNN, 2025). The EU has since suspended its retaliatory tariffs, and many nations are currently working to open tariff deals with the US.

Vietnam stands out as one of the countries most proactively pushing for tariff negotiations with a series of swift and strategic steps. First, Vietnam was among the first countries singled out by Trump for showing openness to resolve tariff issues, following a phone call between Trump and the General Secretary of the Communist Party To Lam (Bloomberg, 2025). Second, just days after the tariff announcement, Vietnam's Deputy Prime Minister Ho Duc Phoc made an urgent trip to Washington to advance tariff discussions. He met with Treasury Secretary Scott Bessent, Commerce Secretary Howard Lutnick, and US Trade Representative Jamieson Greer, where both sides agreed to begin formal discussions on reciprocal trade. This marked the "biggest breakthrough in recent days of intense negotiations", as the US had previously declined Vietnam's repeated proposals for a bilateral trade agreement (Vietnam Government Portal, 2025). Third, Deputy Prime Minister Ho Duc Phoc also recently met with Tim Hughes, Senior Vice President of SpaceX. He officially granted the government's decision to allow the company to pilot satellite internet services in Vietnam for five years with a maximum of 600,000 subscribers, provided SpaceX complies with Vietnamese laws, commits to investing in infrastructure & supply chains, and fosters collaboration with local businesses (VnExpress Online Newspaper, 2025). Last but not least, Prime Minister Pham Minh Chinh affirmed that Vietnam is actively seeking to address US concerns over non-tariff barriers and reiterated the government's commitment to increasing purchases of US goods, including national security and defense items, while also expediting the delivery of contracted commercial aircraft (People's Army Newspaper, 2025).

Given Vietnam's strategic actions and adaptive approach, the country likely remains an attractive destination for foreign investment despite recent tariff pressures. In the past year, expectations of the US - China trade war have prompted not just China-based companies but also key US trading partners — Korea, Japan, and Taiwan — to establish operations in Vietnam. Latest

major initiatives include Korea-based Hyosung's $4-billion investment in data centers and energy infrastructure (Nikkei Asia, 2024), Tokyo Gas and PetroVietnam's $2-billion joint venture for converting liquified natural gas to power (LNG Prime, 2023), Jinko Solar's $1.5-billion investment in a new solar cell production facility (Vietnam Energy, 2023), Taiwan-based LiteOn's $690-million investment in a manufacturing hub for advanced electronic components and power management solutions (The Investor, 2024), and Foxconn's $551-million project to build a factory for assembling Nintendo Switch consoles and unmanned aerial vehicles (Vietnam Investment Review, 2024). Most recently, in December 2024, the world's leading semiconductor company NVIDIA partnered with the Vietnamese government to establish its first artificial intelligence (AI) data center and research hub in Vietnam — the Vietnam Research and Development Center. This collaboration represents a significant milestone in Vietnam's rise as Southeast Asia's next AI innovation hub and paves the way for a greater influx of high-tech foreign investment.

According to Pham, Head of the Research Department at the Research Institute for Banking, Vietnam's FDI landscape is shifting significantly toward high-tech industries and renewable energy (Vietnam Economic Times, 2025). With a median age of 33.4 (Statista, 2025), the country benefits from a young, creative, and tech-savvy workforce ready to drive technological innovation. To fully capitalize on this upstream shift, Vietnam should implement several strategic policy measures. First, as high-tech manufacturing industries rely on high-capacity, uninterrupted power sources, it is essential for Vietnam to strengthen its electricity supply capacity and upgrade infrastructure quality to support advanced industrial operations. Second, while Vietnam currently offers tax incentives for foreign investment, the eligibility criteria remain restrictive, the preferential period is relatively short, and the specific incentive terms are often unclear (Vietnam Institute of Strategy and Policy for Industry and Trade, 2024). The country needs to refine its

policies to build a more stable investment environment and reinforce investor confidence. Third, strengthening the legal framework for intellectual property rights is crucial in order to foster innovation and enhance Vietnam's appeal to investors who seek a secure and favorable environment for research and development. Fourth, it is also important to align foreign investment with Vietnam's sustainable development goals. Resource-efficient technologies should be promoted, investments that pose pollution risks should be restricted, and stricter environmental regulations and violation penalties should be established to ensure the country's commitment to environmental responsibility (Ministry of Finance of Vietnam, 2024). Finally and perhaps most importantly, Vietnam should prioritize human capital development by investing in high-quality vocational training, expanding STEM education, and strengthening industry-academia partnerships. The government is indeed implementing many talent attraction initiatives, offering generous subsidies, priority recruitment, and exciting self-development opportunities like fully-funded higher education programs (Vietnam Government Portal, 2024).

Alongside the promising outlook of becoming an advanced technology investment hotspot, Vietnam is also seeing the emergence of a key challenge: rerouting. Rerouting is the practice of redirecting goods through third-party countries to evade tariffs, with the goal of altering the country of origin on trade documents. For instance, China-based companies can import goods into Vietnam, slightly process or repackage them, then re-export the goods as "made in Vietnam" to avoid tariffs on Chinese goods. The legality of rerouting falls into a gray area. According to the Rules of Origin set by the World Trade Organization (1994), a product is considered to originate from the country where it underwent its last substantial transformation. Nevertheless, the definition of "substantial transformation" leaves much room for debate. When these guidelines are stretched or manipulated, the line between legal trade and tariff evasion becomes increasingly blurred.

Iyoha, Malesky, Wen, Wu, and Feng (2024) investigate rerouting practices in Vietnam by defining it in two ways: product-level rerouting, where goods previously exported from China to the US are now passing through Vietnam, and firm-level rerouting, a stricter measure that tracks Vietnamese firms exporting the same product which was previously shipped from China. Findings reveal that after the trade war, product-level rerouting in Vietnam surged by 47.2%, while firm-level rerouting rose by 15.7% compared to pre-2018 figures.

The economic consequences of rerouting for Vietnam are complex and far-reaching. On one hand, increased trade volumes from rerouting can boost exports and generate short-term economic gains. However, the long-term downsides likely outweigh these benefits. If Vietnam is perceived as facilitating tariff evasion, it risks damaging its international reputation and facing punitive measures from the US and EU, such as stricter trade regulations or retaliatory tariffs. This could undermine Vietnam's efforts to strengthen its economic ties and deepen its integration into global supply chains. Moreover, reliance on rerouted trade can divert attention and resources away from developing sustainable, high-value industries that are more beneficial for the country's long-term economic growth. To mitigate these risks, Vietnam should take proactive measures to address rerouting. This includes monitoring import-export activities more strictly, enhancing customs procedures, and using technology to improve supply chain traceability. On the diplomatic front, the country should also actively engage with trading partners to address concerns on rerouting and reinforce its commitment to fair trade. On April 7, 2025, Prime Minister Pham Minh Chinh announced stricter measures to address concerns over the origin of goods. He directed the Ministry of Industry and Trade to tighten trade oversight and tasked the Ministry of Science and Technology with strengthening enforcement on intellectual property. The goal is to protect legitimate rights and combat counterfeits, fake, and disguised goods. (Vietnam Economic Times, 2025).

Moving forward, Vietnam should build on its progress and maintain a forward-thinking, adaptive approach to further attract FDI and secure its position as a leading destination for global investors. Furthermore, diversifying Vietnam's export portfolio and reducing reliance on any single trade corridor will be essential to foster long-term economic resilience and sustainable growth. Ultimately, these efforts should help Vietnam position itself as a trusted and competitive player in the global trade system.

6. Conclusion

This study finds that higher levels of foreign presence within a province are strongly associated with productivity boosts for both domestic and foreign firms. Domestic firms experience more substantial productivity gains than foreign enterprises, likely through knowledge spillovers, labor mobility, workforce upskilling, and expanded access to global markets. Meanwhile, foreign firms likely benefit from the broader FDI-induced developments in the province, such as enhanced infrastructure, strengthened local supply chains, and the creation of industrial clusters. In addition, firms that have international exposure via import/export activities see higher productivity compared to firms without foreign interaction. While it is inevitable that foreign direct investment also brings challenges such as resource competition and market crowding, the strongly significant regression results indicate that Vietnamese firms experience net positive effects from foreign investment. This suggests that FDI is a key driver of productivity growth in Vietnam.

In 2024, Vietnam saw an impressive GDP growth of 7%, the highest among ASEAN countries, and reached a record-high $35 billion in FDI disbursement. The government has since set an ambitious target of 8% GDP growth for 2025, with one of its key focuses being high-tech

FDI attraction (Vietnam Government Portal, 2025). Despite recent tariff uncertainties, Prime Minister Pham Minh Chinh has reaffirmed that the 8% growth target remains unchanged, framing it as both a challenge and an opportunity to demonstrate the country's resilience. He emphasized ongoing efforts to restructure the economy toward rapid, sustainable growth, with the ultimate goal of building an independent, resilient economy that is deeply and effectively integrated into the global market (Vietnam Government Portal, 2025). At the moment, Vietnam is also undergoing a major transformation in its governance system that aims to reduce bureaucracy, improve institutional efficiency, and strengthen legal frameworks. Nguyen, President of the Vietnam Association of Foreign-Invested Enterprises, expects these reforms to foster a more transparent business environment and attract higher-quality FDI in the near future (Vietnam Economy and Forecasts Review, 2025).

Speaking at this year's National Forum on Vietnamese Digital Technology Enterprises, General Secretary of the Vietnam Communist Party To Lam emphasized the importance of strategic FDI and cautioned, "Do not let Vietnam become a mere assembly-processing base, a technological dumping ground for the world, while domestic firms learn nothing." He stressed that FDI should go beyond capital investment to enhance domestic capabilities and drive long-term economic development (Business Forum Magazine, 2025). With this in mind, Vietnam should ensure a strategic and proactive approach to FDI policies to ensure that foreign investment supports sustainable economic growth and enhances its long-term global competitiveness. This study serves as a modest effort to contribute to this vision.

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8. Appendix

Table 3. First-stage Regression Result

Level_of_ForeignPresence	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
BartikIV	0	0	-106.24	0	0	0	***
Constant	.271	0	3322.14	0	.271	.271	***

Mean dependent var	0.269	SD dependent var	0.164
R-squared	0.003	Number of obs	4177673
F-test	11286.523	Prob > F	0.000
Akaike crit. (AIC)	-3281869.064	Bayesian crit. (BIC)	-3281842.574

**** p<.01, ** p<.05, * p<.1*

Table 4. Summary Statistics for All Firms

	N	Mean	Median	SD	Min	Max
Productivity	4030780	2977.428	204.099	984576.63	-6843.271	1.313e+09
Revenues	4031101	46761.464	1063.520	10238179	-240691.5	1.318e+10
End Labor	4177661	21.388	4.000	297.289	-31	230310
Fixed Assets	4177673	99975.199	43.500	1.833e+08	-12725.9	3.747e+11
Intl Activity	1796837	.155	0.000	.362	0	1

Table 5. Summary Statistics for Domestic Firms

	N	Mean	Median	SD	Min	Max
Productivity	3888203	2987.472	193.975	1002407.1	-6843.271	1.313e+09
Revenues	3888481	35690.85	977.000	10381627	-240691.5	1.318e+10
End Labor	4031607	14.474	3.000	197.635	-31	230310
Fixed Assets	4031615	6769.115	37.000	1054530.9	-12725.9	1.686e+09
Intl Activity	1671835	.12	0.000	.324	0	1

Table 6. Summary Statistics for Foreign Firms

	N	Mean	Median	SD	Min	Max
Productivity	142577	2703.528	550.154	56712.689	-333.472	17166754
Revenues	142620	348597.61	22091.437	4907254.5	-3127.7	5.122e+08
End Labor	146054	212.266	22.000	1188.309	0	85206
Fixed Assets	146058	2672727.4	1166.000	9.805e+08	-46.5	3.747e+11
Intl Activity	125002	.629	1.000	.483	0	1

Table 7. Summary Statistics for Foreign Presence and Intl_Activity

	N	Mean	Median	SD	Min	Max
Level of Foreign Presence	4177673	.269	0.228	.164	.1	.684
ForeignFirm	4177673	.035	0.000	.184	0	1
Domestic Firm with Intl Activity	1817893	.11	0.000	.313	0	1
ForeignFirm with Intl Activity	1796837	.044	0.000	.205	0	1

Table 8. Summary Statistics for Control Variable

	N	Mean	Median	SD	Min	Max
Business Environment Index	4177673	64.856	65.670	3.25	53.91	72.8