The impact of transportation infrastructures on attracting foreign direct investment in Vietnam

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Background

The Vietnamese economy only started to reform after 1986 when the government decided to drop its centralized planning system for the economy and introduced new development of the private sector as well as the participation of foreign enterprises. Throughout years, foreign direct investment (FDI) has played a crucial role in catalyzing Vietnam’s socio-economic development. The sum of FDI in Vietnam has represented a large portion of GDP and makes Vietnam a hub of manufacturing and processing. A 2018 Ministry of Finance shows that export accounts for 53.6% of Vietnam’s GDP in 2016 and it is expected to be an indicator for around 70% in 2017. This year, FDI firms have made up 20% of total taxable profit collection and over 30% of Vietnam’s total industrial production value comes from FDI firms[2]. Minister of Planning and Investment Nguyen Chi Dung said the FDI sector contributes about 25% to social investment capital and 20% to the gross domestic product (GDP)[3].

Understanding the importance of FDI to the economy, Vietnamese government should continue to implement policies to attract more FDI to the country. Several studies (Wheeler and Mody (1992), Leonard et al. (1996), Bhowmik et al. (1998), Anwar et al. (2000), Quazi et al. (2005) and Kadakar and Seethalakshmi (2006)) agreed that good infrastructure especially transportation infrastructures, is a necessary condition for foreign investors to operate successfully.

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Methodology

This study focus on the question: “How transportation infrastructures affect the foreign direct investment in Vietnam”

To answer the question, the study uses the data of Vietnam General Statistics Office about accumulated foreign direct investment of each province in Vietnam until 2017. It also uses the spatial data retrieved from the Ministry of Natural Resources and Environment about ports, railway stations, toll stations, airports, build-up areas, and roads in 2016. Understand that not all kind of roads are interested to foreign investors, the study also separates different types of roads to see the effects of each type to FDI.

The main method use in this study is OLS with the model as below:

FDI = b0 + b1*PORT + b2*TOLL + b3*RAIL + b4*AIRPORT + b5*BUILDAREA + b6*PRIMARYROAD + b7*2ndROAD + e

Understand that geographical characteristics may also affect the effects of infrastructure on foreign direct investment, this study also use Geographically Weighted Regression in GIS to analyze this model.

Analysis

FDI until 2017 in Vietnam

Summary of OLS Results - Model Variables

| Variable | Coefficient (| Std. Error | t-Statistic | Probability (>|t|) | Robust (|t|) | Robust (>|t|) | Robust (>|t|) |
|----------|-------------|------------|-------------|------------------|---------|-------------|---------------|
| INTERCEPT | 4735753.084 | 4995000.144 | 0.953 | 0.341 | 0.953 | 0.341 | 0.953 |
| PORT | 121.083 | 51.083 | 2.379 | 0.021 | 2.379 | 0.021 | 2.379 |
| TOLL | 121.083 | 51.083 | 2.379 | 0.021 | 2.379 | 0.021 | 2.379 |
| RAIL | 121.083 | 51.083 | 2.379 | 0.021 | 2.379 | 0.021 | 2.379 |
| AIRPORT | 121.083 | 51.083 | 2.379 | 0.021 | 2.379 | 0.021 | 2.379 |
| BUILDAREA | 121.083 | 51.083 | 2.379 | 0.021 | 2.379 | 0.021 | 2.379 |
| PRIMARYROAD | 121.083 | 51.083 | 2.379 | 0.021 | 2.379 | 0.021 | 2.379 |
| 2ndROAD | 121.083 | 51.083 | 2.379 | 0.021 | 2.379 | 0.021 | 2.379 |

OLS Diagnostics

- Number of Observations: 43
- Akaike’s Information Criterion (AIC): 131.0128
- Durbin-Watson Statistic: 2.03265
- Jarque-Bera Statistic (ed): 0.12657
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Investment Hot Spot Analysis

Conclusion and implications

Overall, transportation infrastructures does have positive effects to FDI but not all of them. The result shows that Primary road had a significant and positive effect on FDI inflows in Vietnam. It is estimated that one unit increase of primary road in a province is associated with $14.2 billion USD increase in FDI for each province. There are also other transportation infrastructures that are statistically significant to FDI, which are Port (at 15%) and Build-up areas (at 10%). The implies that Vietnamese government should focus on building more transportation infrastructures to attract more FDI, especially primary roads.

Non-stationary coefficients of “primary road”

Limitations

The results from running the Spatial Autocorrelation tool on the regression residuals indicates that the model is not well specified. Furthermore, the Adjusted R-Squared is only about 27% (35% with Geographical Weighted Regression) suggests that the effect of building more primary roads are not the same in all areas in Vietnam. The results of the study highly recommend that the Vietnamese government should prioritize to build more primary roads in the Western North and South of Vietnam because it will yield more impacts than other areas.

Source
- Vietnam General Statistics Office
- Ministry of Natural Resource and Environment