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

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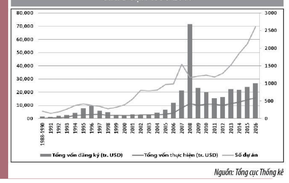
Background

The Vietnamese economy only started to reform after 1986 when the government decided to drop its centralized planning system for the economy and encourage the development of private sector as well as the participation of foreign enterprises. Through years, foreign direct investment (FDI) has played a crucial role in catalyzing Vietnam's socio-economic development. The influx of FDI in Vietnam has created millions of works for Vietnamese and makes Vietnam a hub of manufacturing and processing . A preliminary estimate shows that exports accounts for 93.6% of Vietnamese GDP in 2016 and FDI is expected to accounted for around 70% of export turnover, this year[1] . FDI firms have made up 20% of total State budget collection and over 50% 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 Moody (1992), Loree and Guisinger (1995), Richaud et al. (1999), Asiedu (2000), Quazi (2005) and Khadaroo and Seetanah (2008) agree that good infrastructure, especially transportation infrastructures, is a necessary condition for foreign investors to operate successfully.

HÌNH1: ĐẦU TƯ TRỰC TIẾP NƯỚC NGOÀI VÀO VIỆT NAM GIAI ĐOẠN 1998-2016



[1] https://www.focus-economics.com/blog/the-role-of-fdi-in-vietnams-socio-economic-development

[2] https://en.vietnamplus.vn/fdi-firms-play-important-role-in-vietnams-economic-growth/137598.vnp

[3] https://english.vov.vn/economy/fdi-sector-significantly-contributes-to-vietnams-economy-375313.vov

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.

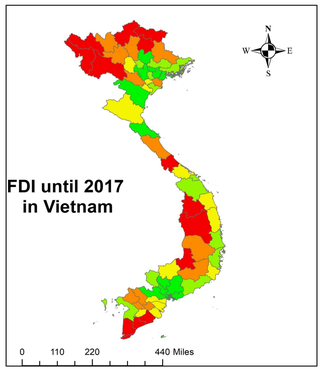
Understand that not all kind of roads are interested to foreign investors, the study also separates different types of roads to see the effects of each type to FDI.

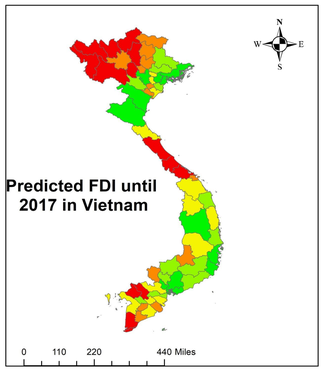
The main method use in this study is OLS with the model as below:

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

Understanding 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





Legend

FDI in billion USD

- 3 - 148
- 149 - 644
- 645 - 3081
- 3082 - 5864
- 5865 - 43879

Predicted FDI in billion USD

- -2093 - 322
- 323 - 2998
- 2999 - 6027
- 6028 - 8770
- 8771 - 21058

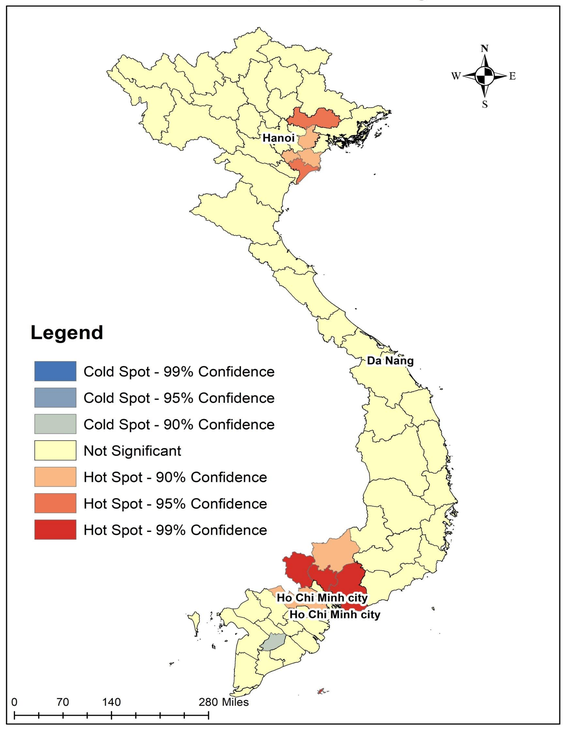
Summary of OLS Results - Model Variables

Variable	Coefficient [a]	StdError	t-Statistic	Probability [b]	Robust_SE	Robust_t	Robust_Pr [b]	VIF [c]
Intercept	-138.047164	1929.084685	-0.071561	0.943209	1621.520270	-0.085134	0.932462	--------
PORT	1908.887477	1088.843685	1.753133	0.085154	1299.841933	1.468554	0.147653	1.260001
TOLL	1428.889922	1247.348683	1.145542	0.256944	1304.024403	1.095754	0.277960	1.521420
RAIL	-1246.598656	921.500671	-1.352792	0.181659	847.934451	-1.470159	0.147219	1.803185
AIRPORT	-332.989788	2035.092554	-0.163624	0.870627	1877.123845	-0.177394	0.859851	1.185121
BUIDAREA	2782.894593	1686.408613	1.650190	0.104607	1651.270870	1.685305	0.097599	1.198752
PRIMARYROA	674.208971	203.130092	3.319099	0.001609*	297.611384	2.265400	0.027446*	1.461510
2NDROAD	15.347075	58.278454	0.263340	0.793275	71.927392	0.213369	0.831829	1.251401

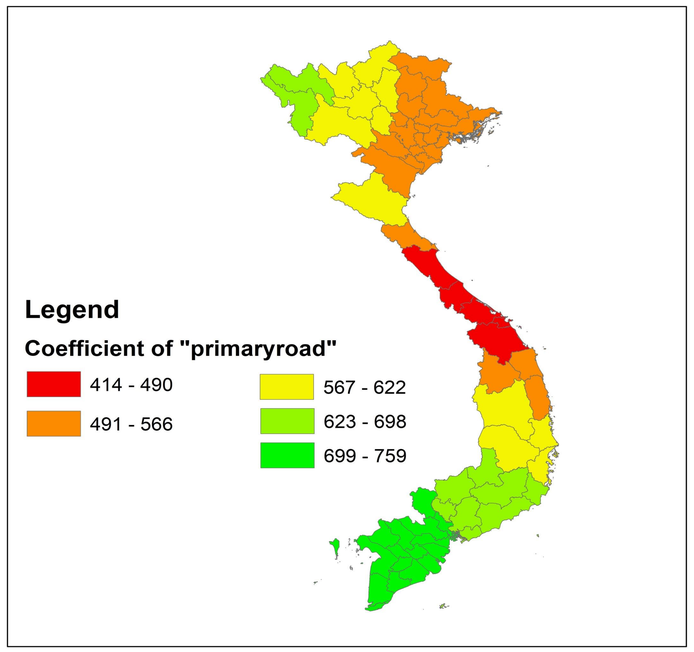
OLS Diagnostics

Input Features:	2ndroad	Dependent Variable:	INVSETMENT
Number of Observations:	63	Akaike's Information Criterion (AICc) [d]:	1321.691290
Multiple R-Squared [d]:	0.355295	Adjusted R-Squared [d]:	0.273242
Joint F-Statistic [e]:	4.330048	Prob(>F), (7,55) degrees of freedom:	0.000703*
Joint Wald Statistic [e]:	31.395348	Prob(>chi-squared), (7) degrees of freedom:	0.000053*
Koenker (BP) Statistic [f]:	24.378481	Prob(>chi-squared), (7) degrees of freedom:	0.000977*
Jarque-Bera Statistic [g]:	51.763030	Prob(>chi-squared), (2) degrees of freedom:	0.000000*

Investment Hot Spot Analysis



Non-stationary coefficients of "primary road"



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 674.2 billion USD increase in FDI for each provinces. 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.

However further analysis used Geographically 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.

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 model is not good. There must be omitted variables.

The study is suffered from the fact lack of data uploaded by Vietnamese government. In the future more socio-economic data like: population, legal system, education, and so on could improve the result more.

Source

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