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Research Paper

THE IMPACT OF CARBON DIOXIDE EMISSION ON THE FDI: AN EMPIRICAL ANALYSIS FOR THE NAFTA AREA

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ABSTRACT

The impact of CO₂ emission on FDI is well debated in the existing literature. Generally, it is found that in developing nations FDI increases as CO₂ emission increases. The research aims at finding the impact of CO₂ emission and GDP growth on the net inflow of FDI for the NAFTA area. Regression analysis has been conducted for the empirical analysis. The results of the regression analysis indicate that GDP growth has no role to play in determining the net inflow of FDI. However, CO₂ emission has positive impact on the net inflow of FDI for the NAFTA countries.

KEY WORDS: Pollution, CO₂ emission, OLS, FDI, Regression

1. INTRODUCTION

The impact of pollution on Foreign Direct Investment (FDI) is a major concern for most of the economists. The issue has gained importance because of the fact that many economists and social scientists believe that weak environmental regulation in a host country may encourage inward FDI for the host country. On the other hand, foreign firms try to spread greener technology in a relatively polluted country and as a result FDI increases in the relatively polluted host country (Zarkasy, 1999). On the other hand it is also possible that spur in FDI accelerate the output growth especially industrial output and as a result environmental pollution increases (Zarkasy, 1999). There are many empirical works which have studied the impact of pollution on the inward FDI. However, most of the works are based on the developing economies. In this paper, I have examined the impact of carbon dioxide emission on the net FDI inflow for the NAFTA countries. NAFTA consists of three countries; USA, Canada and Mexico.

The paper is organised in the following manner. Section 2 presents the methodology and data, section 3

presents results and discussions and finally section 4 presents the conclusions.

2. METHODOLOGY AND DATA

The paper has examined the impact of carbon dioxide emission on the net FDI inflow. For the econometric analysis I have adopted regression analysis in this study. There are other factors which also can impact the net FDI. Along with carbon dioxide emission I have considered GDP growth as one of the independent variables in the regression analysis. The regression equation is given below;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon_i$$

Where,

Y: Net FDI inflow

X₁: GDP growth

X₂: CO₂ emissions

The above equation has been estimated by applying ordinary least square (OLS) method.

The paper has considered all the three countries of NAFTA area and it is based on the period of 1990–2013.



The data on FDI, CO₂ and GDP has been collected from the World Bank Database. GDP growth has been calculated on the basis of GDP data.

3. RESULTS AND DISCUSSIONS

In this paper FDI has been regressed on GDP growth and CO₂ emission. The result of the regression analysis is given in the following table.

Table 1: Result of the Regression Analysis

Variable	Coefficients	P - value	F - Statistics	R ²	N
Intercept	1.05E+10	0.42	49.79***	0.59	72
GDP Growth	-7.9E+08	0.80			
CO ₂ Emission	31309.44	0.00			

Dependent Variable: Net FDI inflow

***Significant at 0%,

The estimated results illustrate that the data fit the model well. The regression equation can explain 59 percentage of the total variation in the FDI. From the regression analysis I find that though GDP growth has negative and highly insignificant coefficient. This implies that GDP growth has no role to play in determining the net inflow of FDI.

It has been argued that higher level of pollution attracts more FDI. The result of the regression analysis has also indicated the same. The coefficient of CO₂ emission is found to be positive and significant. It implies that CO₂ emission has positive impact on the FDI. In other words, as the CO₂ emission increases FDI also increases. There can be various reasons for this. It is possible that MNCs prefer weaker regulation in the host country so that they can produce goods without having strict norms. Another possibility is that, MNCs can transfer greener technology to a host country where emissions are higher. In this case, FDI takes place in the form of transfer of greener technology.

4. CONCLUSIONS

The empirical analysis on emissions and FDI has indicated that GDP growth is not affecting the FDI. In other words, GDP growth has no role to play in determining the FDI. However, it is found that for NAFTA countries CO₂ emission has played a role in

determining the FDI. From the econometric analysis I find that as the CO₂ emission increases FDI also increases for NAFTA countries. There are various explanations for that. One of the explanations is that FDI can take the form of transfer of greener technology. On the other hand it is also possible that weaker environmental regulations attract more FDI. However, the paper is based on NAFTA countries for the period of 2010 – 2013. We have taken total CO₂ emission. CO₂ emission is also dependent on the size of the economy and other demographic factors like population. As the size of the economy increases CO₂ emission also increases. Moreover, CO₂ emission may also increase with the population and population density. I haven't considered per capita CO₂ emission for this study. In fact, the size aspect¹ has not been considered in this paper. The results of this study may change if I incorporate size aspect. The future research agenda is to incorporate the size aspect.

REFERENCES

- Zarsky L (1999) *Havens, halos and spaghetti: untangling the evidence about foreign direct investment and the environment. OECD conference on foreign direct investment and the environment*

Notes

- ¹ Size of the economy, population size, forest area, etc.