**Foreign direct investment and carbon dioxide emissions: evidence from capital of Vietnam**

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**ABSTRACT**

The purpose of this paper is to investigate the relationship between carbon dioxide (CO2) emissions, foreign direct investment (FDI), income per capita and energy consumption (EC) in the capital of Vietnam from 1990 to 2015. The empirical results indicate that EC is a major contributor of environmental degradation while FDI marginally contribute to the current status. Moreover, a one-way causality is found to be running from carbon dioxide (CO2) emissions, EC, FDI to income in the long-run. Then, the new empirical findings suggest that municipal government should make urgent regulations to drastically the energy consumption especially for private cars and motorbikes to improve environmental quality in Hanoi.

**Key words:** Income Per Capita, Inward FDI, Energy Consumption, CO2 Emissions, Hanoi Capital, Vietnam

**JEL Classification:** F21, O44, Q43

**1. INTRODUCTION**

Since 1986, Vietnam has implemented economic reforms, moving from a centrally-planned economy to market-oriented one. This process have prompted rapid economic growth and transformed Vietnam from one of the world’s poorest to a lower middle-income country. Hanoi’s economy, capital of Vietnam, is played an important role to attract local and foreign investment and is a driving force behind that impressive growth. By the end of 2015, there was approximately USD 20 billion of disbursed foreign direct investment in Hanoi. The FDI capital helped, to a certain extent, increase gross domestic product (GDP) per capita from around USD 1,000 to USD 2,324 between 1990 and 2015. The average growth rate of the economy was 12.2 percent from 1990 to 1997. Due to the Asian financial crisis in 1998, the growth rates decreased slightly in three subsequent years but picked up its momentum to reach the highest rate 12.5 percent in 2007. On average, the annual growth rate is 10.5 percent in the period from 1998 to 2015. Simultaneously, the level of environmental pollution in Hanoi has remarkably increased as a result of increase in energy consumption and rapid economic growth. Major sources of environmental degradation in Hanoi are construction, transport and industrial activities. Over the past two decades the average rate of CO2 emissions is approximately 13 percent per annum.

Hanoi is a rapidly growing city and currently more than 1,000 construction projects are underway. Metro projects are being carried out in Hanoi, which have also contributed to more serious air pollution as well as traffic congestion. The traffic congestion is becoming severe as around 20,000 new motorbikes and around 8,000 new cars are registered in the city every month. These numbers are predicted to rise when several vehicle taxes are to be abolished in 2018. Consequently, there will be nearly one million cars and seven million motorbikes by 2020 in the city. In meantime, by the end of 2015, there are approximately 2,600 foreign invested enterprises operating in Hanoi. Obviously, these enterprises are playing an important role in speeding up economic growth evidenced by overwhelming export share, employment, contributions to economic restructuring toward industrialization and modernization. However, there also exists the fact that many foreign invested enterprises have imported substandard-obsolete and outdated-technology equipment. Experts warned that if the alarming pollution problems are not addressed, in near future, Hanoi might become as polluted as New Delhi and Karachi, two of the ten most polluted cities in the world. Therefore, these facts asking for the investigation of the impact of FDI, income per capita and energy consumption on CO2 emissions in Hanoi and whether the EKC hypothesis prevails in case of Hanoi. This is the first study to investigate the EKC hypothesis in FDI and energy consumption context for Hanoi.