Chapter 3
The Benefits and Costs of Foreign Direct Investment for Sustainability in Emerging Market Economies

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ABSTRACT

The chapter contributes to the growing body of empirical researches by exploring the nexus among FDI, trade, carbon dioxide emission level, and the renewable energy use. Panel VAR econometric methodology upon the data for 18 emerging economies over the period of 1990-2014 is applied to uncover the interactive and simultenous relations among variables. Granger causality test results indicate that FDI, carbon emission, and renewable energy use Granger cause trade. Carbon emission and renewable energy use Granger cause FDI, FDI Granger causes carbon emission, and FDI granger causes renewable energy use. Impulse response analysis results indicate that FDI decreases trade, carbon emission, and renewable energy use. Moreover, carbonemission decreases trade, and increases FDI whereas it is decreased by renewable energy use. Results indicate that the Pollution Haven and the Pollution Halo hypothesis are valid for the FDI, however, the Pollution Haven hypothesis is not valid for trade. Additionally, results indicate that FDI decreases trade implying the presence of substitution relation between FDI and trade.

INTRODUCTION

The nexus between the pollution and the economic variables, in particular the nexus between the carbon emission and the GDP per capita has been studied by many scholars. The Environmental Kuznets Curve (EKC) is the diagram representing the inverse U-shaped relation between the carbon emission level and the GDP per capita. There are empirical studies in the literature providing evidences that pollutants, such as nitrogen oxide (Cole, Rayner & Bates; 1997), sulfur oxide (Shafik & Bandyopadhyay, 1992),

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carbon monoxide (Carson, Jeon & Mc Cubbin, 1997) has inverse U-shaped relation with GDP per capita. However, although several studies in the literature providing evidences on the presence of the inverse U-shaped relation between GDP per capita and the greenhouse gas emission, there are also numerous studies providing evidences against the validity of the EKC hypothesis.

The affordability of the abatement technology, and the stringency ofenvironmental regulationsgenerate more environmental friendly conditions for economic activies in the developed economies relative to the developing economies. Moreover, feasibility of renewable energy sources and the energy efficient production processes decrease the demand for energy (Mielnik & Goldemberg, 2002). Additional to change in production technology and processes towards clean technology and energy efficient production, the people would be more prone to environmental goods rather than carbon dioxide intensive goods affecting the average pollution in the country.

Hassler et al. (2012) using data for U.S. show that R&D activity on inputs are scarce, or expensive, thus, consumption and particularly production activities at the lower GDP per capita levels might lead to the destruction of environment. Therefore, clean environment (and non-renewable energy reserves) becomes more scarce in the process of economic development. However, at high GDP levels, R&D activities on energy saving and renewable energy technologies increase.

The literature that has been developing in recent years focus on external sources of carbon emission. In particular, these studies examine empirically the impact of trade and the FDI on the carbon emission level in the country. There are two main hypothesis in the literature that are most of the empirical studies are referring to regarding the nexus between the carbon emission level and the trade and the FDI.

The Pollution Haven hypothesis argue that firms would prefer to produce in countries where the enforcement of environmental laws and regulations are less stringent. In other words, it argues that multinational companies would produce at and trade from the countries where the environmental laws are less stringent (Jensen, 1996; Hoffman et al., 2005; Dietzenbacher & Mukhopadhyay, 2007).Therefore, the multinationals through trade and FDI would raise the carbon emission level in the countries where the environmental rules are weak (and weakly applied). The Pollution Halo hypothesis argues (Birdsall & Wheeler, 1993; Görg and Strobl, 2004) that FDI transfers the environment friendly technologies to the host country contributing to the carbon emissiondecline in the country. In other words, the pollution halohypothesis claims that the introduction of low carbon intensive and clean production technologies by FDI would result in lower pressures on the non-renewable energy sources, and would lead tosustainable economic growth in the host country.

Trade and FDI might contribute to the production and consumption of carbon intensive goods in the country. Therefore, trade, FDI might contribute to the environmental degradation although they contribute significantly to the economic development. Developing countries and developed countries specialize on the production of commodities at the different ends of the value added distribution. Developed countries produce mostly high value added, environment friendly commodities whereas developing countries produce most of the industrial intermediate commodities containing highly mechanical andchemical componentsused in the production of high value added commodities. Therefore, lowering the trade barriers might lead to the rise of importof carbon intensive (intermediate) goods from countries where the enforcement of environmental laws are less stringent (Copeland & Taylor, 2004). Countries where the environmental laws are strictly enforced are mostly developed whereas countries where environmental laws are weakly enforced are mostly developing.