FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 4, N° 2, 2007, pp. 183 - 190

FOREIGN DIRECT INVESTMENT AND SUSTAINABLE DEVELOPMENT: AN ANALYSIS OF THE IMPACT OF ENVIRONMENTAL REGULATIONS ON INVESTMENT LOCATION DECISIONS

UDC 339.727.22

Marija Petrović-Randjelović

Faculty of Economics, University of Niš, 18000 Niš, Serbia

Abstract. *In the conditions of increasing integration among countries, growing international mobility of capital flows, particularly foreign direct investment flows, and decreasing of trade barriers are gradually increasing the role of environmental regulations in shaping the host country's comparative advantages. This issue has lead to raising the awareness about the need to examine the consequences of reallocation of pollution intensive industries through foreign direct investment to those developing countries where environmental regulations are less stringent or where they are not properly enforced. The aim of this paper is to analyze the impact of environmental regulations on investment location decisions based on empirical verification of some theoretical predictions for the pollution havens hypothesis in order to demonstrate that environmental costs are not a decisive factor in investment location decisions.*

Key Words: *foreign direct investment, reallocation of pollution intensive industries, environmental regulations*

INTRODUCTION

During the 1980s and 1990s there was a remarkable wave of internationalization of the world economy, maintained by the growing portfolio investment and particularly foreign direct investment flows. Growing international capital flows have given rise to global interdependency of the economies and have reinforced the globalization process. One of the consequences of such capital mobility is that the high economic growth in the 1990s posed a limit to environmental preserving. Thus, the mobility of international capital flows has gained importance not only from a development point of view but also from a point of sustainable development, especially from their environmental aspect.

Received January 21, 2008

Environmental degradation in developing countries and economies in transition is a consequence of the use of unsustainable mode of production and consumption, both in the countries as well as on their export markets, limiting their efforts aimed at sustainable development goals. In the contemporary globalized economy, their environmental impact is appreciably reinforced by the driver factors of globalization, primarily by foreign direct investment as a tool for the realization of the multinational corporation investment activities.

Thus, the processes of intensive removal of production from developed to developing countries and countries in transition in the last decade of the 20^{th} century, have initiated, among other things, the question of environmental adequacy of these removals. Given that multinational corporations are primarily driven by the need to satisfy shareholders' expectations in their transborder investment activities, i.e. to maximize returns on concrete investments, the concern is amplified regarding the identification of the nature of economic growth that foreign direct investment generates in the host country. The question is whether it is sustainable in the long-term relations.

As a key development resource of contemporary globalized economy and a factor of efficient integration of developing countries and countries in transition in the contemporary flows of the globalization of the world economy, foreign direct investment is increasingly getting the prominence among the factors which maintain the realization of the sustainable development vision. Namely, foreign direct investment has a huge impact potential on economic and environmental performances of the host country, not only directly, by using the modern and environmentally clean technologies and by diffusion of modern eco-efficient management and know-how, but also indirectly, by serving as an example whose practice can also be maintained by other investors. In other words, by promoting the efficient use of the resources and sustainable economic growth foreign direct investment may contribute significantly to the creation of conditions for the needed environmental improvements. However, provided that exertion of potential positive environmental effects of foreign direct investments is determined by the operation of the multiple factors, special attention should be paid to the regulation of foreign direct investments in such a way that sustainable economic development is maintained. The reason being that, without effective management at international, national, and corporative level, and in conditions when there is no adequate regulatory structure, foreign direct investments may intensify environmental damage and limit the efforts of the host country in reaching the goals of sustainable development.

During the last few decades multinational production has become an increasingly important element in international competition. Intensified competition between the countries by the economic policy measures for the foreign direct investment, in form of fiscal or financial incentives broaden the range of economic tools on the environmental policy area. Policy competition between governments in the area of environmental policy may induce governments to set such environmental policies that are hazardous to the environment in order to protect their international competitiveness and reinforce their competitive advantages over others. Thus, in our further work we will analyze the effects of environmental regulations on foreign direct investment inflows in order to show if they work for sustainable development.

DO ENVIRONMENTAL REGULATIONS INFLUENCE INVESTMENT LOCATION DECISIONS?

The globalization process in its broader sense can be described as "the growing interdependence of countries world-wide through the increasing volume and variety of cross-border transactions in goods and services and of international capital flows, and also through the more rapid and widespread diffusion of technology" [1]. As a contemporary trends phenomenon, globalization presents the third phase of internalization in the world economy. As a development force of the contemporary society, it is a reflection of concentration, centralization of the capital and the new mode of the integration process whose organizational form present the multinational corporations or the global corporations, as abroad actors and bearers of economic and other processes. After these global corporations and the character of their influence on the world processes and relationships, this phase of capitalism received the name global capitalism or capitalism as a world system [2, p. 136] .

In its essence, globalization is an economic phenomenon which like the others has an impact on the environment and prospects for sustainable development. The interrelationship between environmental regulations and globalization can be perceived in several different perspectives: the most important are trade and investment liberalization.

Environmental problems have drawn the attention of researchers since World War II, particularly in the late 1950s. On one hand, the consequence of industrialization growth and the process of trade liberalization has been substantial environmental degradation. Namely, there is a belief that countries that are intensively engaged in production process generate more pollution. Dispute about environmental regulations has emerged as the differences in environmental regulations between developed and developing countries have become pronounced and have given rise to controversy about the influence of environmental regulations on the investment location decisions. This issue has also reinforced as the activities of developed countries began to display the signs of unfair competition through lax regulations. The underlying hypothesis of such opinion is that environmental regulations effectuate a strong impact on industrial location and that differences in environmental regulations between two countries will have an effect on capital movements to the country where they are weaker.

Basically, "strong environmental regulations are viewed to: (a) directly drive up production costs by requiring certain equipment; (b) decrease waste disposal capacity (e.g., by restricting areas that can be used for landfills); (c) prohibit certain factor inputs or outputs" [8, p. 1]. If it is presumed that all other things are equal, it is perfectly obvious that none of the companies will be interested in having their production facilities in a location (country) with high production costs if they have the possibility to choose among locations (countries). But, this argument is narrowed due to the fact that it simply focuses on the cost effect of environmental regulations on environmentally hazardous industries and the presumption that the differences in production costs are enough to impel the company's investment location decisions.

As globalization has intensified, with increased foreign direct investment flows the pressures on environment has also increased, particularly in the countries where environmental framework is too weak or non-existent. Namely, "the debate on the environmental consequences of foreign direct investment is one of the central issues in the discussion about globalization and sustainable development. Much of the debate on foreign direct investment and its impact on the environment centers on the "pollution havens" hypothesis. The "pollution havens" hypothesis states that companies are willing to move their operations to developing countries in order to take the advantage of less stringent environmental regulations. The starting assumption is that each country sets its regulations based on domestic preferences and resources. But, low income countries that tolerate pollution often set low standards and thus attract pollution intensive and resource seeking foreign direct investment.

Essentially, environmental regulations are a means of internalizing the external environmental costs of companies' economic activity. But in order to attract investment, the host country government will undervalue their environment through lax environmental regulations. Consequently, companies will shift their operations to these countries to take advantage of lower production costs. Both moments lead to sub-optimal pollution in the host country and a potential race to the bottom in environmental standards" [3, p. 3].

From the theoretical side, there are two opposite views about the role that environmental factors play in influencing the location of foreign direct investment. According to the classical comparative advantage trade point of view, the environmental factor is included in the production process as yet another production factor that raises the costs of production. Environmental stringency from this point of view burdens the additional costs, slow productivity growth and contributes to the decline of competitive advantage. All of these in turn negatively contribute to exports, increase the imports and have an impact on pollution industry movements abroad. But, from the neo-technology trade perspective, there is doubt that stringent environmental regulations initiated industries to migrate to locations with lax regulations.

The performed empirical studies show that some companies will invest abroad seeking to reduce environmental costs as their primary goal. However, there are two opposite opinion with theoretical justification. Some authors, using a general equilibrium framework concluded that countries with lax environmental regulations will tend to specialize in pollution intensive industries or at least to enjoy a comparative advantage in such industries. The basic suggestion derived from this conclusion is that it is the optimal solution for pollution intensive foreign direct investment to be located in the so called "pollution haven". Therefore, multinational corporations will locate their production facilities in countries with lax environmental regulations. Other authors support the view that environmental regulations have no effect on investment location decisions. This opinion is based on the presumption that cost effects of environmental regulations are too small and negligible in the location of production facilities abroad.

Yet, these empirical studies show certain shortcomings. For instance, the problems occur in using such endogenous variables that are not eligible to track the effect of environmental regulations. Another problem appears in adequate measuring the strictness of environmental regulations. In particular, correct evaluation of the magnitude of stringency of a country's environmental regulations is not such an easy task. The shortcomings of most empirical studies occur due to their disability to measure the environmental regulations stringency which gives their discussion a certain dose of descriptiveness.[1]

[1] In most empirical studies there is no measure of the strictness of environmental regulations, which in turn increases the descriptive nature of such explorations.

INSTEAD OF CONCLUSION

Essentially, investment is of particular importance to the achievement of sustainable development and growth. Capital is a scarce resource, particularly in developing and countries that are in transition to the market economies. Efficient allocation of capital is critical to achieve both economic growth and sustainable development, as well. In recent years, foreign direct investment flows have increased dramatically. For many developing countries and countries in transition, foreign direct investment has become the most important source of capital, overtaking both, official development assistance and portfolio investments. Foreign direct investment seen as a complex investment package, not only provides the possibility to promote development, but also to encourage the prospect of its sustainability. As a bundle of assets, foreign direct investment is a complex investment category that, beside the capital, also includes intangible assets in form of technological, marketing and management skills and know-how. As such an investment package, foreign direct investment may contribute significantly to the development process of developing countries and countries in transition.

Meanwhile, investors choose the investment location in accordance with expected profitability of potential location. The profitability of an investment depends on both the advantages of the investment location and motives for investment. The relevant literature suggests that the key locational factors that determine foreign direct investment inflows are host country market size, input costs (particularly labour and natural resources costs), and the riskiness of investment, from economic and political aspects. What about the role of the environmental factors in determining investment decisions?

For example, Wheler and Mody (1992) suggest that the differences in environmental regulations stringency have not played a significant role in investment making decisions. In their study of 172 Japanese companies, other authors, Dasgrupta, Mody and Sinha (1995), found that the quality of labour force, not its cost, have played a decisive role in choosing the investment location.

The general conclusion is that environmental costs are not included as a crucial factor in investment location decisions. Despite the fact that cost effectiveness may be an important driver for the investment activities abroad, multinational corporations prefer to operate in the country with adequate environmental framework rather than with lax ones. If the companies make the investments that improve the environment, many production costs will decrease with higher quality of environment. When they make a decision to invest, environmental costs seem to be only a small part of the bulk of locational factors. The significance of environmental costs, as a constitutive part of production costs, will vary depending on the industry in question, and sectors involved.

Abundant empirical evidence substantiated such conclusions of which we will mention some. Some authors [7, p. 147] suggest that if environmental regulations caused industrial flight from developed countries, foreign direct investment should increase over time to developing countries. But, the amount of inward pollution investment constitutes just a smaller proportion of total foreign direct investment receipts. Namely, most pollution intensive foreign direct investment, according to OECD (1997), from the developed countries was gone to other developed countries, rather than to developing ones.

In their attempt to evaluate the stringency of environmental policy effects on the location of the pollution industries, Kolstad and Xing (1998) find that in the conditions where other determinants of foreign direct investment remain constant, environmental regulations impact the location decisions. They had analyzed the interrelationship between capital outflow of several US industries (particularly the US chemical industry, the US electrical machinery industry and the US non-electrical machinery industry) and the environmental policy of their host countries. They found a strong correlation between environmental laxity and the US chemical industry, but no correlation with the other US industries. According to their study, lax environmental regulations will tend to attract foreign direct investment from the US pollution intensive industry.

Cole and Eliot (2002) performed two different types of analyses with the aim to identify the key determinants of the US pollution intensive foreign direct outflows. Applying the single sector and multi-country analysis they found that the main determinants were factor endowments, and not environmental regulations, due to the capital intensity nature of pollution intensive sectors for US industries. Meanwhile, applying the multi-sector and single country analysis for the purpose of investigating the determinants of multi-sector aimed foreign direct investment and single country they found opposite results. With the example of Brazil and Mexico, as countries with high capital labor ratios and relatively low environmental regulations, they found that there is a strong positive correlation between sector capital intensity and the pollution abatement costs within the sector. On this basis, they concluded that they are the most important determinants of the US foreign direct investment outflows to these countries.

In their common work, Smarzynska and Wei (2001) tried to find justification for the "pollution havens" hypothesis. Instead of using country-level or industry-level figures, they used a unique firm-level data set that describes the investment decision by 534 major multinational firms in 24 countries in Central/Eastern Europe and the former Soviet Republics, which represents potentially 12,816 (=534X24) investment decisions at the firm level. With various improvements of the previous empirical studies they found little support for the "pollution havens" hypothesis that holds for more pollution intensive industries. These improvements relate to: taking into explicit account the effect of host country corruption, employing a variety of measures that capture the strength of environmental protection in host countries, and constructing a measure of pollution intensity at the 4-digit industry level (based on pollution emissions and on abatement costs).

By using a variety of measures to capture the strength of environmental protection in host countries [(apropos, a degree of participation in four different international environmental protection treaties, covering transboundary aspects of air pollution, industrial accidents, use of water-courses and lakes, etc; an index of the strength of the air and water ambient and emission standards system as rated by European Bank for Reconstruction and Development (1997); the actual reduction in emissions of carbon dioxide, land and water pollutants (scaled by the GDP growth)], they found that "the most supportive evidence comes when a country's environmental standard is measured by its participation in international environmental treaties. In this case, investment from pollution-intensive multinational firms as a share of total inward FDI is lower for host countries with a higher environmental standard. However, the support for the "pollution haven" hypothesis is not robust to various sensitivity checks" [11, p. 14].

On balance, there is little evidence that support "pollution havens" hypothesis performed from classical comparative advantage trade point of view. The "pollution havens" hypotheses based on the proposition that developing countries in order to attract investment lower the environmental standards and thus create competitive advantage in pollution - intensive industries. In fact, pollution havens seem to be tenable just for some industries and some countries and not for all, namely it has no general meaning. A literature survey on the linkage between environmental regulations and foreign direct investment has shown that there were a few studies that give supporting empirical evidence to the theoretical background. Since the large multinational corporations undertake foreign direct investment abroad which operate at corporate environmental standards, rather than host country environmental standards, there is a reason why there can be general meaning and application of the "pollution havens" hypotheses. Industrial flight can be attributed to structural adjustments, rather than to the "race to the bottom" in the environmental standards. Adversely, imposition of higher environmental standards may initiate production reallocation from host countries in order to reduce the environmental costs of production. But, this question opens the door for the new investigations that will be dealt with in our future work.

REFERENCES

1. Agarwal, J. P., "Determinants of Foreign Direct Investment: A Survey", Weltwirtschaftliches Archive, Vol 116: 739-773, 1980
2. Arandjelović, dr Zoran i Petrović-Randjelović, mr Marija, "Foreign Direct Investment as a Factor of Acceleration of the Transition Process and its Role in the Process of Privatisation", Facta Universitatis, series Economic and Organization, Vol. 3, No. 2, p. 135-150, 2006
3. Arandjelović, dr Zoran i Petrović-Randjelović, mr Marija, "Does Foreign Direct Investment Harm the Host Country's Environmental Performance? An Analytical Assessment", Economic themes No. 6, Ekonomski fakultet, Niš, p. 1 - 9, 2006
4. De Janquiers, G., "Reform Has Not Yet Gone Far Enough", in "Is Globalisation Inevitable and Desirable?", www.monde-diplomatique.fr/md dossiers/ft/, 1997
5. Frankel, J.A., "The Environment and Economic Globalization", in M. Weinstein (ed.), Globalization: What is New?. Cambridge, 2002
6. Gray, W. B. and Shadbegian, R. J., "Environmental Regulation, Investment Timing, and Technology Choice", The Journal of Industrial Economics, 64, 2: 235-256, 1998
7. Jaffe, A. B., Peterson S. R., Portney P. R. and Stavins R. N., "Environmental Regulation and the Competitiveness of U.S. Manufacturing: What Does the Evidence Tell Us?", Journal of Economic Literature, 33, 1995
8. Kolstad, C. and Xing, Y., "Do Lax Environmental Regulations Attract Foreign Investment?", Department of Economics, UC Santa Barbara; Economics Working Paper: 1078, 1998
9. List, J. A. and Co, C. Y., "The Effects of Environmental Regulations on Foreign Direct Investment", Journal of Environmental Economics and Management, 40: 1-20, 2000
10. Low, P and A. Yeates., "Do 'dirty' Industries Migrate?", In Low, P (ed) International Trade and the Environmental, World Bank discussion paper, No. 159: 89-104, 1992
11. Smarzynska, B. K. and Wei, S-J. "Pollution Havens and Foreign Direct Investment: Dirty Secret or Popular Myth?", NBER Working Paper: 8465, 2001
12. Tobey, J. A., "The Effect of Domestic Environmental Policies on Pattern of world Trade: An empirical Test", Kyklos, 43, Fasc, 2: 191-209, 1990

STRANE DIREKTNE INVESTICIJE I ODRŽIV RAZVOJ: ANALIZA UTICAJA EKOLOŠKIH PROPISA NA ODLUKE O LOKACIJI INVESTICIJA

Marija Petrović-Randjelović

U uslovima rastuće integracije zemalja, veća međunarodna mobilnost tokova kapitala, naročito tokova stranih direktnih investicija, i smanjenje trgovinskih barijera postepeno povećavaju ulogu ekoloških propisa u oblikovanju komparativnih prednosti zemlje domaćina. Ovo pitanje je povećalo svest o potrebi razmatranja posledica realokacije prljavih industrija preko stranih direktnih investicija ka onim zemljama u kojima su ekološki propisi slabiji ili se ne sprovode kako treba. Cilj ovog rada je da analizira uticaj ekoloških propisa na odluke o lokaciji investicija na bazi empirijske verifikacije nekih teorijskih pretpostavki o hipotezi o "lukama zagađenja", kako bi se dokazalo da se ekološki troškovi ne javljaju kao odlučujući u odlukama o lokaciji investicija.

Ključne reči: *strane direktne investicije, realokacija prljavih industrija, ekološki propisi.*