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GREEN WAY-OUT FROM DEPRESSION: INSIGHTS FROM THE EU

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Abstract
Global economic crisis, along with domestic structural inefficiencies, weakens growth perspectives for the less developed and/or the financially weaker economies of Europe. On the other hand, the relevant literature claims that technological innovations, especially with respect to the ecological aspects of products and processes, could be an effective way-out. The present paper contributes to this discussion in two ways: first, we discuss relevant case studies of certain multinationals. Second, we proceed with a panel data analysis of recent intra-EU data, estimating the effect of environmental expenditures and investments on exporting activity, considering also "gravity"- explanatory variables. We conclude that "green"- investments seem to have a positive effect, both, in the micro- as well as macro-dimension, while expenditures could affect extroversion and competitiveness adversely.

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1. Introduction

The entrance of the US economy into recession in late 2007 interrupted the twenty-year period of stability and prosperity of "Great Moderation" (Castree, 2009; Dagum, 2010; Kurth, 2010). The US credit crisis spread rapidly in many developed countries (butterfly effect) and the subsequent recession has become so deep and prolonged as to be considered a new major crisis similar to the Great Depression of 1930 (Castree, 2009; Kurth, 2010). Indicative of the inability of current theoretical approaches to provide a suitable policy, was the possibility of payments suspension that the United States faced in July 2011 as well as the risk of a domino debt effect in many member states that the eurozone still has to deal with. The problem becomes more complicated when we take into consideration that it has coincided with severe environmental and social problems (Castree, 2009).

In the following paragraphs we explore whether a green economy (via a new green technological revolution) could be sufficient to overcome the downswing phase of the current Kondratieff wave and to put the global economy on a growth trajectory. More specifically, could it help the European economies that have been hardest hit?

The rest of the paper is structured as follows: the next section provides a short theoretical and empirical literature review. Section 3 provides empirical investigation in the micro-dimension through specific case studies of certain multinational companies. Section 4 implements a cross-section test using a gravity model to provide a macro-dimension empirical investigation. Section 5 offers our conclusions.

2. Literature review

The present global economic crisis is systemic as well as multidimensional, for a series of reasons that will be presented below.

There are opposing views in the academic community regarding the nature of the current crisis, which has led to declining profits, growth and employment on a world-wide scale, exacerbating socio-economic inequalities at the same time (Gills, 2010). Heterodox tradition argues that the capitalist economy has inherent imbalance trends tending to no equilibrium. Hence, crises are generated by the system itself and economic fluctuations are structural and long-term (thus accepting the existence of long waves), in contrast to the neoclassical view of normal recession incidents of the business cycle (Zarotiadis and Michalena, 2010; Gills, 2010). According to Gills (2010) the causes of the current problems must be searched for in the footsteps of neo-liberalism. Adopted in 1970, it temporarily led the way out of the Great Inflation but apparently created a chain reaction within capitalism leading to the present systemic crisis. Otherwise problems would be solved through existing policy tools, confirming that neoliberal capitalism has a relatively smooth operation (which is not observed) demonstrating the failure of the orthodox school, who believed that the recipe for the control of business cycles had been found (Kotz, 2009). Moreover, the current crisis differs from previous ones in to its multidimensional nature. Not only do we have financial issues but also serious environmental and social ones that have emerged since the beginning of 21st century.

The gradual rise of crude oil prices (that reached nearly $150 per barrel in July 2008) was due to the reduction of oil production during 2002-2003 (because of the war in Iraq), increasing demand for fossil fuels from emerging countries and the absence of reliable data regarding reserves' adequacy (Kesicki, 2010; Maugeri, 2009). It is obvious that developed countries, which entirely depend on oil, were -and will continue to be- more sensitive to any energy crisis. There was a direct effect on the prices of staple food through increased fertilizer prices, the cost of agricultural machinery and transport costs (Chand, 2008). Furthermore, we should include the conversion of arable production to biofuels since 2007, the change of dietary preferences of emerging countries and climate change in areas that were the main producers of staple foods - leading to the 2007 food crisis (prolonged drought in Russia and floods in Australia) (Biggs et al., 2011; Chand, 2008; Hanjra and Qureshi, 2010). At the same time there is a common consensus that global warming is a phenomenon that is evolving at dramatic speed owing to a rapid increase in energy requirements and harmful emissions (Schumacher, 2007). In addition, according to a WHO survey of 2004, 1.2 billion people had no access to cheap and clean water – exacerbating sanitation and hygiene problems as a result of water scarcity (Moe and Rheingans, 2006). All the above disproportionately affected the lower strata of the global population and intensified the problem of famine. Bearing in mind the relevant literature, each of the earlier long waves seems to have been launched by the adoption of a new technological revolution which according to Zarotiadis (2012:41) "...is the most fair and efficient solution to any crisis" (Ayres, 2006; Eklund, 1980; Gore, 2010; Maddison, 2007). Combined with the obvious need for an alternative form of development that will not be at the expense of the environment, it is not surprising that the green economy has come to the fore. The question is whether we are on the threshold of a new, fifth Kondratieff wave that will be stimulated by environmental technology and will be able to rescue the fragile global economy (Palmberg and Nikulainen, 2010).

UNEP (2011:16) defined the green economy as the economic system that aims at improving the welfare of individuals and social justice, and is combined with the simultaneous reduction of both environmental risks and ecological inadequacies. Nevertheless, the concept does not enjoy wide acceptance by economists and environmentalists, probably owing to the complexity of the term. It is frequently confused with sustainable development, which is a broader term that includes the three pillars of (sustainable) development: economic, social and environmental (Fulai, 2011; Khor, 2011). In practice, it is the economic strategy that will help to reach sustainable development (UNEP, 2011:16-19). However, there will not be a simultaneous transition process towards a green economy for all countries. There will be variations among them, taking into account the specificities of their natural environment and environmental problems, human resources and level of development (McLauchlan and Mehrubeoglu, 2010; OECD, 2010:22).

Environmental issues have attracted worldwide attention since the 1970s energy crisis, and many countries have adopted environmental practices relating to the characteristics of products and production processes (Esty and Geradin, 1998). Despite research progress on both theoretical and empirical levels since 1990, the empirical literature in the micro- and macro-dimension is currently inconclusive as to whether 'it pays to be green' (Horváthová, 2010; López-Gamero et al., 2009).

The traditional view is that environmental legislation (which has been promoted to deal with environmental problems and has become stricter over the years) is intended to correct the negative externalities caused by pollution (Testa et al., 2011). However, businesses face additional costs that lead to reduced competitiveness and decreased market shares (Costantini and Mazzanti 2012; Esty and Geradin, 1998; Iraldo et al., 2011; Horváthová, 2010; Testa et al., 2011). Palmer et al. (1995) in their neoclassical model showed that stricter environmental legislation is an additional cost that weakens companies' financial operations (Eiadat et al., 2008; Testa et al., 2011). On the other hand, it has been argued that improved environmental activity (through legislation) is able to promote competitive business advantage by more efficient processes, improved productivity and opportunities in new emerging markets (Iraldo et al., 2011; Testa et al., 2011). According to Porter and van der Linde (1995), more flexible but rigorous environmental legislation will increase the incentive to adopt innovations in two directions: firstly, towards product innovation (as a finished product or as an input) in order to differentiate it from others. Eco-labeling, which first appeared in the late 1970s allows businesses to acquaint consumers with their environmentally friendly products (D'Souza et al., 2006). Meanwhile, process innovation regulates the manner in which goods are manufactured. Thus businesses adopt environmental management systems and communicate them through international certification standards such as ISO 14001 and EMAS (Sinding, 2001). Hitherto the empirical literature has been divided (Iraldo et al., 2011). Half of the studies display a positive relationship while the rest of them a negative or no relationship between environmental practices and business economic performance (Eiadat et al., 2008).

At the macro level an indicative measure of competitiveness is the size of exports, assuming that an open economy strengthens its competitiveness when its share of exports (imports) is increasing (decreasing) (Kemp and Horbach, 2008; Taner et al., 2000). Among several econometric studies, gravity models are more often used to check the effect that stricter environmental legislation (as a new variable in the classical gravity model) may have on bilateral trade between countries. Xu (2000) could not confirm that stricter environmental legislation reduces total bilateral exports of environmentally sensitive goods among 34 countries. Jug and Mirza (2005) unlike the majority of previous models, decided to express the stringent environmental variable through the new Eurostat indicator of current environmental protection expenditure. Through a gravity model among 12 importing and 19 exporting European countries

for the period 1996-1999, they concluded that the environmental costs entailed negative trade flows. Cagatay and Mihci (2006) constructed an index that indicates the level of diversification of environmental stringency between 23 developed and 9 developing countries for 2000 and concluded that environmental rigor discourages exports. Caporale et al., (2010) also used current environmental expenditure data from Eurostat. Their gravity model for multilateral trade relations between Romania and 20 European trading partners suggested that in most cases the environmental stringency variable had a positive and statistically significant effect on trade. Finally, Costantini and Mazzanti (2012) in a sample of 14 exporting and 145 importing countries for the period 1996-2007, examined each country's environmental policies (such as environmental taxation and Environmental Certification Standards) to find that they did not burden exports while in some cases promoted them.

3. Micro-investigations

The following empirical investigation will be carried out by the method of case studies. Environmental policy reporting is quite a recent aspect of corporate strategy, thus there is difficulty in finding available data from businesses[1]. Meanwhile, there is controversy in the existing literature owing to a long list of practices that have been used and variables that have been examined, which leads to different results (Horváthová, 2010). In order to avoid these problems we will adopt this method in examining four multinationals: Fujitsu, IBM, Sharp and Toyota. Our primary goal is to identify the reasons that initially motivated them to adopt environmentally friendly practices in processes and/ or products. Moreover, since they apply environmental accounting we can have a comparative evaluation between environmental costs and benefits in order to examine which view in the existing literature prevails.

Fujitsu, Sharp and Toyota are Japanese companies whereas IBM is an American multinational. They were all founded in the beginning of the 20th century and are successful in their respective fields of operation. Through their environmental reports it has been observed that in general their interest in environmental protection started in the 1990s. As stated, their common objective was the fulfillment of their 'corporate social responsibility'. At the same time, they admit their desire to strengthen their competitive advantage, enhance their market share and promote their economic prosperity. According to them, all the above can be achieved through their preoccupation with environmental practices.

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1. Data were collected from multinationals' sustainable and environmental reports respectively, from the following websites:
http://www.fujitsu.com/global/about/environment/communication/report/ (last accessed 23 Nov 2011);
http://www.ibm.com/ibm/environment/annual/ (last accessed 12 Nov 2011); http://sharp-world.com/corporate/eco/csr_report/backnumber.html (last accessed 19 Nov 2011);
http://www.toyota-global.com/sustainability/report/archive/ (last accessed 14 Nov 2011;
http://sharp-world.com/corporate/eco/csr_report/backnumber.html (last accessed 19 Nov 2011);
http://www.toyota-global.com/sustainability/report/archive/ (last accessed 14 Nov 2011).

Thus they have restructured their production processes as a means to use resources efficiently (since nowadays there is constant increase in the prices of raw materials) and to alleviate as much as they can their impact on the environment. Otherwise they would be dealing with more fines because of stricter environmental legislation, which seems to confirm the 'Porter Hypothesis'. Thus, all multinationals have adopted the global ISO 14001 environmental management system to harmonize with various environmental laws of foreign markets and gain easier access to them. At the same time, they are interested in environmentally friendly products and their certification (e.g. ENERGY STAR) in order to inform consumers as well as to sell them in any market where certification is needed.

Concerning the environmental accounting of the multinationals in question, they appear to have relatively uniform positive effects. Environmental costs are quite similarly assessed while there is diversity in the calculation of benefits, mostly in the indirect ones (whose importance has been realized). As far as the economic impact of the specific multinationals is concerned, we can deduce that the environmental costs do not seem to significantly burden them as an additional cost, in contrast to the traditional view. Accordingly, the resulting benefits (direct and indirect) are difficult to estimate and do not appear to make a particular contribution because in times of crisis businesses were unable to maintain their momentum. Instead they produced more environmentally sensitive products, probably as a way to boost their profile and gain the 'first mover advantage'. This is clearly demonstrated in the case of Toyota (by the production of the hybrid Prius) and of Sharp (by the production of photovoltaic panels). Their involvement with innovative green products provided them with the required expertise that made them leaders in the new emerging markets.

Nevertheless, the orientation of business to green innovation in both products and production processes is relatively recent, thus medium and long term results are not yet available. Therefore, we cannot draw definitive conclusions because of the limited amount of information, since the data are mostly ten years old. Future, further research through an appropriate econometric investigation would be required, taking into account a wider range of data.

4. Macro- empirical analysis

In the following part, we will try to examine, through inductive reasoning, whether the transition to a green economy can have positive effects on nations' competitiveness. Thus we have focused on the European Union, which has been the leader - to a degree - in the design and adoption of stringent environmental policies (Costantini and Mazzanti, 2012). Since the southern member-states have been worst hit by the current debt crisis, we thought it would be of greatest interest to focus on them. The issue of 'environment and international trade' is relatively recent, thus specializing in the core of the European Union, the Eurozone, is even rarer. For this reason, we will use the current environmental expenditure and investment data both for public and private sectors from Eurostat, which do not seem to have been widely used before.

We will adopt the method of gravity models because they are eminently applicable to the empirical investigation of international trade and are thought to be the most successful econometric tools, without losing the geographic dimension (Cagatay and Mihci, 2006; Caporale et al., 2010; Costantini and Mazzanti, 2012). Applied initially by Tinbergen, Pöyhönen and Linneman, who pioneered the idea of analyzing international trade flows by adopting the concept of Newton's law of gravity (science of physics), they were further developed by Bergstrand as well as Helpman and Krugman (Cagatay and Mihci, 2006; Caporale et al., 2010; Eita, 2008; Xu, 2000). Gravity models are also used to test the relationship between environmental regulation and trade flows and the equation has the following form:

$$(1) \quad T_{ijt} = \beta_0 + \beta_1 GDP_{it} + \beta_2 GDP_{jt} + \beta_3 N_{it} + \beta_4 N_{jt} + \beta_5 d_{ij} + \beta_6 S_{ijt} + \beta_7 X' + u_{ijt}$$

where T_{ijt} is the dependent variable that represents trade flows between counties i and j in time t (they can be bilateral, exports or imports), while the explanatory variables are GDP_{it} and GDP_{jt} (GDP for countries i and j respectively at time t), respective populations N_{it} and N_{jt} for countries i and j at time t, d_{ij} is distance between countries i and j and is independent of time, X´ is a vector that represents other control variables which may differ between countries and influence trade flows, β_0 is the constant variable, u_{ijt} is the error term and β_1, β_2, β_3, β_4, β_5, β_6, β_7 are the coefficients of the model (Caporale *et al.*, 2010; Jug and Mizra, 2005).

4.1. Models and the dataset

Our main goal is to examine the consequences of environmental policies on trade flows, by analyzing bilateral trade relations among five northern (Germany, France, Netherlands, Finland, Belgium) - henceforth N - and six southern (Greece, Italy, Spain, Portugal) and eastern (Bulgaria, Romania) European countries - henceforth S - for the period 1997 to 2007. Their selection was based on data availability and their economies' size depending on European GDP ranking.

Before proceeding, it must be noted that there will be two different dependent variables: net exports (henceforth NX) between N and S and exports (henceforth X) between N and S. Considering that NX, in general show the country's position in bilateral trade flows while X reveal the openness of domestic firms, it is likely that the trade balance will remain unchanged although firms become more competitive.

The two econometric regression equations are:

$$(2) \quad \left(\frac{NX_{S,N}}{GDP_S}\right)_t = a_0 + a_1 (y_S - y_N)_t + a_2 \left(\frac{\frac{ECE_S^{Pu}}{GDP_S}}{\frac{ECE_N^{Pu}}{GDP_N}}\right)_t + a_3 \left(\frac{\frac{ECE_S^{Pr}}{GDP_S}}{\frac{ECE_N^{Pr}}{GDP_N}}\right)_t + a_4 \left(\frac{\frac{EI_S^{Pu}}{GDP_S}}{\frac{EI_N^{Pu}}{GDP_N}}\right)_t +$$

$$a_5 (ISO_S - ISO_N)_t + u_{SNt}$$

$$(3)\ \left(\frac{X_{S,N}}{GDP_S}\right)_t = a_0 + a_1(y_S - y_N)_t + a_2 DIST_{SN} + a_3\left(\frac{\frac{EI_S^{Pu}}{GDP_S}}{\frac{EI_N^{Pu}}{GDP_N}}\right)_t + a_4\left(\frac{\frac{EI_S^{Pu}}{GDP_S}}{\frac{EI_N^{Pu}}{GDP_N}}\right)_{t-1} +$$

$$a_5\left(\frac{\frac{ECE_S^{Pu}}{GDP_S}}{\frac{ECE_N^{Pu}}{GDP_N}}\right)_{t-1} + a_6\left(\frac{\frac{ECE_S^{Pr}}{GDP_S}}{\frac{ECE_N^{Pr}}{GDP_N}}\right)_{t-1} + a_7(ISO_S - ISO_N)_t + a_8(ISO_S - ISO_N)_{t-1} +$$

$$a_9 D_{IT} + a_{10} D_{SP} + a_{11} D_P + a_{12} D_{BU} + a_{13} D_{RO} + a_{14} D_{FR} + a_{15} D_{NL} +$$

$$a_{16} D_{FI} + a_{17} D_{AU} + u_{SNt}$$

where $\left(\frac{NX_{S,N}}{GDP_S}\right)_t$ denotes net exports from country S towards country N in year t, expressed as a percentage of GDP while $\left(\frac{X_{S,N}}{GDP_S}\right)_t$ shows exports from S towards N in year t, expressed as a percentage of GDP (database: COMTRADE[2]; World Bank[3]). Since GDP per capita is a more objective indicator that takes into account the country's population, we used $(y_S - y_N)_t$ which is the difference of GDP per capita between S and N in year t (database: Eurostat[4]). Because there are no available data for private environmental investment, we tried to include them indirectly through the variable $(ISO_S - ISO_N)_t$, which shows the difference in change ratios of international environmental management systems between S and N in year t. (database: ISO surveys[5]). We also included it lagged by one year, assuming that their impact takes time to occur. The next independent variable $DIST_{SN}$, shows the geographical distance in kilometers between the capitals of N and S (database: Google Maps).

To denote environmental stringency we used $\left(\frac{\frac{ECE_S^{Pu}}{GDP_S}}{\frac{ECE_N^{Pu}}{GDP_N}}\right)_t$, $\left(\frac{\frac{ECE_S^{Pr}}{GDP_S}}{\frac{ECE_N^{Pr}}{GDP_N}}\right)_t$, which are the ratios of current environmental expenditures of public and private sector respectively (as a percentage of GDP) in S to N in year t (database: Eurostat[6]).

2. http://comtrade.un.org/db/mr/daYearsResults.aspx?y=all (last accessed 12 Dec 2011).
3. http://data.worldbank.org/indicator/NY.GDP.MKTP.CD?page=3 (last accessed 13 Dec 2011); http://data.worldbank.org/indicator/NY.GDP.MKTP.CD?page=2(last accessed 13 Dec 2011); http://data.worldbank.org/indicator/NY.GDP.MKTP.CD?page=1(last accessed 13 Dec 2011); http://data.worldbank.org/indicator/NY.GDP.MKTP.CD (last accessed 13 Dec 2011).
4. http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (last accessed 14 Dec 2011).
5. ISO survey, 2000, http://www.tc207.org/PDF/News_Articles/2000/2000_7.pdf (last accessed 28 Dec 2011); ISO survey, 2004, http://www.iso.org/iso/survey2004.pdf (last accessed 28 Dec 2011); ISO survey, 2006, http://www.environment.gov.au/soe/2006/publications/drs/pubs/590/set/hs59iso-survey12thcycle.pdf (last accessed 28 Dec 2011); ISO survey, 2008, http://www.accredia.it/UploadDocs/488_survey2008.pdf (last accessed 28 Dec 2011).
6. Current expenditure for environmental protection includes both internal current expenditure and fees/purchases. Internal (in-house) current expenditure includes the use of energy, material, maintenance and own personnel for measures taken by a sector to protect the environment. http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (last accessed 14 Dec 2011).

Moreover, $\left(\frac{\frac{EI_S^{Pu}}{GDP_S}}{\frac{EI_N^{Pu}}{GDP_N}}\right)_t$ is the ratio of environmental investment as a percentage of GDP of the public sector in S to N in year t (database: Eurostat[7]). For the same reason (as mentioned above), environmental variables entered in our model lagged by one year. Finally, in order to take into account countries' general characteristics, we included which are dummies for each country respectively and not every combination of countries.

4.2. Empirical results

In order to estimate the gravity model (2), we implemented the fixed effects (according to the Hausman test). On the other hand, we could not use this technique in its typical form to estimate equation (3) because we included the distance variable that remains unchanged for each pair of countries. Thus, we chose to use dummies. We estimated both regression models with the weighted Generalized Least Squares method in order to deal with the problem of heteroskedasticity. Table 1 summarizes the results for two different regressions and includes the estimated coefficients and their calculated t-statistics (in parentheses).

In both equations, the difference in GDP per capita has a positive and statistically significant effect, confirming similar findings in modern empirical theory (contrary to the neoclassical theory of trade). That supports that the intensity of trade flows is sometimes larger among countries which have a similar level of prosperity. Moreover, distance has the expected (by the gravity model theory) negative and statistically significant effect on exports.

Next, we focus on environmental variables. In equation (2), current environmental expenditures both in private and public sectors are not statistically significant. On the contrary, in equation (3) the same variables lagged by one year, have a negative and statistically significant effect on X. This may be justified, because high environmental costs are incurred to correct damage resulting from lack of appropriate environmental policy. As a result there is a need for additional environmental costs that obviously further burden state budgets and firms. This should not intimidate us. Conversely, one might say that it demonstrates the need for a proper environmental policy that will lead to reduction in expenditure.

Likewise, we do not have distinct results as far as environmental investments of the public sector are concerned. In spite of having a positive and statistically significant impact on NX, the same is not confirmed for X. There is a rather negative impact when the one year-time lag of the variable is included. Since the shift to environmental issues (with strict policies and more investments) is relatively recent, there may be short-term results that cannot be easily identified within our models. For example, it would be useful perhaps to use more time lags, which is difficult because of the limited time horizon of our data

7. Investment expenditure includes all outlays in a given year (purchases and own-account production) for machinery, equipment and land used for environmental protection purposes. http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (last accessed 14 Dec 2011).

Finally, the results from the implementation of environmental management systems (ISO) and the lagged ISO seem to vindicate us since they have a statistically significant effect both in NX and X.

Table 1. Estimation results

Variables	Regression (2)	Regression (3)
a_0	-0.003082 (-2.933548) ***	0.037032 (48.34934) ***
$(y_S - y_N)_t$	2.23E-07 (3.353034) ***	2.51E-07 (9.354016) ***
$DIST_{SN}$		-4.56E-06 (-24.74868) ***
$\left(\frac{ECE_S^{Pu}/GDP_S}{ECE_N^{Pu}/GDP_N}\right)_t$	-0.000259 (-1.509549)	
$\left(\frac{ECE_S^{Pu}/GDP_S}{ECE_N^{Pu}/GDP_N}\right)_{t-1}$		-0.000427 (-2.368970) **
$\left(\frac{ECE_S^{Pr}/GDP_S}{ECE_N^{Pr}/GDP_N}\right)_t$	-7.72E-07 (-0.005008)	
$\left(\frac{ECE_S^{Pr}/GDP_S}{ECE_N^{Pr}/GDP_N}\right)_{t-1}$		-0.000363 (-2.285744) **
$\left(\frac{EI_S^{Pu}/GDP_S}{EI_N^{Pu}/GDP_N}\right)_t$	3.61E-05 (2.237814) **	-2.65E-05 (-2.778902)
$\left(\frac{EI_S^{Pu}/GDP_S}{EI_N^{Pu}/GDP_N}\right)_{t-1}$		-1.14E-05 (-1.628592) ***
$(ISO_S - ISO_N)_t$	0.000168 (4.233916) ***	0.000345 (2.877118) ***
$(ISO_S - ISO_N)_{t-1}$		0.000205 (7.977332) ***
R-squared	0.940658	0.957916

5. Conclusions

The aim of this paper was to empirically contribute to the discussion whether the transformation to a green economy will have a positive impact in promoting firms' profitability and countries' competitiveness in the current era of the new imbalance in the capitalist system.

Firstly, the investigation of four multinationals through the method of case studies, has not reached clear conclusions. It is not confirmed that the adoption of green products (both in production process and products) either promotes and boosts multinationals' profitability in time of crises or burdens them as an additional cost (as claimed by neoclassical theory). Of course, enterprises' occupation with environmental issues is relatively recent, thus medium- and long-term results do not exist yet. However, multinationals seem to increasingly declare their interest in becoming "green". Because of their new environmental profile they will gain larger market shares and "the first mover advantage", which will give them the leading position in newly-created markets as well. Therefore, we could say that the four multinationals care for indirect benefits, though they cannot fully calculate them.

The empirical testing of the two econometric models that followed yielded a number of interesting observations which certainly deserve further investigation and confirmation. However, there are indications that the adoption of environmental practices can contribute to the openness of a country's economy, contrary to the traditional view. In future research, a microeconomic econometric investigation would be quite useful. At the same time, it would be beneficial to broaden the sample both of countries and control variables.

In conclusion, a comprehensive evaluation of the results suggests positive consequences from the shift to green economies, although the results are not fully confirmed. Building a green economy will require strong political commitment and proper policy coordination. In any case, it is obvious that the era of neoliberal capitalism seems to be coming to an end and there will need to be a new development model, more environmentally friendly.

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