

The Effects of Globalization on the Environment

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ABSTRACT

In multiple standard ordinary least squares regression models, the effects of 26 standard predictor variables, including the “four freedoms” of goods, capital, labor, and services, are tested on the following indicators of sustainable development: Avoiding net trade of ecological footprint gha per person, carbon emissions per million US dollars gross domestic product, CO₂ per capita, environmental performance index (EPI), global footprint per capita, happy life years, happy planet index (HPI), and ln (number of people per mill inhabitants 1980–2000 killed by natural disasters per year + 1). This research shows that the apprehensions of quantitative globalization critical research are fully vindicated by the significant negative environmental effects of the foreign savings rate. High foreign savings are indeed a driver of global footprint and are a blockade against a satisfactory HPI performance. The New International Division of Labor model (Froebel et al., 1980) is one of the prime drivers of high CO₂ per capita emissions. MNC penetration, the master variable of most quantitative dependency theories, blocks environmental performance (EPI-index) and several other socially important processes. Worker remittances have a significant positive effect on the HPI and happy life years.

Keywords: Environment, Globalization, International Migration, International Political Economy, International Relations

1. INTRODUCTION

The issues under empirical scrutiny here have an enormous importance for the future of policy-making on a global scale and also in Europe. The EU-2020 strategy, which substitutes the now defunct “Libson agenda,” which was the main policy strategy of the European Union from 2000 to 2010¹, now aims to make Europe a lot “greener” by 2020. Europe must acquire global leadership on climate change and development of new sources of sustainable growth and social cohesion. Such attempt corresponds to the perspective presented by the

1 To make the EU “the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion,” by 2010 (see: http://www.europarl.europa.eu/summits/lis1_en.htm)

Commission President José Manuel Durao Barroso². Europe should become a low emission economy, should move in particular toward decarbonizing the electricity supply and the transport sector, and should develop clean and electric cars³. Barroso underlines, on the other hand, his unmistakable belief in globalization and “world economic openness” as a driver of Europe’s future strategy:

“Openness is critical to Europe’s future competitiveness. This is not just a question of political preference. It is in Europe’s self-interest as the world’s leading exporter⁴.”

In this quantitative research paper, the solid and accumulating macropolitical and macrosociological evidence, published in the world’s leading peer-reviewed social science journals, which seems to indicate that there are indeed serious contradictions between unfettered globalization and unfettered world economic openness and sustainable

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2 http://ec.europa.eu/commission_2010-2014/president/about/political/index_en.htm

3 http://ec.europa.eu/europe2020/index_en.htm

4 http://ec.europa.eu/commission_2010-2014/president/about/political/index_en.htm

development, are reanalyzed. For the first time, this research link the deliberations about the EU-2020 strategy with the relatively coherent tendency of these recent studies, most notably Dick and Jorgenson, 2010; Jorgenson and Burns, 2007; Jorgenson, 2003; 2004a, 2004b; 2005; 2006a, 2006b; 2007a, 2007b; 2008; 2009a, 2009b; Jorgenson and Burns, 2004; Jorgenson et al., 2007; Jorgenson and Kuykendall, 2008; Lawrence, 2009; Longo and York, 2008; Mostafa and Natarajan, 2009; Mostafa, 2010a, 2010b; Nugent and Shandra, 2009; Shandra, 2007a, 2007b; Shandra et al., 2008; Shandra et al., 2009; Shandra et al., 2009; Shandra et al., 2004; and finally, Shandra et al., 2008; 2009, who all suggested that there seems to be a strong interaction between what these empirical studies tend to call “transnational capitalist penetration” and “environmental degradation.”

The rest of this study is organized as follows. In section 2 and due to limitations of space, the main critical theories and earlier major studies on the subject are only very briefly sketched. Section 3 presents the data and the research design. The main results are presented in Section 4, while Section 5 summarizes the study. The appendices document the results and provide an invitation for the research community to further use and test the explanations.

2. ENVIRONMENTAL DEVELOPMENT THEORY

Due to the usual limitations of space in the International Social Science Journals, the sketch of the relevant theories under scrutiny here is very brief indeed. Let us start with what could be termed as the official neo-liberal “Brussels/Paris Consensus” of the EU-Commission and the OECD. For the European Commission, the main threat today is not globalization, but significant fiscal deficits, rising debt ratios and the costs of aging populations, which together pose the most significant challenge for Europe’s fiscal sustainability⁵. For the commission, first of all, a stable and well-functioning financial sector is necessary after the 2008 crisis. Member states, which do not tap their full employment and productivity growth potential because of sectors with low competition, a weak business environment and obstacles to employment and labor reallocation, must act. Appropriate labor market reforms are needed in a number of countries so as to increase wage flexibility, reduce segmentation, and improve incentives to work for all. An efficient regulatory business

environment, administrative efficiency as well as promoting a higher degree of competition must be provided; member states face important challenges regarding the human capital endowment and upgrading of their economies⁶. As it is too well known and one even risks stating the obvious, the neo-classical/neo-liberal approach, culminating in the Washington Consensus and the Brussels/Paris-Consensus, wants open markets and no barriers and thinks that the private sector is much better equipped than the public sector and intends to reduce public deficits (Tausch and Ghymers, 2006). Indicators of “economic freedom” will be dramatically and positively associated with economic, social, and even environmental performance. The declining and restructured public sectors, deregulation, and privatization, falling wage shares higher labor market flexibility, higher savings, international competition for locations of productions, and international tax competition, and absence of active anticyclical policy of price stability and budget consolidation will be the main drivers of efficiency, economic growth, investment and a cleaner environment.

The omnipresent⁷ neoliberal approach would exactly maintain such a position, stressing that “market methods” for pollution control are the best alternative. Economists should care about the determination of fee schedules, issues of spatial and temporal variation in fees or allowable emissions under permits, the life of permits and their treatment for tax purposes, rules governing the transfer of pollution rights, procedures for the monitoring and enforcement of emissions limitations, and so on. In the neoliberal flagship article on environmental economics, Cropper and Oates welcome the “growing receptiveness to incentive-based approaches to environmental management” (Cropper and Oates, 1992. p. 728-731).

One very consistent counter perspective to this “Commission approach” is the Kalecki/Steindl paradigm (Guger et al., 2004), based on the works of the political economists Michal Kalecki (June 22nd 1899–April 17th 1970) and Josef Steindl (April 14th 1912–March 7th 1993), emphasizing the factors of anticyclical policy (cycle and trend have the same determinants), demand, international cooperation, lower household savings, a rise of the public sector, a rising wage share, tax coordination, technology, and educational policy as promoters of economic growth and employment (Kalecki, 1943, 1966, 1968a, 1968b, 1971, 1979, 1996, Kalecki and Feiwel, 1972; Steindl, 1952, 1979, 1988, 1990). The contrast

5 Council of the European Union, Brussels, 4 June 2010, 10731/10, ECOFIN 345; COMPET 191; SOC 404; Note from The General Secretariat of the Council to Delegations. Subject: Report on EU macro-structural bottlenecks to growth at the national level. Available from: register.consilium.europa.eu/pdf/en/10/st10/st10731.en10.pdf

6 See note above.

7 With 316 quotations in the ISIW-Web of Science documentation system, the analysis by Cropper and Oates is the most often quoted article in the field of global “environmental economics.”

with the contemporary neoliberal agenda could not be starker:

Dependency and world systems theories, by contrast, culminate in predicting, with Cardoso, 1979, the following processes to happen:

- There is a financial and technological penetration by the developed capitalist centers of the countries of the periphery and semi-periphery,
- This produces an unbalanced economic structure both within the peripheral societies and between them and the centers,
- This leads to limitations on self-sustained growth in the periphery,
- This favors the appearance of specific patterns of class relations, and
- These require modifications in the role of the state to guarantee both the functioning of the economy and the political articulation of a society, which contains, within itself, foci of inarticulateness and structural imbalance (Cardoso, 1979).

For these approaches, low comparative price levels, high foreign savings, the openings of the national economies to free production zones (FPZ), a low MNC outward investment presence on the world markets (MNC headquarter status), and a high MNC PEN - stock of Inward FDI per gross domestic product (GDP), as well as a high world economic openness, measured by the export-share per GDP + import-share per GDP, all could constitute possible negative (sustainable) development bottlenecks.

This article duly take into account several indicators of globalization and dependency, which are being measured by the following different variables of “in/dependent development” (for a more thorough debate on globalization and inequality, see also: Herkenrath and Bornschieer, 2003; Herkenrath et al., 2005; Heshmati, 2003, 2006a, 2006b, 2006c, 2007; Heshmati and Lee, 2010; Heshmati and Oh, 2006; and Heshmati and Tausch, 2007).

- MNC penetration (MNC PEN) measures the different degrees of weight that foreign capital investments have in the host countries, i.e., the UNCTAD percentages of the stocks of multinational corporation investments per total host country GDP. This research tradition has been especially developed, as already mentioned, by the Swiss sociologist Bornschieer and his school. Bornschieer and his school predicted a strong negative determination

of development by a high MNC penetration, and due to the negative consequences, monopolies have on the long-term development trajectory of countries.

- This research also ascertains the growth of MNC penetration over time (DYN MNC PEN), from 1995 to 2005. The Bornschieer school expected short-term dynamic effects from such MNC penetration increases.
- Equally, Bornschieer and his school already developed a high theoretical and empirical awareness about the long-term consequences of the presence or absence of “MNC headquarter status” (MNC HEADQU), measured in this analysis by the indicator MNC outward investments (stock) per GDP. Bornschieer and his school expected that a high headquarter status mitigates against the long-term negative effects of MNC penetration.
- FPZ employment as percentage of total population is the indicator, best suited to measure the new international division of labor (NIDL). Froebel et al., 1980, already predicted the unfettered rise of this model (“export processing zones [EPZ]”), especially in China and Southeast Asia. Froebel et al., 1980, was followed, among others, by the studies conducted by Ross, 2004; and Singa-Boyenge, 2007. EPZ or “FPZ” already accounts for some 80% of the merchandise exports of countries such as China, Kenya, the Philippines, Malaysia, Mauritius, Mexico, Senegal, Tunisia, and Vietnam. 3500 EPZs in 130 countries of the world now employ 66 Million people, among these 40 million employees in China.
- “Low comparative price levels” or “unequal exchange/unequal transfer” (Kohler and Tausch, 2001) is operationalized here simply by ERD or ERDI, the exchange rate deviation index, which measures the degree, to which globalization has contributed to lowering the international price level of a country; i.e., it is an indicator about the openness of the price system *vis-à-vis* the pressures of dependent insertion into the global economy. Ever since Balassa, 1964, and Samuelson, 1964, economists have linked the comparative price level to the price relationship between tradables and non-tradables. Neoliberals assume that globalization will lead toward a lowering of comparative price levels around the globe. ERD is calculated by the ratio between GDPs at purchasing power parities, divided by GDP at current exchange rates (Kohler and Tausch, 2001).
- For dependency authors, foreign savings show the weight that foreign savings, mostly from the centers and richer semi-peripheries, have in the accumulation process of the host countries in the periphery and semi-periphery.

It is calculated by the difference between the share of investments per GDP and the share of savings per GDP.

These three theoretical positions, the neoliberal approach, the “neo-Keynesian” Kalecki–Steindl paradigm, and the dependency/world systems research, inspired a great number of empirical studies not only on economic growth but also on sustainable development.

A real “growth industry” of macro-quantitative sociological and political science research over the last years looked empirically at the “bottlenecks” and “drivers” of the environmental situation of the countries of the world system. However, as yet, notably enough, not a single of these studies used the combined Yale/Columbia indices of the environmental situation, especially the “Environmental Performance Index (EPI),” available today for a very wide range of countries. These studies relied instead of a startling variety of approximately 18 major environmental indicators. The indicators include: carbon dioxide emissions; deforestation; ecological footprint; emission of organic water pollutants; energy use; environmental protection efforts; fertilizer and pesticide consumption; greenhouse gas emissions; growth of ecological footprint; industrial organic water pollution, infant mortality; nitrogen oxides, volatile organic compounds, carbon monoxide, and carbon dioxide gas; nitrous oxide emissions; organic water pollution; pesticide consumption; pesticide and fertilizer use; threatened mammal species; total carbon dioxide emissions and emissions per unit of production to water pollution; and infant mortality. The indicators are often available for only a limited number of nations, and exclude the experience of the countries of East and Central Europe and the former USSR, and other post-communist nations.

From a conceptual viewpoint, this de-facto exclusion of former (in Eastern Europe and the former USSR) or continuously communist nations (in Asia and Cuba) in most of the most widely circulated research publications is a major and very serious theoretical weakness. Excluding the real of former Communism from the horizon of studies almost automatically biases against neoliberal theories because the heavy state sector influence under communism is historically associated with the extreme ecological legacy of failure of “real existing socialism” in ecological performance (for a review of these issues, inter alia: Burckett, 1999; Auer and Reuveny, 2001). The environmental crisis, blamed in most empirical studies on the workings of “transnational capitalism,” was, especially, severe in the heavy industrial and polluted communist countries before the transformation

to some form of capitalism and before the large-scale penetration of these countries by transnational capital.

Nevertheless, the relatively coherent tendency of these studies, most notably Dick and Jorgenson, 2010; Jorgenson and Burns, 2007; Jorgenson, 2003; 2004a, 2004b; 2005; 2006a, 2006b; 2007a, 2007b; 2008; 2009c, 2009d; Jorgenson, and Burns, 2004; Jorgenson et al., 2007; Jorgenson and Kuykendall, 2008; Lawrence, 2009; Longo and York, 2008; Mostafa and Natarajan, 2009; Mostafa, 2010a, 2010b; Nugent, and Shandra, 2009; Shandra, 2007a, 2007b; Shandra et al., 2008; Shandra et al., 2009; Shandra et al., 2009; Shandra et al., 2004; and finally, Shandra et al., 2008, 2009, suggests that there seems to be a strong interaction between transnational capitalist penetration and environmental degradation, especially in third world countries.

Considering the enormous quantity of migration-related human transport and its environmental impacts around the globe, there is as yet not a single essay available on the relationship between the freedom of movement and the environment. The divisive issue of migration policy divides opinions around the globe, and it also divides opinions among the global social science research community. In dealing with the issue of migration, first one might notice that - with the laudable exception of Sanderson, 2010, which analyzed the effects of migration on the Human Development Index - there is no solid cross-national evidence available about the macrosocietal effects of migration on national development.

Most liberal and left of the center-oriented global political discourse would expect that worker remittances have very general, beneficial general and also environmental effects for the sending countries and that they amount to a very huge transfer machine of wealth from the rich, migration recipient countries to the poor, and migration sending countries. Migration is thus seen as a win-win situation (UNDP HDR, 2009). UNDP HDR 2009 maintains that financial remittances are vital in improving the livelihoods of millions of people in developing countries. There is a positive contribution of international remittances to household welfare, nutrition, food, health, and living conditions in places of origin. Even countries whose development path was driven by conflict can be net remitters. This has been illustrated in history in Bosnia and Herzegovina, Guinea-Bissau, Nicaragua, Tajikistan, and Uganda, where remittances helped the entire war-affected communities to survive. In some international migration corridors, money transfer costs have tended to fall over time, with obvious benefits for those sending and receiving

remittances. An important function of remittances is to diversify sources of income and to cushion families against setbacks such as illness or larger shocks caused by economic downturns, political conflicts, or climatic vagaries (UNDP HDR, 2009, p. 72). Similarly, the UNDP also maintains that there should be significant aggregate gains from movement, both to movers and to destination countries. The destination countries will capture about one-fifth of the gains from a 5% increase in the number of migrants in developed countries, amounting to US\$190 billion dollars. Immigration increases employment, with no evidence of crowding out of locals, and investment also responds vigorously to immigration. Population growth due to migration increases real GDP per capita in the short run, one-for-one (meaning that a 1% increase in population due to migration increases GDP by 1%). However, not all of the optimistic forecasts of the liberal migration policy school of thought can be maintained on a 1:1 basis. It cannot be rolled out that as inward migration increases - *ceteris paribus* - the environmental strain variables in the migration recipient countries are affected not only due to the direct, mostly transport related effects, but also due to the priorities made in favor of economic growth and not the environment, which are observable in the majority of the migration sending countries in international value surveys (protecting environment vs. economic growth - data from the latest wave of the World Values Survey, 2004–2007; World Values Survey, September 20th 2010, online data analysis from <http://www.wvsevsdb.com/wvs/WVSAanalyze.jsp>).

3. DEVELOPING THE RESEARCH DESIGN AND PRESENTING THE DATA

This investigation duly acknowledges many of the key determinants of economic growth, mentioned in the economic literature, such as current shares of the country's inhabitants in total world population, calculated from UNDP data; the famous Heritage Foundation 2000 Economic Freedom Score; absolute geographical latitude, adapted from Easterly's growth theory; the UNDP figures for long-term annual population growth rate, 1975–2005 (%); the trade-off between development level and development performance, otherwise also known in economics as "conditional convergence" (\ln GDP per capita; \ln GDP per capita squared); the simple Huntingtonian fact of whether a country is Muslim country, to be measured by the Organization of Islamic Conference Membership or by Muslim population share (Nationmaster); UNDP data on the simple geographical fact of population density (based on the CIA's World Factbook); UNDP data on public education

expenditure per GDP; and the UNDP education index, combining the enrolment rates at the primary, secondary, and tertiary education level. UNDP figures on military expenditures per GDP are also taken into account and the openly available CIA data on military personnel rate, which are key variables of contemporary political science international relations theory and peace research. This analysis also shows the theoretical and practical (political) potential of the following drivers of development, which are somewhat a "*terra incognita Australis*" in the hitherto existing macro-sociological debate, like migration and European (Monetary) Union membership.

The choice of a country to be included in the final analysis (175 countries) was determined by the availability of fairly good data series for these independent variables (if not mentioned otherwise, UNDP data for the middle of the first decade of the new millennium). In the final regressions, the "listwise deletion of missing values" routine is applied. The statistical design of this study is thus based on the usual, SPSS-PAWS XVIII ordinary least square standard regression of the "kitchen sink type" (Durlauf et al., 2008) of economic growth and economic, social, and political performance in the research tradition of Barro, 2003. The term "*kitchen sink regression*," commonly used in econometrics of economic growth, was reintroduced in more recent standard social science journal vocabulary in Laver and Shepsle, 1999. Prior stepwise regression procedures selected the significant among the total list of 26 available predictors.

Surveying the vast econometric literature on the subject of the possible drivers and bottlenecks of development of a given country, one also finds support for the inclusion of geographic and demographic variables in the comparative analysis of development success or failure (Ades and Glaeser, 1999; Alesina and La Ferrara, 2005; Barro and Sala-i-Martin, 2003; Barro 1991, 1996, 1998; Bloom and Sachs, 1998; Dowrick and Quiggin, 1997; Easterly and Levine 1997; Frankel and Romer, 1999; Gallup et al., 1999; Grier and Tullock, 1989; Hall and Jones, 1999; Kamarck, 1976; Kormendi and Meguire, 1985; Levine and Renelt, 1992; Mankiw et al. 1992; Rodriguez and Rodrik, 2001).

It should be mentioned that, for Barro regression, a number of assumptions are necessary. These include among others that savings rates for human and physical capital are constant, production is Cobb-Douglas in physical and human capital, the economy is sufficiently close to the steady state, all countries have the same level of growth, and the log of production is linear in all of its shifters. In

addition, to support the last assumption, one should conduct misspecification test which is conducted in this study and the set of chose models results presented.

4. THE MAIN RESULTS: BEYOND THE PRO-GLOBALIST ENVIRONMENT APPROACH

The results of the standard ordinary least squares multiple regression analyses are presented. The regression results, presented in the Appendix 1 of this work, present the best available choice of variables from both the theoretical and statistical perspective. In testing the implications of the competing paradigms, one arrives at the following list of multiple regressions with very significant statistical results.

Hence, let us now see the results in detail. In accordance with neoliberal approaches, and in discord with the mainstream of globalization critical research, economic freedom has a significant positive impact on indicators of the environment. The environmental variable, affected by economic freedom in a good direction, is carbon emissions per GDP.

The next analysis deals with the impact of world economic openness on the main indicators of the environment. Again, it emerges that the impact of liberal policies - just as in the case above - on the quality of environmental policy is not necessarily and generally negative. In the world system, some of the most persistent sinners in terms of CO₂ and SO₂ output, poisoning rivers, and woodland were the communist dictatorships which ruled East-Central Europe until 1989/90. Thus, it is no surprise that world economic openness does not increase, but decreases - *ceteris paribus* - CO₂ emissions per capita.

The significant influence of comparative price levels on the chosen indicators here is equally clear. Neoliberal theories start from the assumption that low comparative price levels will be an advantage for the development process, and high comparative price levels will impede the development trajectory. The empirical results confirm the fact that a liberal framework does not necessarily impede a good ecological performance. It can be shown that high comparative price levels indeed lead necessarily toward a higher involvement in the net trade of ecological footprint gha per person.

However, the main thrust of the serious apprehensions of globalization critical research is fully vindicated by the significant effects of the foreign savings rate. High foreign savings ARE indeed a driver of global footprint are a

blockade against a satisfactory Happy Planet Index (HPI) performance.

The NIDL-model, featured in the critical theories of globalization since the 1970s, most prominently in the works of Froebel et al., and which best can be measured by the indicator FPZ employment as percentage of total population, is one of the prime drivers of high CO₂ per capita emissions.

MNC penetration, the master variable of most quantitative dependency theories, blocks EPI index and several other socially important processes.

MNC PEN - stock of inward FDI per GDP	Quintile share income difference between richest and poorest 20%	0.221	0.013
	Infant mortality 2005	0.160	0.000
	Democracy measure	-0.147	0.011
	Environmental performance index	-0.113	0.005
	Rule of law	-0.090	0.168

Worker remittances have a significant positive effect on the HPI and happy life years. To be able to compare the results for worker remittances with the other migration policy variables, one would have to multiply the results by a factor of -1 to make them comparable with the results about inward migration. One should have to keep in mind, though, that the indicator does not measure net worker remittances, but only worker remittances accruing to the economy of a given country, exporting labour to the world economy. While high worker remittance ratios are very typical for migrant workforce exporting countries, the migration recipient countries typically will have very low numerical values on this indicator. However, also, poor countries not substantially integrated at all into the sending and receiving of guest workers also have low numerical values on this indicator. It can be assumed that the export of labor to the world economy indeed has beneficial effects on life quality (HPI, happy life years). One can also assume that the import of labor to the world economy has - *ceteris paribus* - detrimental effects on life quality (HPI, happy life years).

The consensus of a large and ever-growing tradition of research would tend to see the effects of international migration on the recipient countries in very positive terms, the political noise from migra-phobic politicians to the contrary. However, not all of the optimistic forecasts of this liberal school of thought can be maintained empirically or at least on a 1:1 basis. Why should the globalization of

three freedoms - capital, goods, and services - be so socially and environmentally destructive in its consequences - as the globalization critical public in Western countries thinks, while freedom number four - labour - should have only positive effects, fully described by neoliberal economics? It was already hinted above at the fact that one can assume from the effects of worker remittances that the import of labor to the world economy has - *ceteris paribus* - detrimental effects on life quality (HPI, happy life years).

Furthermore, the percentage of the population with what today is called an “immigration background” has - *ceteris paribus* - a negative effect on some other key indicators of the environment. Immigration, and all the transport activities it causes, increases without question the CO₂ output of a given society, and it also increases the ratio of carbon emissions per GDP.

However, there are not only clear-cut detrimental effects. Furthermore, there are positive ones. Interestingly enough, a large share of people with migration background per total population also is significantly associated with a lower number of people per million inhabitants 1980–2000 killed by natural disasters per year, but this ratio might also reflect past migration patterns from disaster-prone regions to safer

places with less disasters over the earlier decades, reflected in higher ratios of people with migration background per total population decades later.

The UNDP education index as the chosen predictor for the long-standing UNDP human capital propelled development approach has the predicted significant and beneficial effects on:

- EPI
- ln (number of people per mill inhabitants 1980–2000 killed by natural disasters per year+1) (reduction of disaster risk).

The significant effects of military expenditures per GDP on the environment are rather limited in comparison to the other drivers and bottlenecks of international development, under investigation here. They significantly diminish the number of happy life years, indicating a *ceteris paribus* negative trade-off not with life expectancy, but with life quality which is measured by the happy life years indicator. The burden of the military effort thus has a limited negative effect on life quality.

The research results suggest that - *ceteris paribus* - high military personnel rates are a bottleneck of the environmental performance, as measured by the Yale/Columbia EPI index.

Table 1: The counter perspective of the Kalecki–Steindl paradigm, compared to the current global neoliberal agenda

Differences in growth strategies	Current mainstream on growth
Steindl–Kaleckian growth policy	Price stability and budget consolidation as main political concerns
Full employment as main political concerns	Supply as growth driver
Demand as growth driver	Higher labor market flexibility to raise economic growth
Higher effective demand to raise employment	Deregulation and privatization
Technology and educational policy	Higher savings (for investment)
Lower household savings	Falling wage share (real unit labor costs)
Stable or rising wage share	No active anticyclical policy (irrelevant for growth path)
Anticyclical policy (cycle and trend have the same determinants)	Decline and restructuring of the public sector (efficiency)
Rise of public sector promotes growth (through effective demand)	International tax competition
Tax coordination	International competition (location)
International cooperation	

Source: Guger et al., 2004

Table 2: The final results from multiple regression analysis. The properties of the statistical investigations

Dependent variable	Adjusted R ²	df	F	Error prob
Global footprint	81.200	135	117.592	0.000
Environmental performance index	78.900	140	88.259	0.000
Happy life years	77.100	102	86.653	0.000
CO ₂ per capita	72.700	159	71.594	0.000
Avoiding net trade of ecological footprint gha per person	40.900	138	20.111	0.000
Happy planet index	38.000	119	19.217	0.000
Carbon emissions per million US dollars GDP	35.000	144	16.535	0.000
ln (number of people per mill inhabitants 1980–2000 killed by natural disasters per year+1)	14.400	159	7.713	0.000

The best single measure on the control, which women exercise over the structures of national government, arguably is the indicator “% women in government, all levels,” which goes much beyond the ministerial level and looks at different layers of government, i.e., the top political and administrative sphere, where the real decisions on the day-to-day running of a given country are being taken. It is the globally leading indicator of established feminist power. However, there is also a darker side to the whole story, although the effects are only significant at the 7.4% and the 5.2% level. *Ceteris paribus*, it holds that structures, where “*real existing feminism*” plays an important role, are tending toward a higher involvement in the international trade of ecological footprint, the most visible sign of globalization, affecting the environment either as net exporters or net importers of ecological footprint. The result indicates that real existing, established feminist power - under the conditions of “real existing globalization” - has not come to terms positively with all the environmental indicators under scrutiny here.

The empirical investigations also show that European Union and/or European Monetary Union membership have rather small beneficial effects. There are only two significant positive effects to be reported in this context, and both concern a comparable dimension of environmental policy. The member countries of the European Monetary Union are good at reducing ecological footprint. Similarly, years of EU membership coincides with avoiding net trade of ecological footprint.

Now, it is time to look closer at the significant effects of the geographical, demographical, and historical determinants of development performance, which cannot be influenced by short-term or, in many cases, even long-term actions of governments and which have to be interpreted as “givens,” which a country faces today.

Let us start with the effects of absolute latitude, a variable which often appears in the econometric literature on drivers and bottlenecks of development performance. However, absolute latitude is outside the domain of interest of the mainstream of empirical dependency and world-systems research fields. Predictably, and due to climatic reasons, latitude has a very strong and significant effect on carbon emissions per million US dollars GDP and has a considerable negative effect on life satisfaction.

Population density seems to affect the ecological costs of infrastructure and significantly reduces CO₂ emissions per capita and global footprint.

The percentage share of a given country in current world population today, and hence, population size has an independent and *ceteris paribus* negative development effect on the EPI.

The empirical results also suggest a new perspective on the curve-linear relationships between development level and environmental development performance. Let us clearly distinguish here between the old “*Kuznets hypothesis*” of first deteriorating, and then improving income inequalities, and the “*Matthews effect*” of rising, and then shrinking (economic) growth rates. In this research, one could establish that, after taking care of the direction of the indicators, there is a wide array of first improving and then deteriorating environmental performances. They all concern the environment and the health/basic human needs dimensions:

- Avoiding CO₂ per capita
- Avoiding global footprint
- Avoiding net trade of ecological footprint gha per person
- EPI
- HPI.

The pessimistic essence of the Kuznets curve with rapidly increasing societal problems and very deficient development performances at middle stages of development holds for the following phenomena of the ecological efficiency of the economy and avoiding disaster risk. All these effects suggest that “*things get worse before they get better:*”

- Avoiding carbon emissions per million US dollars GDP
- Avoiding ln (number of people per mill inhabitants 1980-2000 killed by natural disasters per year+1)

The following variables yield no significant effects for the globalization critical paradigm of Bornschieer, an important control variable was MNC headquarter status. However, it has no significant effect on any of the environmental variables. Increases in MNC penetration over time had no significant effect on the environment. Net international migration rates, 2005–2010, which are a typical migration flow measure, do not affect significantly any of the environment development indicators. Furthermore, the *ceteris paribus* effects of membership in the Islamic Conference and Muslim population shares cannot be reduced to a simplistic reasoning. They do not affect any of the chosen environmental indicators in a significant way. Furthermore, the share of public education expenditures per GDP has no significant effects on any of the environmental indicators. Annual population growth has no significant effect on any of the environmental development indicators.

5. CONCLUSIONS

The empirical investigations showed that - per se - European Union and/or European Monetary Union membership have, by global comparison, rather small beneficial effects on the environmental situation. There are only two significant positive effects to be reported in this context, and both concern a comparable dimension of environmental policy. The member countries of the European Monetary Union are good at reducing ecological footprint. Similarly, years of EU-membership coincide with avoiding net trade of ecological footprint.

Moreover, not all liberal approaches to environmental policies are falsified. In accordance with neoliberal approaches, and in discord with the mainstream of globalization critical research, Economic Freedom has a significant positive impact on indicators of the environment. It also emerges that world economic openness does not increase but decrease - *ceteris paribus* - CO₂ emissions per capita. The significant influence of lowering comparative price levels, i.e., the globalization of services, on the chosen indicators is equally clear. The empirical results confirm the fact that a liberal framework does not necessarily impede a good ecological performance. It can be shown that high comparative price levels indeed lead necessarily toward a higher involvement in the net trade of ecological footprint gha per person. Reducing the net trade of ecological footprint gha per person is intrinsically linked to the globalization of services.

What are then the effects of the globalization of goods, labor, and capital on the environment? Only a part of the main thrust of globalization critical research is fully vindicated by the significant effects of the foreign savings rate. High foreign savings, and hence, a reliance on foreign sources of savings are indeed a driver of global footprint and are a blockade against a satisfactory HPI performance. The NIDL model is one of the prime drivers of high CO₂ per capita emissions. MNC penetration, the master variable of most quantitative dependency theories, blocks environmental performance (EPI-Index) and several other socially important processes. Worker remittances have a significant positive effect on the HPI and happy life years. The percentage of the population with what today is called an “immigration background” has - *ceteris paribus* - a negative effect on some other key indicators of the environment. Immigration, and all the transport activities it causes, increases without question the CO₂ output of a given society, and it also increases the ratio of carbon emissions per GDP.

The detailed studies, based on multiple regressions, further confirmed the globalization critical paradigm:

- The apprehensions of globalization critical research are fully vindicated by the significant effects of the foreign savings rate. High foreign savings are indeed a driver of global footprint and are a blockade against a satisfactory HPI performance.
- The NIDL model is one of the prime drivers of high CO₂ per capita emissions.
- MNC penetration blocks environmental performance.

Based on the findings here, European policy-making finally should dare to take the globalization critical organizations of “civil society” seriously (Brand, 2005; Brand and Raza, 2003; Brand and Demirovic, 2000; Brand and Demirovic, 2001, Görg et al., 2017).

This research in similarity with many other researches based on secondary data suffers from a number of limitations. Attempt is made to propose remedies for future research.

Many of the composite indicators such as sustainable development index, EPI, ecological footprint index, carbon emissions, happy life years, and HPI are all continuously improve accounting for more and important dimensions. To remedy the problem, the quality and consistency of the data over time and their interrelationship should be further explored. This combined with systematic model specification, and testing and use of robust estimation methods should help to obtain consistent, unbiased, and efficient estimates of the effects of interest.

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APPENDIX 1

Multiple regressions - the dependency model, tested against feminist, demographic, neoliberal, geographic, cultural, peace research, human capital policy predictors, migration theories, and integration theories.

Predictors (pre-selection of the significant predictors by prior selection, using stepwise regression)

- % women in government, all levels
- % world population
- 2000 economic freedom score
- Absolute latitude
- Annual population growth rate (1975–2005%)
- Comparative price levels (US=1.00)
- Foreign savings rate
- Free production zones (FPZ employment as % of total population)
- ln GDP per capita
- ln GDP per capita squared
- Membership in the Islamic Conference
- Military expenditures per GDP
- Military personnel rate ln (MPR+1)
- MNC outward investments (stock) per GDP
- MNC PEN - stock of Inward FDI per GDP
- MNC PEN: DYN MNC PEN 1995–2005
- Openness Index, 1990 (export-share per GDP + import-share per GDP).
- Population density
- Public education expenditure per GNP
- UNDP education index
- Worker remittance inflows as % of GDP
- Immigration - Share of population 2005 (%)
- Muslim population share per total population
- Net international migration rate, 2005–2010
- Years of membership in the EU, 2010
- Years of membership in EMU, 2010

The reported equations were chosen from the following dependent variables:

- Ecological footprint (g ha/cap)
- Environmental performance index (epi)
- Happy life years
- Happy planet index (HPI)
- Avoiding net trade of ecological footprint gha per person
- ln (number of people per mill inhabitants 1980–2000 killed by natural disasters per year+1)
- Carbon emissions per million US dollars GDP
- Carbon emissions per capita.

Dependent variable	Results from stepwise regression	Statistical properties	Statistical properties	Statistical properties	Statistical properties	Statistical properties	Development dimension
Environmental performance index (EPI)	Independent variable	B	Std error	Beta	t value	Error prob	Environment
	Constant	-66.751	27.623		-2.417	0.017	
	% world population	-0.548	0.216	-0.100	-2.536	0.012	
	ln GDP per capita	23.041	6.605	2.158	3.489	0.001	
	ln GDP per capita squared	-1.084	0.374	-1.750	-2.898	0.004	
	Military personnel rate ln (MPR + 1)	-3.298	0.806	-0.174	-4.091	0.000	
	MNC PEN - stock of Inward FDI per GDP	-0.094	0.033	-0.113	-2.871	0.005	
	UNDP education index	36.930	4.216	0.560	8.760	0.000	
	Memorandum item: Statistical properties of the equation	Adj R²	df	F	Error prob. of the entire eqn		
		78.900	140.000	88.259	0.000		
Global footprint	Independent variable	B	Std. error	Beta	t-value	Error prob	Environment
	Constant	31.026	4.440		6.988	0.000	
	Foreign savings rate	0.017	0.009	0.082	1.872	0.063	
	ln GDP per capita	-8.365	1.065	-4.870	-7.851	0.000	
	ln GDP per capita squared	0.580	0.063	5.838	9.203	0.000	
	Population density	0.000	0.000	-0.089	-2.283	0.024	
	Years of membership in EMU, 2010	-0.128	0.042	-0.141	-3.037	0.003	
	Memorandum item: Statistical properties of the equation	Adj R²	df	F	Error prob. of the entire eqn		
		81.200	135.000	117.592	0.000		
In (number of people per mill inhabitants 1980-2000 killed by natural disasters per year+1)	Independent variable	B	Std. error	Beta	t-value	Error prob	Environment
	Constant	-15.273	5.398		-2.830	0.005	
	ln GDP per capita	4.262	1.287	3.751	3.312	0.001	
	ln GDP per capita squared	-0.247	0.074	-3.741	-3.355	0.001	
	UNDP education index	-2.011	0.839	-0.289	-2.397	0.018	
	Immigration - Share of population 2005 (%)	-0.018	0.012	-0.124	-1.497	0.136	
	Memorandum item: Statistical properties of the equation	Adj R²	df	F	Error prob. of the entire eqn		

		14.400	159.000	7.713	0.000		
CO₂ per capita	Independent variable	B	Std. error	Beta	t-value	Error prob	Environment
	Constant	32.170	12.138		2.650	0.009	
	FPZ (free production zones) employment as % of total population	0.331	0.063	0.238	5.281	0.000	
	ln GDP per capita	-9.438	2.877	-2.104	-3.281	0.001	
	ln GDP per capita squared	0.706	0.168	2.713	4.214	0.000	
	Openness-Index, 1990 (export-share per GDP+import-share per GDP)	-0.020	0.006	-0.164	-3.240	0.001	
	population density	-0.001	0.001	-0.121	-2.710	0.007	
	Immigration - Share of population 2005 (%)	0.168	0.025	0.348	6.811	0.000	
Memorandum item: Statistical properties of the equation		Adj R²	df	F	error prob. of the entire eqn		
		72.700	159.000	71.594	0.000		
Carbon emissions per million US dollars GDP	Independent variable	B	Std. error	Beta	t-value	Error prob	Environment
	Constant	-6595.543	1383.628		-4.767	0.000	
	2000 Economic Freedom Score	-7.988	3.279	-0.236	-2.436	0.016	
	Absolute latitude	12.325	2.012	0.544	6.125	0.000	
	ln GDP per capita	1792.705	325.022	5.614	5.516	0.000	
	ln GDP per capita squared	-111.407	19.201	-6.024	-5.802	0.000	
	Immigration - Share of population 2005 (%)	8.903	2.615	0.267	3.404	0.001	
Memorandum item: Statistical properties of the equation		Adj R²	df	F	Error prob. of the entire eqn		
		35.000	144.000	16.535	0.000		
Avoiding net trade of ecological footprint gha per person	Independent variable	B	Std. error	Beta	t-value	Error prob	Global ecological justice
	Constant	-85.394	31.144		-2.742	0.007	
	% women in government, all levels	-0.130	0.072	-0.125	-1.801	0.074	
	Comparative price levels (US=1.00)	-8.056	2.312	-0.401	-3.485	0.001	
	ln GDP per capita	22.761	7.550	3.880	3.015	0.003	
	ln GDP per capita squared	-1.436	0.462	-4.195	-3.109	0.002	
	Years of membership in the EU, 2010	0.234	0.050	0.396	4.716	0.000	

Memorandum item: Statistical properties of the equation		Adj R²	df	F	Error prob. of the entire eqn		
		40.900	138.000	20.111	0.000		
Happy Planet Index	Independent variable	B	Std. error	Beta	t-value	Error prob	Happiness
	Constant	-280.000	46.695		-5.996	0.000	
	Foreign savings rate	-0.236	0.112	-0.189	-2.105	0.037	
	ln GDP per capita	73.912	11.094	7.100	6.662	0.000	
	ln GDP per capita squared	-4.158	0.649	-6.908	-6.411	0.000	
	Worker remittance inflows as % of GDP	0.587	0.135	0.356	4.346	0.000	
Memorandum item: Statistical properties of the equation		adj R²	df	F	error prob. of the entire eqn		
		38.000	119.000	19.217	0.000		
Happy life years	Independent variable	B	Std. error	Beta	t-value	Error prob	Happiness
	Constant	-87.614	35.855		-2.444	0.016	
	ln GDP per capita	19.100	8.451	1.542	2.260	0.026	
	ln GDP per capita squared	-0.460	0.490	-0.644	-0.938	0.350	
	Military expenditures per GDP	-0.754	0.318	-0.113	-2.370	0.020	
	Worker remittance inflows as % of GDP	0.257	0.112	0.118	2.295	0.024	
Memorandum item: Statistical properties of the equation		Adj R²	df	F	Error prob. of the entire eqn		
		77.100	102.000	86.653	0.000		