
GLOBALIZATION AT THE MACROREGIONAL LEVEL

THE 'FOUR ECONOMIC FREEDOMS' AND LIFE QUALITY. GENERAL TENDENCIES AND SOME HARD LESSONS FOR EU-27-EUROPE

Arno Tausch

For many years, EU-27-Europe's political-economic strategy was characterized by an intensive opening to the forces of globalization and the realization of the 'four freedoms' of goods, capital, labour and services on the EU-27-European 'internal market'. The present article is a 175 nation and 26 predictor variables study about the determinants of 12 sub-processes of life expectancy, infant mortality and other social cohesion variables in this context. Our detailed studies confirm a globalization critical paradigm and let us expect negative consequences for the overall EU-27-European health situation as a consequence of the current global economic crisis.

Keywords: *life expectancy, infant mortality, international relations, international political economy, international migration.*

'Nobody can fall in love with the single market', used to say Jacques Delors. That the single market is not loved, is normal and even reassuring. A market is an instrument, not an end in itself. When the market is regarded as a superior entity, as if it were always able to deliver efficiently and did not need appropriate regulation and rigorous supervision, dangers are likely to lie ahead, as shown by the financial crisis. *It was forgotten by many that the market 'is a good servant but a bad master'* (Monti 2010).

1. Background

EU-27 Europe, confronted by global economic crisis and the Euro zone, perhaps more so than currently any other region in the world economy, seems to be affected by the ills of globalization, without reaping too many of its presumed benefits.¹ What will be the effects of this on inequality, social cohesion, and life quality?

For many years, EU-27-Europe's political-economic strategy was characterized by an intensive opening to the forces of globalization and the realization of the 'four freedoms' of goods, capital, labour and services on the EU-27-European 'internal market'. The present article is a 175 nation and 26 predictor variables study about the determinants of 12 sub-processes of life expectancy, infant mortality and other social cohesion

variables development in this context. It is based on the maximum number of countries with available United Nations and other international data.

As this essay is being written, large-scale austerity programmes with expectedly very large-scale negative health policy and overall social effects are swept across Portugal, Ireland, Italy, Greece and Spain, often called nowadays the PIIGS-countries. Austerity is on the agenda in the entire EU-27. Globalization critical scholars from various disciplines increasingly link the growing lack of ‘social cohesion’ in EU-27-Europe and the world at large to what they perceive as ‘unfettered globalization’, while the very Article 2 of the founding EEC Treaty already solemnly enshrined the free movement of persons, services, goods and capital into the basic principles of the Union.² Contemporary social scientists not only blame globalization as such, but the very European Union and the way it is constructed for rising inequality in EU-27-Europe with its adverse consequences for population health (Beckfield 2006). When discussing the quantitative determinants of life expectancy and under-five mortality in the countries of the world system, the medical profession in turn drew inspiration from the work of Richard G. Williamson, Carl Otto Schnell *et al.* (Wilkinson and Pickett 2006; Schell *et al.* 2007) with their emphasis on the trade-off between inequality and deficits in health, but stopped short of researching into the global socio-economic determinants of inequality, which in turn lead to observable deficits in public health. Our article is deeply indebted to this research tradition in the public health profession, bridging the borders between the research traditions of economics and the social sciences, on the one hand, and public health – on the other hand. Limitations of space prohibit us from referring more profoundly to these recent advances of inequality-centred public health research. The current article, based in that ‘Williamson’ tradition, only would like to broaden the ongoing debate to include very plausible drivers of inequality, and how they in turn are linked to life expectancy and infant mortality and other social cohesion variables (see also Tausch 2010a, 2011, 2012).

2. Methods

The question of the geographic, demographic and other independent variables in development accounting found much attention in recent *economic* literature (Barro and Sala-i-Martin 2003; Durlauf, Kourtellos, and Tan 2008; Easterly 2000; Sala-i-Martin 1997: 178–183), while *sociologists* and *political scientists* generally featured their investigations on the ‘drivers’ and ‘bottlenecks’ of ‘health’ and ‘social development’ or ‘social cohesion’ on variables such as dependence of countries from the large transnational corporations (Jenkins, Scanlan, and Peterson 2007; on child hunger see Shandra, Nobles, London, and Williamson 2005). Our research about the determinants of ‘social cohesion’, that is life expectancy, infant mortality, economic inequality, and other ‘social quality’ variables is fully within this theoretical and empirical research tradition (just to mention some studies: Bornschieer, Volker 1983 on income inequality; Sander-son 2010 on the influence of migration on the human development index). In particular, we will be interested in studying not only social effects of the globalization of goods and capital, but also of services and labour. While evidence on the social effects of such phenomena as penetration of the host economies of transnational foreign direct investments already abound, little has been said up to now on the predictive power of these freedoms of services and labour in comparison to the other two freedoms.

To start with, we have made our data and the codebooks completely and freely available on the Internet so that the global research community can have free access to our data and have an opportunity to check our results or to conduct new research (<http://www.hichemkaroui.com/?p=2017>). This mentioned internet site contains not only the Microsoft EXCEL data and lists of the sources but also a codebook with the variable definitions in PDF format. It should be emphasized that the number of countries under investigation is the maximum number of countries with available statistical data from reliable international sources.

The statistical design of our study is based on the usual, SPSS XVIII ordinary least square standard regression analysis, starting with 'kitchen sink type' regressions with all the predictors of our investigation in the tradition of Durlauf *et al.*, and Barro (Barro and Sala-i-Martin 2003; Durlauf, Kourtellos, and Tan 2008; Sala-i-Martin 1997), and then using the most significant predictors in these stepwise regressions as explanatory variables in the final forward regression procedures. As it is known, there are two common strategies in model building: a general-to-simple and a simple-to-general. In maintaining simplicity, model builders begin with a small model specification and gradually build up the model by adding more explanatory variables. This approach, due to the omitted variable bias, is not recommended. Increased computational power has led to the fact that the alternative – the general-to-simple model strategy – is increasingly attractive. This approach has been automated in some statistical packages to ease their implementation. For instance in a 'kitchen sink' regression, first every relevant variable is included, until the insignificant ones remain in the 'kitchen sink' to be thrown away.

According to this type of research (Easterly 2000; Durlauf, Kourtellos, and Tan 2008), we currently are facing around 100 popular independent variables in the current econometric literature on the determinants of economic growth. Our investigation duly acknowledges many of the key determinants of development, usually associated with economic growth, all mentioned in the relevant economic literature, like current shares of the country's inhabitants in total world population; the Heritage Foundation Economic Freedom Score; absolute geographical latitude; long-term annual population growth rate, 1975–2005 (per cent); the trade-off between development level and development performance, otherwise also known in economics as 'conditional convergence' ($\ln \text{GDP per capita}$; $\ln \text{GDP per capita}^2$); the simple 'Huntingtonian' fact of whether a country is a Muslim country, to be measured by the Organization of Islamic Conference (OIC) Membership or by Muslim population share; data on population density; public education expenditure per GDP; and the UNDP education index, combining the enrolment rates at the primary, secondary and tertiary education levels. We also take into account UNDP figures on military expenditures per GDP and the openly available US-CIA data on military personnel rates, which are key variables of contemporary political science, international relations theory, and peace research. In our analysis, we also show the theoretical and practical (political) potential of the following two drivers of development, which are somewhat a '*terra incognita Australis*' in the hitherto existing macro-sociological debate: migration and European (Monetary) Union membership.

The present article will thus duly confront the underlying, pro-globalist logic of the 'Lisbon strategy' or 'Lisbon agenda' or 'Europe 2020 agenda' as the unhappy succes-

sor of the failed 2000–2010 strategy with what we perceive as the essence of a globalization-critical argument. As we already mentioned, and as we should highlight here especially, recent comparative sociological literature (see Tausch 2010b, 2010c, 2010d for a survey of the available literature) investigated the implications of foreign capital penetration for patterns of development. The choice of a country to be included in the final analysis (175 countries³) was determined by the availability of a 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, we applied the ‘list wise deletion of missing values’ routine (*i.e.* only entering countries with complete data into the statistical analysis).

Our main independent variables were:

1. Share of women in government, all levels.
2. Per cent of world population.
3. 2000 Economic Freedom Score.
4. Absolute latitude.
5. Annual population growth rate, 1975–2005 (%).
6. Comparative price levels (US=1.00).
7. Foreign savings rate.
8. FPZ (free production zones) employment as % of total population.
9. ln GDP per capita.
10. ln GDP per capita ².
11. Membership in the Islamic Conference.
12. Military expenditures per GDP.
13. Military personnel rate ln (MPR+1).
14. MNC outward investments (stock) per GDP.
15. MNC PEN – stock of Inward FDI per GDP.
16. MNC PEN: DYN MNC PEN 1995–2005.
17. Openness-Index, 1990 (export-share per GDP + import-share per GDP).
18. Population density.
19. Public education expenditure per GNP.
20. UNDP education index.
21. Worker remittance inflows as a share of GDP.
22. Immigration – Share of population 2005 (%).
23. Muslim population share per total population.
24. Net international migration rate, 2005–2010.
25. Years of membership in the EU, 2010.
26. Years of membership in EMU, 2010.

The main **dependent** variables for this analysis also correspond to standard knowledge in comparative political science and sociology. An ever-growing number of more recently published investigations not only look into the effects of MNC penetration on economic growth, but into the more social and ecological conditions in general.⁴

The list of the twelve dependent variables which were entered into the final multiple stepwise regressions, consists of the following key variables:

1. Closing economic gender gap.
2. Closing of global gender gap overall score 2009.
3. Closing political gender gap.

4. Female survival probability of surviving to age 65 female.
5. Gender empowerment index value.
6. Happy life years.
7. Human development index (HDI) value 2004.
8. Infant mortality 2005.
9. Life Expectancy (years).
10. Life Satisfaction (0–10).
11. Quintile share income difference between richest and poorest 20 %.
12. Unemployment rate.

Our investigation thus not only brings together the most important possible determinants of global development, it also presents a fairly good collection of dependent variables in the literature to date on the dimensions of life quality.

3. Results

In interpreting the results, we concentrate on the indicators of the economic freedoms of trade, capital, services and labour.

1) The global contradictions of *world economic openness, and hence, the freedom of trade*, are on the social level. In accordance with the mainstream of dependency theory and globalization critical writing, a negative social trade-off of world economic openness has to be expected. World economic openness does have a significant negative effect on the Human Development Index, regarded by many as the master variable for the social situation in a country.

2) The significant influence of *comparative price levels* on our chosen development indicators is equally clear. High comparative price levels, and hence, implicitly, a *high level of services of general interest*, are a good and sound precondition of the leveling of the income differences between rich and poor (Yotopoulos 1996; Yotopoulos and Sawada 2005). Opening the borders of the European Union countries to unfettered competition in the services sector, and thus lowering the prices of non-tradables, that is services, would doubtlessly undermine the 'European social model'. At the same time, it has to be remarked critically that the Lisbon strategy, 2000–2010 precisely aimed at this low comparative price levels, and the stark competition in the services sector.⁵ Euphemistically, Eurostat calls a low comparative price level an indicator of economic reform. But pushing down comparative price levels to dimensions of Moldova, let alone Bangladesh, will not be a constructive approach to economic reform in the EU-27.

3) The *freedom of capital* has the following results. 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 unemployment, and income inequality. The New International Division of Labour (NIDL)-model, featured the critical theories of globalization since the 1970s, most prominently in the works by Froebel, Heinrichs, and Kreye (Froebel 1980), which best can be measured by the indicator *free production zones employment as a share of total population*, and thus the existence of run-away processes of capital, has no significant effects on our variables. For Volker Bornschier's globalization critical paradigm (Bornschier and Chase-Dunn 1985), an important control variable was *MNC headquarter status*. MNC penetration's negative impacts on the social development of the host countries of foreign direct investments are – the theory says – mitigated by the positive effects of MNC headquarter sta-

tus. But this predictor also has no significant effect on our indicators. But *MNC penetration* increases income polarization and infant mortality. *Increases in MNC penetration over time* had no significant effects on our variables.

4) The freedom of labour considerably affects social outcomes. *Worker remittances* have a significant positive effect on Life expectancy (years), closing the political gender gap, Life Satisfaction (0–10), closing the overall gender gap, and 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 (United Nations 2009; Williamson 2002). 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. We can assume from the effects of worker remittances that the *import* of labour to the world economy has – *ceteris paribus* – *detrimental* effects on life quality (Happy Planet Index, life expectancy, life satisfaction, Happy Life Years), and gender relations (closing the political gender gap; closing the overall gender gap). Also, 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 gender justice. *Ceteris paribus*, there hold nevertheless some other important effects as well, which tend to confirm the migration policy liberal Consensus, inherent in the UNDP Human Development Report 2009 (United Nations 2009). A large share of people with migration background per total population seems to coincide with a weakening of the role of traditional, local, native elites, and income inequality tends to be lower, when the share of population with a migration background is higher per total population in a given country. In the comparative social sciences, stock data – like the already *given share of population with an immigration background* – need not necessarily and always coincide with the patterns of associations of flow data in the empirical analysis. *Net international migration rates*, 2005–2010, which is a typical migration flow measure, relating to current and contemporary migration flows, are in turn significantly and positively influencing the ratio of the closing the political gender gap. There are clear beneficial effects of Muslim traditions on reducing the quintile share income difference between richest and poorest 20 per cent, and also the Human Development Index cannot be negated. Muslim societies, by contrast, are poor performers along the following indicators: closing overall gender gap; closing the economic gender gap; closing the political gender gap; gender empowerment index; unemployment rate. OIC membership is detrimental to closing the political gender gap, and Muslim population shares negatively affect the closing the economic gender gap, the gender empowerment index, the closing overall gender gap, and they increase the unemployment rate.⁶ However, there is a positive effect on longevity and the Human Development Index.

4. Conclusions – Disconnecting from the **'Bad Master'** (Mario Monti)?

The EU-27-European debate hardly ever evaluated, from a rational, quantitative and comparative perspective, the current global balance sheet of advantages and disadvantages of the four freedoms of goods, capital, labor and services for 'social cohesion'. As we had shown in the quotation at the beginning of this analysis, Mario Monti, a former EU-Commissioner, now recognizes that when the market is regarded as a superior entity, as if it were always able to deliver efficiently and did not need appropriate regulation and rigorous supervision. And dangers are likely to lie ahead, as shown by

the current financial crisis. It was – Monti says correctly – forgotten by many that the market 'is a good servant but a bad master'. As correctly predicted by the dependency literature in the tradition of Osvaldo Sunkel, social polarization dramatically increases by a development model, based on a very high foreign capital penetration (Sunkel 1973). In our opinion, EU-27-European policy-making finally should dare to take the globalization-critical organizations of contemporary global and EU-27-European 'civil society' seriously (Brand *et al.* 2008). We also came to the conclusion that the understanding of globalization critical research of migration up to now has been rather deficient. For the public health profession, the implication is clear: variables, measuring the 'four freedoms', have to be controlled in future, if we want to draw meaningful conclusions about the drivers of inequality. In addition, we have shown empirically the **detrimental effects** of the 'four freedoms' not on income inequality alone, but on other measures of inequality, such as the gender gap.

NOTES

¹ <http://www.ft.com/indepth/euro-in-crisis> (this and all other internet downloads: August 30, 2011).

² http://europa.eu/legislation_summaries/institutional_affairs/treaties/treaties_eec_en.htm.

³ Albania; Algeria; Angola; Antigua and Barbuda; Argentina; Armenia; Australia; Austria; Azerbaijan; Bahamas; Bahrain; Bangladesh; Barbados; Belarus; Belgium; Belize; Benin; Bhutan; Bolivia; Bosnia and Herzegovina; Botswana; Brazil; Brunei Darussalam; Bulgaria; Burkina Faso; Burundi; Cambodia; Cameroon; Canada; Cape Verde; Central African Republic; Chad; Chile; China; Colombia; Comoros; Congo; Congo (Democratic Republic of the); Costa Rica; Côte d'Ivoire; Croatia; Cuba; Cyprus; Czech Republic; Denmark; Djibouti; Dominica; Dominican Republic; Ecuador; Egypt; El Salvador; Equatorial Guinea; Eritrea; Estonia; Ethiopia; Fiji; Finland; France; Gabon; Gambia; Georgia; Germany; Ghana; Greece; Grenada; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hong Kong, China (SAR); Hungary; Iceland; India; Indonesia; Iran (Islamic Republic of); Ireland; Israel; Italy; Jamaica; Japan; Jordan; Kazakhstan; Kenya; Korea (Republic of); Kuwait; Kyrgyzstan; Lao People's Democratic Republic; Latvia; Lebanon; Lesotho; Libyan Arab Jamahiriya; Lithuania; Luxembourg; Macedonia (TFYR); Madagascar; Malawi; Malaysia; Maldives; Mali; Malta; Mauritania; Mauritius; Mexico; Moldova; Mongolia; Morocco; Mozambique; Myanmar; Namibia; Nepal; Netherlands; New Zealand; Nicaragua; Niger; Nigeria; Norway; Oman; Pakistan; Panama; Papua New Guinea; Paraguay; Peru; Philippines; Poland; Portugal; Qatar; Romania; Russian Federation; Rwanda; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Samoa; Sao Tome and Principe; Saudi Arabia; Senegal; Seychelles; Sierra Leone; Singapore; Slovakia; Slovenia; Solomon Islands; South Africa; Spain; Sri Lanka; Sudan; Suriname; Swaziland; Sweden; Switzerland; Syrian Arab Republic; Tajikistan; Tanzania (United Republic of); Thailand; Timor-Leste; Togo; Trinidad and Tobago; Tunisia; Turkey; Turkmenistan; Uganda; Ukraine; United Arab Emirates; United Kingdom; United States; Uruguay; Uzbekistan; Vanuatu; Venezuela (Bolivarian Republic of); Vietnam; Yemen; Zambia; and Zimbabwe.

⁴ Although we presume many of the indicators to be known, we refer our readers especially to the brief summary of the ever more important Happy Planet Index Indicator, relating happy life years to ecological footprint, available at <http://www.happyplanetindex.org/list.htm>, and the very comprehensive Yale/Columbia environmental data series, available at <http://sedac.ciesin.columbia.edu/es/esi/> and <http://epi.yale.edu/Home>, which up to now have been practically neglected by cross-national comparative dependency and world systems research. The important new grammar of the footprint discourse can be found at <http://www.footprintnetwork.org/en/index.php/GFN/page/glossary/>.

⁵ URL: http://epp.eurostat.ec.europa.eu/portal/page/portal/structural_indicators/indicators/economic_reform. Comparative price levels are measured as comparative price levels of final consumption by

private households including indirect taxes (EU-27=100). Comparative price levels are the ratio between Purchasing Power Parities (PPPs) and market exchange rate for each country. PPPs are currency conversion rates that convert economic indicators expressed in national currencies to a common currency, called Purchasing Power Standard (PPS), which equalizes the purchasing power of different national currencies and thus allows meaningful comparison. The ratio is shown in relation to the EU average (EU27 = 100). If the index of the comparative price levels shown for a country is higher/lower than 100, the country concerned is relatively expensive/cheap as compared with the EU average. Comparative price levels are often brought into connection with the work of economists Balassa (1964) and Samuelson (1964), who rationalized a systematic deviation of current exchange rates from purchasing power parity (PPP) levels: At the going exchange rate aggregate price levels are higher in richer than in poorer economies. The simplest version of the Balassa-Samuelson hypothesis is stated within a framework of two countries, two homogenous goods (one tradable, one non-tradable), and one factor of production (labor). If – as is commonly assumed – the biggest differences in (labor) productivity across countries are in the tradable rather than non-tradable production, it follows that aggregate price levels are highest in the country with the highest labor productivity in the tradable sector or rather with the highest per worker income (Balassa 1964; Samuelson 1964).

⁶ Thus the current results are replicating Norris and Inglehart 2004.

REFERENCES

- Balassa, B.
1964. The Purchasing Power Parity Doctrine: A Reappraisal. *Journal of Political Economy* 72: 584–596.
- Barro, R. J., and Sala-i-Martin, X.
2003. *Economic Growth*. 2nd edition. Cambridge, MA: MIT Press.
- Beckfield, J.
2006. European Integration and Income Inequality. *American Sociological Review* 71(6): 964–985.
- Bornschieer, V.
1983. World Economy, Level Development and Income Distribution: An Integration of Different Approaches to the Explanation of Income Inequality. *World Development* 11(1): 11–20.
- Bornschieer, V., and Chase-Dunn, Ch.
1985. *Transnational Corporations and Underdevelopment*. New York: Praeger.
- Brand, U., Görg, Ch., Hirsch, J., and Wissen, M.
2008. *Conflicts in Environmental Regulation and the Internationalization of the State: Contested Terrains*. London: Routledge.
- Durlauf, St. N., Kourtellos, A., and Tan, Ch. M.
2008. Are any Growth Theories Robust? *The Economic Journal* 118(1): 329–346.
- Easterly, W.
2000. *The Middle Class Consensus and Economic Development*. World Bank Policy Research Working Paper No. 2346. URL: <http://ssrn.com/abstract=630718>.
- Froebel, F.
1980. *The New International Division of Labour: Structural Unemployment in Industrialised Countries and Industrialization in Developing Countries*. Cambridge – New York: Cambridge University Press.

- Jenkins, J. C., Scanlan, S. J., and Peterson, L.
2007. Military Famine, Human Rights, and Child Hunger. *Journal of Conflict Resolution* 51(6): 823–847.
- Monti, M.
2010. *A New Strategy for the Single Market. At the Service of Europe's Economy and Society*. Report to the President of the European Commission José Manuel Barroso, May 9, 2010. Brussels: BEPA Report.
- Norris, P., and Inglehart, R.
2004. *Sacred and Secular: Religion and Politics Worldwide*. Cambridge; Melbourne: Cambridge University Press.
- Sala-i-Martin, X.
1997. I Just Ran Two Million Regressions. *The American Economic Review* 87(2). Papers and Proceedings of the Hundred and Fourth Annual Meeting of the American Economic Association: 178–183.
- Samuelson, P.
1964. Theoretical Notes on Trade Problems. *Review of Economics and Statistics* 46: 145–154.
- Sanderson, M.
2010. International Migration and Human Development in Destination Countries: A Cross-National Analysis of Less-Developed Countries, 1970–2005. *Social Indicators Research* 96(1): 59–83.
- Schell, C. O., Reilly, M., Rosling, H., Peterson, St., and Ekström, A. M.
2007. Socioeconomic Determinants of Infant Mortality: A Worldwide Study of 152 Low-, Middle-, and High-Income Countries. *Scandinavian Journal of Public Health* 35(3): 288–297.
- Shandra, J. M., Nobles, J. E., London, B., and Williamson, J. B.
2005. Multinational Corporations, Democracy and Child Mortality: A Quantitative, Cross-National Analysis of Developing Countries. *Social Indicators Research* 73(2): 267–293.
- Sunkel, O.
1973. Transnational Capitalism and National Disintegration in Latin America. *Social and Economic Studies* 22(1): 132–176.
- Tausch, A.
2010a. Life Expectancy, Infant Mortality and Inequality – Once Again. Rapid Responses to: Editorials: Kate E Pickett and Richard G Wilkinson Greater Equality and Better Health. *British Medical Journal* 339: b4320. URL: http://www.bmj.com/cgi/eletters/339/nov10_2/b4320.
- 2010b. Passive Globalization and the Failure of the European Union's Lisbon Strategy, 2000–2010: Some New Cross-National Evidence. *Alternatives: Turkish Journal of International Relations* 9(1): 1–91.
- 2010c. The European Union's Failed 'Lisbon strategy'. *Society and Economy* 32(1): 103–121.
- 2010d. Towards Yet Another Age of Creative Destruction? *Journal of Globalization Studies* 1(1): 104–130. URL: <http://www.sociostudies.org/journal/articles/140635/>.

2011. In Praise of Inequality? 'Happy Planet' Performance and its Determinants. *Australian and New Zealand Journal of Public Health* 35(6): 572–573.

2012. A Globalization-Oriented Perspective on Health, Inequality and Socio-Economic Development. *International Journal of Health Planning and Management* 27(1): 2–33.

United Nations

2009. *United Nations Human Development Report*. New York and Oxford: Oxford University Press.

Wilkinson, R. G., and Pickett, K. E.

2006. Income Inequality and Population Health: A Review and Explanation of the Evidence. *Social Science & Medicine* 62(7): 1768–1784.

Yotopoulos, P. A.

1996. *Exchange Rate Parity for Trade and Development: Theory, Tests, and Case Studies*. Cambridge – New York: Cambridge University Press.

Yotopoulos, P., and Sawada, Y.

2005. *Exchange Rate Misalignment: A New Test of Long-Run PPP Based on Cross-Country Data CIRJE*. Discussion Paper CIRJE-F-318, February 2005, Faculty of Economics, University of Tokyo. URL: <http://www.e.u-tokyo.ac.jp/cirje/research/dp/2005/2005cf318.pdf>.

**Multiple regressions –
the globalization critical paradigm Predictors:**

% women in government, all levels
 % world population
 2000 Economic Freedom Score
 Absolute latitude
 Annual population growth rate, 1975–2005 (per cent)
 comparative price levels (US=1.00)
 foreign savings rate
 FPZ (free production zones) employment as per cent of total population
 ln GDP per capita
 ln GDP per capita ²
 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:

closing economic gender gap
 closing of global gender gap overall score 2009
 closing political gender gap
 female survival probability of surviving to age 65 female
 gender empowerment index value
 Happy life years
 Human development index (HDI) value 2004
 Infant mortality 2005
 Life Expectancy (years)
 Life Satisfaction (0–10)
 quintile share income difference between richest and poorest 20 %
 unemployment rate

Dependent variable	results from multiple regression	statistical properties	statistical properties	statistical properties	statistical properties	statistical properties
1. Closing overall gender gap	Independent Variable	B	standard error			error probability
	Constant	0.516	0.216			0.019
	% women in government, all levels	0.002	0.001			0.009
	ln GDP per capita	0.015	0.050			0.767
	ln GDP per capita ^2	0.001	0.003			0.841
	military personnel rate ln (MPR+1)	-0.014	0.007			0.037
	worker remittance inflows as % of GDP	0.001	0.001			0.012
	Muslim population share per total population	-0.001	0.000			0.000
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		58.700	09.000	26.796	.000	
2. Female survival probability of surviving to age 65 female	Independent Variable	B	standard error			error probability
	Constant	-178.454	61.114			0.004
	quintile share income difference between richest and poorest 20 %	-0.618	0.122			0.000
	ln GDP per capita	49.109	14.514			0.001
	ln GDP per capita ^2	-2.304	0.820			0.006
	public education expenditure per GNP	-1.406	0.546			0.011
	UNDP education index	19.464	8.692			0.027
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		66.800	114.000	46.815	.000	
	3. Gender empowerment index	Independent Variable	B	standard error		
Constant		3.834	0.636			0.000
% women in government, all levels		0.005	0.001			0.001
ln GDP per capita		-0.845	0.143			0.000
ln GDP per capita ^2		0.053	0.008			0.000
Muslim population share per total population		-0.002	0.000			0.000
<i>memorandum item: statistical properties of the equation</i>		adj R^2	df	F	error prob.	
		81.500	70.000	77.895	.000	

4. Closing the economic gender gap	Independent Variable	B	standard error			error probability
	Constant	1.246	0.469			0.009
	% women in government, all levels	0.005	0.001			0.001
	ln GDP per capita	-0.136	0.108			0.214
	ln GDP per capita ^2	0.007	0.006			0.245
	Muslim population share per total population	-0.002	0.000			0.000
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		40.100	122.000	21.380	.000	
5. Closing the political gender gap	Independent Variable	B	standard error			error probability
	Constant	1.473	0.599			0.016
	ln GDP per capita	-0.343	0.142			0.018
	ln GDP per capita ^2	0.022	0.008			0.009
	Membership in the Islamic Conference	-0.044	0.026			0.087
	worker remittance inflows as % of GDP	0.003	0.002			0.054
	Immigration – Share of population 2005 (%)	-0.003	0.002			0.026
	net international migration rate, 2005–2010	0.066	0.038			0.083
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		24.900	113.000	7.243	.000	
6. Happy Life Years	Independent Variable	B	standard error			error probability
	Constant	-87.614	35.855			0.016
	ln GDP per capita	19.100	8.451			0.026
	ln GDP per capita ^2	-0.460	0.490			0.350
	military expenditures per GDP	-0.754	0.318			0.020
	worker remittance inflows as % of GDP	0.257	0.112	0.118	2.295	0.024
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		77.100	102.000	86.653	.000	
7. Life Satisfaction (0–10)	Independent Variable	B	standard error			error probability
	Constant	-6.732	3.790			0.079
	Absolute latitude	-0.017	0.006			0.005
	ln GDP per capita	1.816	0.899			0.046

	ln GDP per capita ^2	-0.036	0.053			0.498
	worker remittance inflows as % of GDP	0.035	0.011			0.001
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		69.400	113.000	64.990	.000	
8. Infant mortality 2005	Independent Variable	B	standard error			error probability
	Constant	576.606	83.129			0.000
	2000 Economic Freedom Score	-0.777	0.179			0.000
	ln GDP per capita	-87.974	19.619			0.000
	ln GDP per capita ^2	4.453	1.120			0.000
	MNC PEN – stock of Inward FDI per GDP	0.364	0.085			0.000
	UNDP education index	-94.037	12.705			0.000
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		79.400	152.000	117.921	.000	
9. Life expectancy (years)	Independent Variable	B	standard error			error probability
	Constant	-63.159	27.661			0.025
	ln GDP per capita	23.657	6.558			0.000
	ln GDP per capita ^2	-0.914	0.383			0.019
	worker remittance inflows as % of GDP	0.324	0.073			0.000
	quintile share income difference between richest and poorest 20 %	-0.187	0.063			0.004
	public education expenditure per GNP	-0.654	0.274			0.019
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		74.800	105.000	63.293	.000	
10. Quintile share income difference between richest and poorest 20 per cent	Independent Variable	B	standard error			error probability
	Constant	9.775	55.216			0.860
	Annual population growth rate, 1975–2005 (%)	4.236	1.146			0.000
	comparative price levels (US=1.00)	-8.866	5.337			0.099
	foreign savings rate	0.203	0.074			0.007
	ln GDP per capita	-3.599	13.441			0.789

	ln GDP per capita ^2	0.394	0.836			0.638
	MNC PEN – stock of Inward FDI per GDP	0.139	0.055			0.013
	Immigration – Share of population 2005 (%)	-0.250	0.122			0.044
	Muslim population share per total population	-0.082	0.025			0.001
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		25.500	119.000	6.098	.000	
11. Unemployment rate	Independent Variable	B	standard error			error probability
	Constant	-90.856	27.685			0.001
	quintile share income difference between richest and poorest 20 %	0.161	0.061			0.009
	foreign savings rate	0.154	0.044			0.001
	ln GDP per capita	20.749	6.541			0.002
	ln GDP per capita ^2	-1.141	0.381			0.004
	public education expenditure per GNP	0.548	0.275			0.049
	Muslim population share per total population	0.053	0.016			0.001
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		35.400	103.000	10.416	.000	
12. Human Development Index	Independent Variable	B	standard error			error probability
	Constant	-0.575	0.202			0.005
	ln GDP per capita	0.127	0.048			0.009
	ln GDP per capita ^2	-0.002	0.003			0.396
	Openness-Index, 1990 (export-share per GDP + import-share per GDP)	0.000	0.000			0.005
	public education expenditure per GNP	-0.005	0.002			0.016
	UNDP education index	0.503	0.031			0.000
	Muslim population share per total population	0.000	0.000			0.001
	<i>memorandum item: statistical properties of the equation</i>	adj R^2	df	F	error prob.	
		95.000	133.000	425.085	.000	

Abbreviations and terms, used in this article

Absolute latitude is the absolute geographical position of a country, away from the earth's equator.

Comparative price levels (US=1.00) were calculated from the UNDP Human Development Report 2000. The GDP at current international exchange rate is simply divided by the GDP at real purchasing power parity for each country of the world. The U.S.A. are the international standard, with the US achieving the value of 1.0. For Eurostat, comparative price levels are comparative levels of final consumption by private households including indirect taxes (EU-27=100). If the index of the comparative price levels shown for a country is higher/ lower than 100, the country concerned is relatively expensive/cheap as compared with the EU average. Dependency theories and world systems theories assume that low comparative price levels are an indicator of 'unequal exchange' between the countries of the center and the periphery and that comparative price levels should be high, while neoliberal theories and the EU Commission aim at low comparative price levels (low comparative price levels as an indicator of economic reform).

DYN is a measure of dynamic change over time.

Economic Freedom (Score for 2000) is the key international indicator for economic liberalism and was published, among others, by the Heritage Foundation, the CATO Institute and other leading global liberal think-tanks. The basic assumption of the indicator is that economic freedom is the fundamental right of every human to control his or her own labor and property. In an economically free society, the assumption is that individuals are free to work, produce, consume, and invest in any way they please, with that freedom both protected by the state and unconstrained by the state. In economically free societies, the indicator assumption is that governments allow labor, capital and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself. The index measures ten components of economic freedom, assigning a grade in each using a scale from 0 to 100, where 100 represents the maximum freedom. The ten component scores are then averaged to give an overall economic freedom score for each country. The ten components of economic freedom are: Business Freedom, Trade Freedom, Fiscal Freedom, Government Spending, Monetary Freedom, Investment Freedom, Financial Freedom, Property rights, Freedom from Corruption, and Labor Freedom. We time-lagged the index somewhat to allow the study of the more long-term effects.

EU-2020 strategy: The European Commission sets out a vision of 'Europe's social market economy' for the 21st century. The strategy pretends to show how the EU can 'come out stronger from the [current world economic] crisis and how it can be turned into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion'. (http://ec.europa.eu/eu2020/index_en.htm). The strategy rests on five pillars – social security, labour, education, research and development, and environmental protection.

Foreign savings rate, calculated from the UNDP Human Development Report 2000 for the year 1998. We time-lagged the indicator to evaluate the more long-term effects of the variable. For dependency authors, especially Paul Israel Singer, 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.

FPZ (free production zones) – FPZ employment as % of total population is the indicator, best suited to measure the effects of the 'NIDL' (new international division of labour). An important sub-school of dependency and world systems research, most prominently represented by Froebel/Heinrichs and Kreye (1980), predicted the unfettered rise of the model of 'export processing zones', especially in China and Southeast Asia. More recent studies highlighted the fact that these Export Processing Zones (EPZ) – or 'Free Production Zones' already account for some 80 per cent of the merchandise exports of countries like China, Kenya, the Philippines, Malaysia, Mauritius, Mexico, Senegal, Tunisia, Vietnam. 3500 EPZs in 130 countries of the world now employ 66 Million people, among these 40 million employees in China.

Gender Empowerment Measure (GEM) is a composite UNDP indicator that captures gender inequality in three key areas: the extent of women's political participation and decision-making, economic participation and decision making-power and the power exerted by women over economic resources. In the calculation of the index, female and male shares of parliamentary seats (1st component), female and male shares of positions as legislators, senior officials and managers (the first half of the 2nd component) and Female and male shares of professional and technical positions (the second half of the 2nd component) and female estimated earned real income expressed in international purchasing power parities (the 3rd component) enter into the calculation.

Growth of MNC penetration over time (Dynamic Effects from Multinational Corporations Penetration, DYN MNC PEN), from 1995 to 2005, based on UNCTAD sources. Several global sociologists, like Volker Bornschieer and associate authors, expected short-term dynamic effects from such MNC penetration increases.

Happy life years (from Happy Planet Index). Happy Planet Index Organization used data from the life satisfaction question: All things considered, how satisfied are you with your life as a whole these days? Responses were made on a numeric scales from 0 to 10, where 0 is dissatisfied and 10 is satisfied. In HPI 2.0, the HPI Organization takes advantage of new data collected by Gallup. Its World Poll has, in the last two years, included the question on life satisfaction and asked it in 112 countries included in this report. Gallup's intention is to continue polling the countries of the world on a regular basis so as to monitor how life develops. To augment these 112 countries, authors also included data from the two most recent waves of the World Values Survey (WVS, from 2000 and 2005). This survey asks the exact same question regarding life satisfaction, albeit with a slightly different response scale (1–10 as opposed to 0–10). The two waves cover 84 countries. HPI used well-documented econometric and politometric methods to augment the data base, where Gallup public opinion survey data were missing and where World Values Survey data were available.

Happy Planet Index, HPI. The HPI is a measure that shows the ecological efficiency with which human well-being is delivered around the world. It is the first ever index to combine environmental impact with well-being to measure the environmental efficiency with which country by country, people live long and happy lives. It shows the relative efficiency with which nations convert the planet's natural resources (footprint per capita) into long and happy lives for their citizens. The nations that top the Index are not the happiest places in the world, but the nations that score well show that achieving, long, happy lives without over-stretching the planet's resources is possible.

Immigration. Share of population 2005 (%) was also directly taken from the UNDP HDR 2009 statistics facility.

Infant mortality 2005 (UNDP). Infant mortality rates are calculated per 1,000 live births. Data were taken from the UNDP's statistics facility on the internet, and are from the UNDP HDR 2007/2008 edition.

ISI Web of Knowledge. Bibliographical data base, run by the Institute for the Study of Scientific Information (nowadays also increasingly referred to by the term 'Web of Science') is an online academic citation index provided by the company Thomson Reuters.

KOF business cycle research institute at the ETH Zurich.

Kuznets curve. Economics Nobel laureate Simon Smith Kuznets (April 30, 1901 – July 8, 1985) ventured the hypothesis that along the path of development, a nation will experience first a rising, and later on, falling rate of economic inequalities.

Life Expectancy (years) (Happy Planet Index). We used the HPI data series for life expectancy. Average life expectancy at birth was taken by the HPI Organization from 2007/08 UNDP Human Development report, which provides figures for the year 2005.

Life Satisfaction (0–10) (Happy Planet Index). See Happy Life Years.

ln natural logarithm.

Matthews effect. Most economists assume that economic growth at middle income levels is most rapid. There is a well-established tradition to control for these effects by introducing a double-

logarithmic function (\ln GDP per capita; $(\ln$ GDP per capita)²) in all cross-national multiple regression equations, explaining economic growth rates. This curve-linear function of growth, being regressed on the natural logarithm of development level and its square, is sometimes called the 'Matthew effect' following Matthew (chapter 13, verse 12) in the Christian Bible (*For whosoever hath, to him shall be given, and he shall have more abundance: but whosoever hath not, from him shall be taken away even that he hath*).

Membership in the Islamic Conference is a very clear and simple measurement concept for the hypothesis by the U.S. political scientist Samuel Phillips Huntington (April 18, 1927 – December 24, 2008) that – inter alia – Islam will be a development blockade in the 21st Century. Our indicator is simply a dummy-variable (1 for membership, 0 for non-membership), based on the Website of the Organization of Islamic Conference (download 2009).

MILEX military expenditures per GDP.

Military expenditures per GDP were taken from the UNDP Human Development Report Office Statistics facility, HDR 2007–2008, and were time-lagged to take into account the very-long-term effects of military spending rates. The time point chosen was the beginning of the 1990s.

Military personnel rate measures a country's army personnel per 1000 population, and due to the skewness of the indicator, there is a strong and well-founded research tradition, founded by the eminent German sociologist Erich Weede, to calculate the natural logarithm of the original number plus the number 1 (\ln (MPR+1)). The statistical source of our data was the official website of the United States Central Intelligence Agency. The data refer to the first decade of the new Millennium.

MNC headquarter status (MNC HEADQU), measured in our analysis by the time-lagged indicator MNC outward investments (stock) per GDP by around 1995. It is thus an indicator of the power or weakness of the 'national' capital in question on the world markets. Bornschier and his school expected that a high headquarter status mitigates against the long-term negative effects of MNC penetration (the value of the stock of cumulated foreign direct investment per GDP of the host country).

MNC Multinational Corporations, mostly used in connection with MNC outward investments (stock) per GDP.

MNC PEN – stock of Inward FDI per GDP, a measure of the penetration of a country by multinational corporations.

MNC penetration (MNC PEN) is the key variable of most quantitative dependency and world systems theories, and it measures the weight that cumulated foreign capital investments had in the host countries, *i.e.* the percentages of the cumulated stocks of multinational corporation investments per total host country GDP. We time-lagged our indicator and used the values for the year 1995, to take the long-term societal consequences of foreign direct investment penetration into account. The Swiss sociologist Volker Bornschier and his school predicted a strong long-term negative determination of development by a high MNC penetration, due to the negative consequences that monopolies have on the long term development trajectory of countries.

Multiple Regression see **regression equation**.

Muslim population share per total population was taken from the University of Sydney's Nationmaster statistics facility.

NIDL New International Division of Labour.

OIC The Organisation of Islamic Cooperation (OIC), which currently has 57 member states. It changed its name from the Organisation of the Islamic Conference on 28 June 2011.

Openness-Index is time-lagged for the year 1990, and measures the very long-term two-decade effects of export-shares per GDP + import-shares per GDP. It was taken from the UNDP Human Development Report Office statistics facility, HDR 2007/2008. The countries with the greatest openness in 1990 were the small states and territories including Hong Kong, China (SAR), Bahrain, Luxembourg, Malta, Antigua and Barbuda, Slovenia, Panama, Croatia, Swaziland, and Saint Lucia.

Population density was taken from US CIA World Factbook. It measures population density per square kilometre by around the first decade in the new Millennium.

Public education expenditure per GDP for the middle of the first decade of the new millenium was taken from the UNDP's Human Development Report Office statistics facility on the internet (UNDP HDR 2000), and refers to the time-lagged data for 1995–1997 to measure the long-term effects of public education expenditures.

Quintile share income difference between richest and poorest 20 per cent (Eurostat indicator). The income quintile share ratio or the S80/S20 ratio is a measure of the inequality of income distribution. It is calculated as the ratio of total income received by the 20 % of the population with the highest income (the top quintile) to that received by the 20 % of the population with the lowest income (the bottom quintile). Our global data were taken from the UNDP's statistics facility on the internet, and refer to the UNDP HDR 2006. Data show the ratio of the income or expenditure share of the richest 20 % to that of the poorest 20 %, and are based on relevant World Bank data.

Share of women in government, all levels is one of the UNDP's long-term lead indicators of the institutionalization of political feminism. We time-lagged the variable and measured it by around 1998. It was documented in the NDP HDR 2000. The idea of the indicator is to capture the real advance of women not only at the level of the top political administration of a given country, but at the general level of the central government, i.e. taking the important decision-making ministerial bureaucracies into account as well.

Share of world population was calculated from UNDP HDR 2007/2008 statistics, and reflects the enormous differences in size of the nations of the earth, and the demographic weight of a nation in world society.

Social security expenditure per GDP is average 1990s (International Labor Organization, ILO). The social security expenditure ratio is generally to be considered as the best single indicator of the existence of a tight social net.

UNDP's education index is a compound measure of performance of the education system on the primary, secondary and tertiary level, measured for the middle of the new decade of the millenium, and taken from the UNDP HDR 2007/2008. It is comprised of adult literacy rates and the combined gross enrolment ratio for primary, secondary and tertiary schooling, weighted to give adult literacy more significance in the statistic.

Unemployment rate (United Nations Statistics, data refer to around 2003/2004). The adult unemployment rate refers to the proportion of the adult (aged 15 years and older) labour force that is unemployed, unless otherwise specified. The unemployed are persons who are currently without work, who are currently available for work, and who are seeking or have sought work recently. The base for these statistics is the labour force (that is, the economically active portion of the population), not the total population.

UTIP University of Texas Inequality Project.

Worker remittance inflows as % of GDP was directly taken from the UNDP HDR 2009 statistics facility.

World Economic Forum Gender Gap Indices 2007 were designed to measure gender-based gaps in access to resources and opportunities in individual countries rather than the actual levels of the available resources and opportunities in those countries. The Global Gender Gap Report 2007 by the World Economic Forum measures the size of the gender gap in four critical areas of inequality between men and women: 1) Economic participation and opportunity – outcomes on salaries, participation levels and access to high-skilled employment; 2) Educational attainment – outcomes on access to basic and higher level education; 3) Political empowerment – outcomes on representation in decision-making structures; 4) Health and survival – outcomes on life expectancy and sex ratio.