



Economic development and prosperity patterns around the world: Structural challenges for a global steady-state economy



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ARTICLE INFO

Article history:

Received 5 July 2015

Received in revised form 1 February 2016

Accepted 18 February 2016

Available online xxx

Keywords:

Prosperity

Global steady-state economy

Ecological sustainability

Economic development

Degrowth

Cross-country analysis

ABSTRACT

Taking a global perspective this paper sets out to theoretically and empirically identify prosperity patterns for four groups of countries at different levels of economic development. It conceptualizes 'prosperity' in terms of ecological sustainability, social inclusion, and the quality of life and contextualizes this definition in global perspective. Subsequently, it operationalizes and measures these dimensions on the basis of data from sources such as the World Bank, the Global Footprint Network and the OECD for 138 countries and by applying dual multiple factor analysis. Building on earlier research that suggested that higher development levels in terms of GDP per capita are capable of providing social and individual prosperity but at the expense of environmental sustainability, we ask whether other interrelations between prosperity indicators exist on other levels of economic development. Empirically distinguishing between 'rich', 'emerging', 'developing' and 'poor countries' the paper finds that social and individual prosperity indicators largely increase with economic development while ecological sustainability indicators worsen. Our analyses further reveal that 'social cohesion' can be established under different economic and institutional conditions, that subjective wellbeing increases with income rises at all levels of economic development and that a decoupling of carbon emissions from the provision of prosperity is, in principle, achievable, while a reduction of the global matter and energy throughput poses a much greater challenge. The paper concludes by highlighting the repercussions of these findings for the trajectories that countries at different levels of economic development would need to undertake.

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1. Introduction

Prosperity is commonly conceptualized in socio-economic terms, highlighting particularly economic development and material welfare in terms of GDP. While this is normally not questioned as a priority in policy making, there is growing evidence that Western production and consumption patterns are not generalizable to the rest of the planet if environmental concerns are considered. The traditional notion and the existing structures of Western prosperity are not only challenged by unprecedented levels of inequality (Piketty, 2014) but also by the fact that the Earth's carrying capacity is being exceeded in relation to at least three planetary boundaries: climate change, the nitrogen cycle, and biodiversity loss (Rockström et al., 2009). Less than ever before can the economy and the associated notion of prosperity be considered as an isolated system. This means taking seriously the environmental limits to economic growth and material prosperity

as well as understanding that there are real thresholds. Ignoring or disrespecting them has fundamental consequences for humans and other species. In addition, there continues to be a lack of evidence for an absolute decoupling of GDP growth, material resource use and carbon emissions (Jackson, 2009; Koch, 2012). This severely diminishes the plausibility of the 'green growth' vision, that economic growth can be combined with environmental sustainability, which is nevertheless almost endlessly reiterated in policy documents, especially in the EU.

Theoretically, we depart from Tim Jackson's 'Prosperity without Growth' (Jackson, 2009) and Fritz and Koch, (2014) and conceptualize prosperity in terms of three dimensions: ecological sustainability, social inclusion as well as individual wellbeing and the quality of life. The added value of the present study is to understand prosperity in a global context. Empirically, we explore the dimensions and relations between the elements of prosperity for groups of countries at different levels of economic development. While existing studies focus on single indicators and intend to find the causes for differences between countries' performances regarding, for example, CO₂ emissions, wellbeing or crime rates, the present study provides a comparative analysis of how

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prosperity indicators are interrelated and whether these relations vary under different economic conditions. In contrast to Fritz and Koch (2014), who studied the advanced capitalist plus selected developing countries and applied correspondence analysis, we now take a global perspective and apply dual multiple factor analysis (DMFA). We have compiled data for 138 countries from different organizations such as the World Bank, the Global Footprint Network, and the OECD and collected information about ten indicators measuring the ecological, social and individual dimensions of prosperity as well as economic development.

In the next section we conceptualize prosperity and its ecological, social and individual dimensions at global scale. Subsequently, we operationalize these prosperity dimensions and empirically analyze them in relation to economic development. How are different levels of economic development associated with social inclusion, quality of life and ecological sustainability? Is there a level of economic development beyond the poorest that is environmentally sustainable? In the conclusion we highlight the implications these associations have for a transition toward a global economy that respects ecological limits.

2. Prosperity as a multidimensional concept at global scale

Scholars who systematically consider the existence of ecological limits to economic growth have begun to discuss the feasibility of providing prosperity, the 'good life', 'sustainable welfare' or '21st century socialism' in non-growing economies (Jackson, 2009; Fritz and Koch, 2014; Soper and Emmelin, 2016; Alvarez Lozano, 2012). These research directions are united in their emphasis of those elements of human conviviality that require few, if any, material resources, allowing for a surplus in prosperity for one person or one generation while still leaving room for the development of others. The degrowth research community has furthermore pointed to the link between ecological sustainability, social equity and individual wellbeing (Schneider et al., 2010; Kallis, 2011). Building on these contributions our concept of prosperity includes, on top of environmental sustainability, a social and an individual dimension. In relation to the *social dimension*, previous studies provided the evidence that people in more equal and socially inclusive societies are better-off and report greater amounts of happiness than in more unequal ones where status competition is particularly pronounced (Wilkinson and Pickett, 2010). Concerning the *individual dimension* of prosperity, Steinberger et al. (2012) have demonstrated that high life expectancies are compatible with low carbon emissions but high incomes are not. Wellbeing and quality of life researchers assume that human beings must have certain psychological needs satisfied in order to flourish and experience personal wellbeing. These needs include feeling safe and secure as well as competent and efficient (Kasser, 2009). Similarly, theories of human need (Gough, 2015) argue that the satisfaction of essential needs at global level would require relatively few material resources, allowing for a surplus in welfare and prosperity for one person or one generation without undermining the development of others. While due to planetary limits existing Western welfare systems cannot be generalized to the rest of the world, the issue of whether more than basic human needs can be provided is an empirical one.

While alternative understandings of prosperity in non-growing economies and post-growth societies are moving into the focus of interest, Herman Daly (1991) has developed a model of a non-growing economic system that functions within ecological boundaries. The 'steady-state economy' (SSE) is defined in terms of biophysical limits and material flows designed to keep two factors at constant level: the population of artifacts (stocks of physical wealth) and the number of people. However, the original concept of a SSE was not developed for the global level (Koch,

2015). Yet environmental threats such as climate change are global issues, because it does not matter from which part of the globe greenhouse gases are emitted (IPCC, 2014). It is only at the global level that thresholds for matter and energy throughput and population quota can be determined in order to effectively mitigate global environmental challenges such as climate change. At the same time, these bio-physical terms achieved at the global level would delineate the leeway within which national and local economies and societies could evolve. In other words, there would be space for different national and local paths to post-growth economies and societies that represent different traditions and institutional patterns and that could provide prosperity in different ways. This study contributes toward empirically identifying these different ways by analyzing the interrelations between prosperity indicators on four levels of economic development. Is there a certain level of economic development that is environmentally sustainable? Are there universal patterns of prosperity for all levels or do patterns change in the course of economic development?

3. Operationalizing and comparatively studying prosperity

We operationalize prosperity in a three-dimensional way, as ecological sustainability, social inclusion and quality of life. First, prosperity is concerned with aspects of *ecological sustainability*. We measure the extent to which the relation between society and its natural environment deserves the label 'sustainable' in terms of 'climate friendliness' (low CO₂ emissions), 'clean production' (as a low ecological footprint of production) and clean consumption (as a low ecological footprint of consumption).

Secondly, prosperity involves the social conditions under which people live. We call this second dimension *social inclusion* and suggest a further distinction between two aspects: (a) Social cohesion or the degree to which people can safely live together without excluding or disadvantaging others. We operationalize this subdimension by using the indicators 'security' (measured as low homicides rates) and 'equality' (low values on the Gini index for income inequality). In principle, the combination of social cohesion and ecological sustainability can be provided by authoritarian regimes as well as in more democratic systems. However, only the latter corresponds to a humane understanding of prosperity: freedom and autonomy are, for example, an essential part of the Degrowth declaration (Research and Degrowth, 2010) and a major theme in human needs theory (Doyal and Gough, 1991). Thus, as a second aspect or subdimension of social inclusion (b) 'Political freedom' accounts for the chances that citizens have in participating and shaping their common political and social life by freely expressing their opinions and views. We measure political freedom by the Democracy Index and Freedom House Index, both being indices accounting for political rights and civil liberties.

Third, prosperity refers to individuals and the objective and subjective *quality of life* that individuals are experiencing. For the objective aspect we use life expectancy as an overall indicator for health and literacy rates to measure the degree of education. Literacy rates are a somewhat general indicator for education, as they are similar across the developed countries. However, since we conduct a cross-country analysis with global scope and based on a dataset that includes many developing countries with significant differences in literacy rates, they are a useful source of information in our analyses.

We consider self-reported wellbeing as an indicator for the subjective aspect of the individual quality of life. The debate around the Easterlin paradox (Easterlin, 1974; Easterlin et al., 2010) and the question whether income has relative or absolute value shows that considering objective factors only is not sufficient when evaluating the quality of life. The mechanism of the hedonic treadmill, social comparisons and psychological adaptation

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