



European
University
Institute

ROBERT
SCHUMAN
CENTRE FOR
ADVANCED
STUDIES

WORKING PAPERS

RSCAS 2014/78
Robert Schuman Centre for Advanced Studies
Global Governance Programme-121

Representing, reducing or removing complexity:
Indicators of Sustainability and Fiscal Sustainability

Nehal Bhuta, Debora Valentina Malito, Gaby Umbach

European University Institute
Robert Schuman Centre for Advanced Studies
Global Governance Programme

**Representing, reducing or removing complexity:
Indicators of Sustainability and Fiscal Sustainability**

Nehal Bhuta, Debora Valentina Malito, Gaby Umbach

EUI Working Paper **RSCAS** 2014/78

This text may be downloaded only for personal research purposes. Additional reproduction for other purposes, whether in hard copies or electronically, requires the consent of the author(s), editor(s). If cited or quoted, reference should be made to the full name of the author(s), editor(s), the title, the working paper, or other series, the year and the publisher.

ISSN 1028-3625

© Nehal Bhuta, Debora Valentina Malito, Gaby Umbach, 2014

Printed in Italy, July 2014

European University Institute

Badia Fiesolana

I – 50014 San Domenico di Fiesole (FI)

Italy

www.eui.eu/RSCAS/Publications/

www.eui.eu

cadmus.eui.eu

Robert Schuman Centre for Advanced Studies

The Robert Schuman Centre for Advanced Studies (RSCAS), created in 1992 and directed by Brigid Laffan since September 2013, aims to develop inter-disciplinary and comparative research and to promote work on the major issues facing the process of integration and European society.

The Centre is home to a large post-doctoral programme and hosts major research programmes and projects, and a range of working groups and *ad hoc* initiatives. The research agenda is organised around a set of core themes and is continuously evolving, reflecting the changing agenda of European integration and the expanding membership of the European Union.

Details of the research of the Centre can be found on:

<http://www.eui.eu/RSCAS/Research/>

Research publications take the form of Working Papers, Policy Papers, Distinguished Lectures and books. Most of these are also available on the RSCAS website:

<http://www.eui.eu/RSCAS/Publications/>

The EUI and the RSCAS are not responsible for the opinion expressed by the author(s).

The Global Governance Programme at the EUI

The Global Governance Programme (GGP) is research turned into action. It provides a European setting to conduct research at the highest level and promote synergies between the worlds of research and policy-making, to generate ideas and identify creative and innovative solutions to global challenges.

The GGP comprises three core dimensions: research, policy and training. Diverse global governance issues are investigated in research strands and projects coordinated by senior scholars, both from the EUI and from other internationally recognized top institutions. The policy dimension is developed throughout the programme, but is highlighted in the GGP High-Level Policy Seminars, which bring together policy-makers and academics at the highest level to discuss issues of current global importance. The Academy of Global Governance (AGG) is a unique executive training programme where theory and “real world” experience meet. Young executives, policy makers, diplomats, officials, private sector professionals and junior academics, have the opportunity to meet, share views and debate with leading academics, top-level officials, heads of international organisations and senior executives, on topical issues relating to governance.

For more information:

<http://globalgovernanceprogramme.eui.eu>

Abstract

During the last two decades numerous indicators measuring sustainability and its different dimensions have been created. The 2007 economic crisis led to increased scrutiny of public sector fiscal imbalances, and efforts to create more sophisticated measures of fiscal sustainability. The literature on this recent formulation and use of sustainability indicators is broad and contested. It however largely tends to focus on fiscal components, while wider meanings of sustainability are accounted for to a lesser degree. This working paper examines the conceptual and empirical questions relating to the production of indicators of sustainability, both in the sense of fiscal sustainability and sustainable development. It also discusses the uses of sustainability indicators.

Keywords

Economic and financial crisis, fiscal sustainability, public debt, GDP, sustainable development.

Introduction*

During the last two decades many efforts have been made to formulate indicators and indices capable of accounting for the multiple dimensions of sustainability (Bell & Morse, 2008; Neumayer, 2004). The 2007 economic crisis has yet partially narrowed this broader perspective on sustainable development and led to an increased scrutiny of public sector fiscal imbalances, strengthening efforts to create more sophisticated measures of fiscal sustainability (FS). In line with this refocussing, the literature on the formulation and use of FS indicators is broad and contested, and – particularly in the post-crisis phase – tends to focus more on fiscal consolidation than on the embedment of FS in the multidimensional concept of sustainability.

This working paper aims to connect the debate on FS indicators with the broader sustainable development discourse. It summarises central themes of the workshop ‘Global Governance by Indicators – Sustainability and Sustainable Public Finances’ convened by the Global Governance Programme of the European University Institute on 10 and 11 April 2014. The workshop brought together academics and practitioners involved in the production, use and analysis of indicators of sustainability and FS. Bringing together the different contributions from indicator producers, scholars and practitioners, and the overall discussion during the workshop, the paper highlights the complexity of quantifying sustainability and FS, as well as the uses to which indicators are put in policy- and decision-making processes. It also considers the limits of indicators discussed. In order to do so, the working paper proceeds as follows: The first part explores and analyses the conceptual problem of sustainability (1). It then considers methodological problems pertaining to sustainability and FS indicators (2). In the third section the paper approaches the measures of FS by evaluating both definitions (3.1), and their rationale (3.2). The fourth section summarises the workshop’s findings in terms of the conceptual issues raised (4.1), as well as the use and implications (4.2) of FS indicators.

1. Concepts and definitions of sustainability

Ever since ‘sustainability’ has become a popular term within the public, academic and political discourse, measuring sustainability and sustainable development was a challenging enterprise due to the blurry boundaries of the concept. Yet, regardless of the difficulties accompanying its concrete definition, measures of sustainability are produced in order to operationalise an essential concept for modern decision-making processes.

The conceptualisations of sustainability are *numerous*, because the debate has been dominated by the idea of decomposing the ontological meaning (*what is sustainable?*) into a number of characteristics (*what does sustainability mean?*). While the original Brundtland definition (United Nations, 1987) focused on both inter- and intra-generational justice, the existing measures and concepts of sustainability tend to differentiate between dimensions of sustainability (classically environmental, economic, and social; but sometimes even further ethical, political, structural, temporal). However, already the Brundtland report underlined the need to integrate the ‘spaces of sustainability’ holistically within one common understanding of what sustainable development should be.

The various conceptualisations of sustainability developed ever since the 1980s are *vague*, because, while the term originated in a specific historical development context (a strong north-south cleavage and global social inequality issues), it has accumulated additional meanings during the last three decades, also because the original definition was lacking essential conceptualisation such as global

* The Working Paper reflects the views of the authors. As the workshop from which it derives was convened under the Chatham House rule, no institutions’ and individuals’ names are identified.

justice, moral responsibility, scarcity or fragility/robustness of social systems. The new and additional meanings created have enhanced its mobilising power, but reduced its capacity to denote its precise content at the same time.

They are also *contested* and *contradictory*, because institutions and practitioners have often employed the term to serve and support their particular interests and aims. According to some observers, sustainability had hence become a popular term to express ‘whatever suits the interests of the interlocutor’. Some workshop participants argued that, ever since its baptism, the term had been transformed into a mere attribute of sectorial policies, while others went even further and identified isolated conceptual discourses on the single dimensions of sustainability. The latter development was accompanied by a ‘conceptual reproduction within single sub-systems of sustainability’ (i.e. its dimensions) and a missing ‘general agent of sustainability’ promoting a holistic approach or concept.

The participants however agreed that these incongruences could be explained by the ‘biography’ of the concept. Emerging in the 1970s, the sustainability discourse responded to the widely-perceived limits of economic growth. In this period, indicators were developed to quantify the depletion of existing natural resources and to account for intra- and inter-generational inequalities caused by the dominant model of a rather ‘natural resource blind’ economic growth. After the 1990s, however, the concept lost this particular centre of gravity although scholars and international organisations focused on the formulation of an important set of sustainability indicators, that is the UN Millennium Development Goal Indicators.

So, despite the fact that sustainability indicators have been produced and widely used ever since the Brundtland report, the exercise of ‘measuring the immeasurable’ is assessed as little successful in improving sustainable development as such (Bell & Morse, 2008): Often, single measures of sustainability were used as substitutes for a holistic concept of sustainability; the formulation of sustainability indicators had become an industry on its own (King, Gunton, Freebairn, Coutts, & Webb, 2000); and the gap between the rhetoric and the reality of sustainability had widened.

2. New Metrics, Old Paradigms

In recent years, criticism on existing measures of sustainability and the search for alternative measurement tools for economic performance had been accompanied by a debate on the conceptual basis of the sustainability discourse. Alternative tools had been proposed and scholars have subsequently adjusted both equations and formulas. Within these re-conceptualisation efforts however only few voices questioned the theoretical assumptions underlying old measures of sustainability that, based on neoclassical economic theories, did not capture well the depletion of natural resources through economic activities.

In view of this flaw, the descriptive character of contemporary sustainable development indicators was critically discussed during the workshop: sustainability also meant taking into consideration the risks associated with the consumption of existing resources, over time and space. Arising from these risks, several conceptual and methodological problems were identified.

On the conceptual side, some workshop participants argued that traditional indicators of economic sustainability, like GDP or Debt to GDP/GNI ratio, did not provide broader measures of the overall sustainability of economic performance. They failed to incorporate a whole range of data accounting for the erosion of social capital, public infrastructure or natural resources. According to others, there was a certain selection bias as for instance indicators based on the idea of weak sustainability¹ were formulated on neoclassical economic theories that focus on private capital and assets. They however did not take into consideration changes in public infrastructure and social capital.

¹ Weak sustainability (Pearce & Atkinson, 1993) refers to the possibility to substitute natural capital by other forms of capital.

In reaction to this weakness of the weak sustainability perspective, the supporters of the strong sustainability approach² argued that it was necessary to further deconstruct the normative question of ‘*what to sustain?*’. Consequently, a plethora of sustainability indicators became ‘pillar-based’, that means centred on more or less isolated environmental, economic or social dimensions and considerations. However, this proliferation of pillars contributed to the further erosion of the holistic idea of sustainability as a set of concentric circles or overlapping dimensions. According to several scholars, sustainability defined in this way hence corresponds to a sort of hierarchy of goods, with human well-being as the intrinsic aim located at the top with environmental and societal protection considered as instrumental aims in this perspective (Dobson, 1996, Kopfmüller 2001, Gibson 2005, Burger & Christen 2011).

Also new attempts to overcome the constraints of classical indicators of economic growth, such as the Inclusive Wealth Index (IWI), were discussed during the workshop. Some participants critically questioned the capacity of such alternative measures to capture the full multidimensional complexity of sustainability. They noted that metrics of well-being, such as the Inclusive Index of Wellbeing, did not constitute a fundamental innovation given that the theoretical conceptualisation of sustainability remained largely unchanged and incoherencies between social and environmental aspects remained unsettled.

On the methodological side, the case of the IWI led to a vivid discussion during the workshop. First, participants highlighted the arbitrariness in assigning weights to capital assets, that, by ‘putting a price tag on the environment’, strongly contributed to the politicisation of the overall debate. Considering that ‘wealth is defined as the shadow value of all capital assets a country owns’ (UNU-IHDP & UNEP, 2012: 24), the index focused only on the productive base of the economy. No consideration was yet made of consumption and ecosystem limits. In line with the recent academic debate on the necessity (Dietz & Neumayer, 2007), utility (Arrow, Dasgupta, Goulder, Mumford, & Oleson, 2012) and ineffectiveness (Bulckaen & Stampini, 2009) of using observed (shadow) prices to measure sustainability, the inadequacy of this technique was debated. The discussion underlined that the evaluation of the productive base with shadow price was rather controversial as observed prices were supposed to reflect the degree of substitutability between capitals in a diachronic perspective (today and in the future). This projection however did not take into consideration the future productive base. It did moreover not provide a clear image of resource scarcity and depletion, as it did not account for recovery costs or levels of degradation.

As in the literature (Howarth & Farber, 2002), also the choice between flow and stock, that is physical and monetary-capital accounting raised questions during the discussion. It was noted that the monetisation of non-commeasurable resources did not provide any concrete measure of the depletion of existing goods, or of the physical conditions necessary to preserve resources. So, even alternative measures of well-being maintain the neoclassical idea of sustainability as ‘non-decreasing utility function’. As a consequence, also the new conceptualisation generated metrics that do not fully reflect the physical relevance of each capital type; they rather provided a measure of sustainability that corresponded to the monetary value attributed to the particular resource.

3. Concepts and rationales of fiscal sustainability

Indicators to measure FS mirror many of the previously discussed conceptual flaws of measuring sustainability. The workshop exchange on the concept and measurement of FS hence highlighted the extent to which the relationship between ‘fiscal sustainability’ and ‘sustainability’ remains controversial. This controversy also extends the deeper divide between a holistic concept of sustainability and its measurement.

² The approach of strong sustainability assumes that natural resources are limited and not entirely substitutable with other forms of capital (Neumayer, 2004).

First, analysing the position of FS measures within the sustainability discourse, participants addressed the ‘means-end’ dilemma related to them, highlighting that low public debt should be an instrument to achieve the sustainable development of a given society rather than an ultimate aim in itself. In line with this assessment, many scholars agreed that the debate on specific aspects of sustainability, such as FS, necessarily needed to be broadened to include the normative question of ‘*what to sustain?*’ in order to allow for a broader range of policy options (rather than merely focussing on austerity policies) to react to fiscally unsustainable situations. Consequently, fiscal stability should not be considered an intrinsic aim per se, but rather a means of implementing the wider goal of sustainable development. Although indicator producers acknowledged that FS indicators had usually been excluded from the conceptualisation of sustainable development, they agreed that they actually could not properly be operationalised isolated from it.

Second, many institutions and stakeholders define the sustainability of public finances exclusively by applying the solvency criterion. During the workshop, doubts emerged about the capacity of some of the existing criteria to measure the sustainability of public finance. The focus on financial debt, and not on the debt in natural or human capital, was not always fully informative about the conditions of fiscal soundness or the status of capital and non-capital assets within an economy. Many scholars emphasised that the weakness of public finance was only one aspect of a set of simultaneous and interrelated crises (see also Gills 2011) and sustainability concerns. According to others, the solvency criterion was not sufficient and appropriate to account for the sustainability of public finances. Therefore, in their recent practice, some institutions embraced broader perspectives defining the sustainability of fiscal policies as the capacity of a state to continue current policies also in the future without adapting taxation or public services and without continuously raising the debt share to GDP. As a consequence of such redefinitions, innovative multi-dimensional approaches were adopted in which the sustainability of public finances is viewed as the solvency of the public sector in the context of short-, medium- and long-term challenges. Discussing these examples, some workshop participants yet pointed out that the definition of FS as the ‘threshold to maintain fiscal policy unchanged’ was both misleading and unrealistic: misleading, because FS was seen as an intrinsic aim, and not as a tool to develop societies sustainably; and unrealistic, since current institutional practice showed that fiscal thresholds could not be fixed without considering changes in living standards and macro-economic variables.

Third, on the methodological side, some indicator producers pointed out that classical measures such as the Debt to GDP or GNI ratio were incomplete as well. However, also the alternative measures discussed rooted in controversial assumptions that were in need to be reconsidered in the aftermath of the 2007 financial crisis. Also the approach to use composite indicators was critically assessed to increase the complexity of the debate on FS. Dashboard solutions were viewed as feasible and more transparent solutions in this context. Moreover, the nearly exclusive focus on financial variables (such as in the case of the Debt to GDP or GNI ratio), be they medium- or long-term, was criticised. Responding to such criticism, some institutions more recently adopted alternatives, such as composite metrics incorporating macro-economic variables and capturing the signals of fiscal stress also in the short-term.

4. Use and impact of Sustainability Indicators

While an extensive body of literature focuses on technical aspects of measuring sustainability, relatively few attempts have been made to assess their instrumental, conceptual, tactical, symbolic and political role in policy-shaping and decision-making (Herzi, 2004). Focussing on this aspect, the workshop discussion revealed the manifold uses of sustainability indicators.

4.1 The conceptual use of indicators

Considering the role of sustainability indicators in simplifying and diffusing information, a case study presented focussed on the quantitative and qualitative use of sustainability indicators in global newspapers. Selecting a sample of indicators and indices, the analysis aimed at assessing the ‘success’ of indicators by evaluating media reporting. The results of the study present valuable insight into the *conceptual* use (Hezri, 2004) of sustainability indicators within policy-making. First, the ‘success’ of some indices and indicators (such as the Carbon FootPrint, Ecological FootPrint, Corruption Perception Index) contrasts with the relative lack of success of others (the Human Development Index, for instance). Second, the success of some indices and indicators seems to be related to their capacity of managing a complex amount of data in a way that is comprehensible even for non-specialists. Another interesting result shows that the Debt to GDP ratio is widely cited. The rise in reporting on it especially after 2008 may however be largely related to the economic crisis. The wide distribution of the indicators is however accompanied by a low diversity of reports indicating that FS might not be used to frame the discourse on sustainable development as such. As a result, also the use of indicators by global newspapers seems to reflect this missing connection between FS and sustainable development.

4.2 The political use of indicators and its implications

Indicators of FS are central to formulate policy priorities in budgeting and managing fiscal risks. They hold both a symbolic and innate political use (Hezri, 2004), as well precise policy implications. Regional experiences presented during the workshop offered interesting evidence to understand how these measures impact on policy prescriptions.

On the one side, many practitioners use metrics of FS to inform and justify policy recommendations. Many of them however do not seem to question whether concepts such as ‘solvency’, ‘intertemporal budget constraint’, or ‘tax gap’ are the most appropriate ones to evaluate the sustainability of public finances. Often indicators function as symbolic representations of reality, as “ritualistic assurance” (Hezri, 2004), used to bolster ‘right and proper’ decision-making through the use of certain standards (ibidem). An interesting case in point is the role played by subjective data on economic performance as representations of ‘how the markets feel’.

Using the above mentioned composite metrics of macro-economic variables capturing the signals of short-term fiscal stress exemplifies the political use of early-warning indicators. Indicators of fiscal stress are pivotal to detect immediate risks. They hence impact on policy-making to indicate policy progress and to highlight economic and social policy challenges. Moreover, country-specific recommendations are formulated on the basis of these indicators.

Some regional experience also shows how indicators become indispensable instruments to promote macro-economic stability and growth. In many resource-dependent states for example public expenditure is higher than revenue, since these economies are dependent on commodity exports and suffer volatile revenues. One interesting country example discussed related to the introduction of an oil price-based fiscal rule. The country was an oil-producing country highly dependent on oil revenue. To limit domestic volatility of revenues, the oil price-based fiscal rule imposed the formulation of an annual reference oil price in calculating estimated revenues. The institutionalisation of this benchmark represented a way to fence volatility.

However, the methodology applied to build the benchmark price missed taking into consideration the extent to which the oil price-based rule was addressing the macro-economic conditions that affected FS within the given country. Moreover, there was a problem of co-linearity: the benchmark oil price was influenced by a number of factors (social and economic objectives of government; cost and volume of oil production; non-oil sector viability; overall fiscal stance). It yet helped to formulate policy choices that shaped the same variables although it was defined on the basis of certain incorrect

assumptions, such as the existence of strong (economic and political) institutions. So, different interests had indeed shaped the transformation of these indicators into rules, or governance instruments. The case hence highlighted the degree to which such bench-marking exercises can be shaped by the executive branch in a way that compromised the independence of the institutions involved in its negotiation.

Further regional experiences with fiscal instability highlighted another important aspect of the use of FS indicators. During the 1980s a set of fiscal and economic crises occurred in a number of developing countries. After the adoption of a set of fiscal adjustment programmes sponsored by international institutions, the fiscal policy of many of these states remained ‘procyclical’. They remained extremely vulnerable to external shocks and experienced an explosion in social costs and increasing political instability. However, after the most pressing period of the crisis, many of these countries mitigated the volatility of the regional economy by reducing the dollarisation of the local market. As result, the creation of a ‘fiscal space’ improved a set of macro-economic and social conditions. Against this background, after the 2007 financial crises many of these countries adopted temporary measures to counteract the effects of the crisis and different adjustment reforms were formulated in response to the crisis. Additionally, since 2011 most of the countries affected by the 1980s crisis adopted expansionary fiscal policies and created new analytical tools to evaluate the cyclicity of the crisis, such as a ratio that compares the observed primary balance with the structural balance.

Finally, based on the case studies presented, also the question of co-linearity between FS indicators and macro-economic variables was focused upon. Many measures of FS are based on the assumption of constant rates of economic growth, real interest rates and inflation. On the contrary, there is a linear association between indicators of FS and a set of macro-economic variables that are both *conditioned by* fiscal policies and at the same time *sources* of FS indicators. One of the most interesting examples discussed in this context were flaws observed in the formulation of the fiscal multiplier (Blanchard & Leigh, 2013)³. This particular element illustrated important policy implications arising from the above mentioned limited conceptualisation of FS: First, the underestimation of macro-economic variables minimising the perception of the social costs of the fiscal consolidation, and second, debt sustainability favoured at the expenses of the sustainability of social and economic conditions.

Conclusion

The workshop essentially revealed that a holistic view on FS in the framework of sustainable development needs to embrace more dimensions of sustainability than just fiscal or economic ones. Moreover, a great discrepancy between the rhetoric and reality of the sustainability discourse came to the fore. Generally, the discussion underlined the need to reconceptualise the old question of ‘*what to sustain?*’ and to rethink the overall aim (economic growth, economic transition, requalifying debt), and economic paradigm, that underlies a sustainable development.

From a methodological perspective, interesting reflections were made on risks associated with sustainability over time and space; on the limits of composite approaches to respect the integrity of the holistic approach to sustainability; and the risks of transforming performance indicators into governance tools.

³ At the beginning of the crisis, economists and institutions contended that the impact of austerity measures and fiscal adjustments policies on the GDP growth is not significant. In 2012 the IMF (Blanchard & Leigh, 2013) has recognised that in the process of formulating the fiscal multipliers for 28 EU countries some of the components of the internal income (such as the rate of unemployment and the decline in the level of consumption) have been deeply underestimated.

References

- Arrow, K. J., Dasgupta, P., Goulder, L. H., Mumford, K. J., & Oleson, K. (2012). Sustainability and the measurement of wealth. *Environment and Development Economics*, 17(03), 317–353.
- Bell, S., & Morse, S. (2008). *Sustainability indicators: measuring the immeasurable?* London: Earthscan.
- Blanchard, O. J., & Leigh, D. (2013). *Growth forecast errors and fiscal multipliers*. National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w18779>
- Bulckaen, F., & Stampini, M. (2009). On shadow prices for the measurement of sustainability. *Environment, Development and Sustainability*, 11(6), 1197–1213.
- Dietz, S., & Neumayer, E. (2007). Weak and strong sustainability in the SEEA: Concepts and measurement. *Ecological Economics*, 61(4), 617–626.
- Hezri, A. A. (2004). Sustainability indicator system and policy processes in Malaysia: a framework for utilisation and learning. *Journal of Environmental Management*, 73(4), 357–371.
- Howarth, R. B., & Farber, S. (2002). Accounting for the value of ecosystem services. *Ecological Economics*, 41(3), 421–429.
- King, C., Gunton, J., Freebairn, D., Coutts, J., & Webb, I. (2000). The sustainability indicator industry: where to from here? A focus group study to explore the potential of farmer participation in the development of indicators. *Animal Production Science*, 40(4), 631–642.
- Neumayer, E. (2004). *Sustainability and well-being indicators*. UNU-WIDER. Retrieved from <http://eprints.lse.ac.uk/30851/>
- Pearce, D. W., & Atkinson, G. D. (1993). Capital theory and the measurement of sustainable development: an indicator of “weak” sustainability. *Ecological Economics*, 8(2), 103–108.
- United Nations. (1987). *Report of the World Commission on environment and development: “Our common future.”* United Nations.
- UNU-IHDP, & UNEP. (2012). *Inclusive Wealth Report 2012: Measuring Progress Toward Sustainability*. Cambridge University Press.

Author contacts:

Nehal Bhuta

Law Department

Villa Schifanoia

Via Boccaccio 121

50133 Firenze

ITALY

Email: nehal.bhuta@eui.eu

Debora Valentina Malito

Villa La Fonte

Via delle Fontanelle 18

50014 San Domenico di Fiesole (FI)

ITALY

Email: debora.malito@eui.eu

Gaby Umbach

Robert Schuman Centre for Advanced Studies

Villa La Fonte

Via delle Fontanelle 18

50014 San Domenico di Fiesole (FI)

ITALY

Email: gaby.umbach@eui.eu