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**Measuring Sustainability: Benefits and pitfalls of fiscal sustainability indicators**

Debora Valentina Malito



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

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## **Abstract**

The concept of sustainability emerged on the global governance agenda during the 1970s, when, the economic crisis put the spotlight on environmental and social risks associated with economic growth. Although much has been written about it, the literature on pillars, dimensions and measures of sustainability has developed quite independently from the discussions on the idea of sustainability as a set of interlinked and interdependent concentric thematic circles (that is its environmental, social, economic and institutional dimensions). Beginning with this conceptual debate, the present paper argues that indicators of fiscal sustainability are caught between demands of a solvency criterion and the principles of inter- and intra-generational equity. Bypassing their function as a mere representation of reality, these indicators have played a key role in de facto regulating the current fiscal crisis and in eclipsing the other dimensions of sustainability. To discuss this argument, the paper's first section explores the literature on sustainability indicators and composite indices of sustainable development. Its second part focuses on indicators of fiscal sustainability evaluating concepts, measures and demands. The third part gives insight into two measures, the United Nations' (UN) Debt to GNI ratio and the European Union's (EU) fiscal sustainability gap indicators. The fourth part concludes by summarising conceptual, normative and ontological questions.

## **Keywords**

Economic and Financial Crisis , Sustainable Public Finances, Sustainable Development, GDP, Debt.





## Introduction

The concept of sustainability emerged on the global governance agenda during the 1970s when the downturns in the global economy put the spotlight on environmental and social risks associated with economic growth (Meadows, Meadows, Randers, & Behrens, 1972). In the mid-70s an inflationary crisis gripped advanced economies, while the oil crisis and sovereign debt defaults loomed respectively in emerging and developing countries. The empirical reality of the crisis gave rise to new ideological and policy debates that all centred on the idea of promoting a responsible market economy, aware of the social and environmental trade-offs accompanying economic growth. A special emphasis of the debate back then was laid on the long-term consequences of the depletion of natural resources.

The hour of birth of the conceptual debate on sustainable development was its definition by the United Nations (UN) through the World Commission on Environment and Development's crucial 1987 Brundtland report. With this report, the concept entered into the global governance debate, acquiring international recognition and relevance for the first time. The report defined development as sustainable when it satisfied the requirements of inter-generation equity and availability<sup>1</sup>.

Since the Brundtland report, a plethora of definitions, conceptualisations and operationalisations broadened the debate. In 1992, the UN Conference on Environment and Development in Rio de Janeiro concretised the concept by formulating a related political action plan known as the Agenda 21 (United Nations, 1992). 'Rio 1992' was followed by several global conferences on the topic leading to the UN Millennium Summit in 2000 that launched and established eight development goals, the 7<sup>th</sup> of which comprised the need to integrate 'the principles of sustainable development into country policies and programs' (ibidem). Between 2001 and 2002, the World Bank, the UN Environment Programme (UNEP) and the International Monetary Fund (IMF) initiated cooperating on the report 'Financing for Sustainable Development' that served as an input to the 2002 World Summit on Sustainable Development.

Notwithstanding the growing public and academic interest, sustainability remained a blurry, contested and inconsistent concept ever since. The expanding body of literature and metrics of sustainability made it increasingly open to a wide range of interpretations, which were essential to produce new policy interventions allowing for a certain degree of discretion in the decision-making process. While multidimensional perspectives led to a broad conceptual debate, the production of metrics of sustainability developed rather independently from the conceptual framing. Within the production of sustainability measures, the concept of sustainability clashed with established measures of economic growth (Meadows et al., 1972) in so far as it appeared evident that classical indicators, like GDP, would not provide an 'adequate indication of sustainability' (United Nations, 1992), nor of well-being. Further developing the principle of inter-generational equity addressed by the Brundtland report, scholars hence introduced an intra-generational element, based on the assumption that sustainability is a multidimensional and long-term process in which the economic, political, social and the temporal components were interdependent and mutually influential.

Still today, more than 25 years after its baptism, sustainability is an ubiquitous concept (Castro, 2004). On the one hand, the conceptual separation between 'sustainability' and the normative definition of a 'sustainable development' has stimulated a fragmentation into separate 'pillars of sustainability' (the environmental, social, economic and institutional dimensions). On the other hand, the definitional ambiguity has even been complicated by normative and policy implications when it comes to the construction of indicators. So, while there is a lack of agreement about the definition of

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<sup>1</sup> 'Sustainable development is a Development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (United Nations, 1987).

sustainability and sustainable development, there is larger consensus about the type of policies required to promote sustainable patterns of development, based on the neo-liberal economic policy paradigm. In contrast to the generally multidimensional definition of sustainability, metrics of sustainability are strongly rooted in the logics of the neoclassical economic growth theory (Solow, 1956, 1974). In the same vein, policy demands deriving from the sustainability discourse embrace the priorities of the neo-liberal agenda: from deregulation and liberalisation of markets (International Monetary Fund, 2002) to the privatisation of formerly public organisations or services (Huffschmid, 2005, 2008).

On the background of these considerations, the present paper analyses the production of sustainability measures, particularly focusing on measures of fiscal sustainability. It aims to contextualise the discourse about sustainability, especially in view of normative demands and implications related to its prescriptive character. The remainder of this paper is organised as follows: section 1 explores the literature on sustainability indicators and composite indices of sustainable development by focusing on different pillars of sustainability (1.1); concepts of development and well-being (1.2); the approaches of weak or strong sustainability (1.3); and on connections with neoclassic growth theories (1.4). Section 2 discusses measures of fiscal sustainability evaluating concepts (2.1); metrics (2.2.); and demands (2.3) for such indicators. Section 3 presents an in-depth analysis of two measures, the UN's Debt to GNI ratio and the EU's fiscal sustainability gap indicators. Section 4 concludes by summarising conceptual, normative and ontological questions.

## **1. Measuring sustainability and sustainable development**

Between 1990 and 2000, a growing demand for sustainability indicators could be witnessed at both national and global level. The first important initiative to measure sustainable development was undertaken in 1992 by the UN's Commission on Sustainable Development (UNCSD). After the 1992 Rio conference and the subsequent call for sustainable development indicators within Agenda 21, the UNCSD published a list of 140 indicators, grouped into four thematic frameworks: the social, the economic, institutional and environmental components (United Nations, 2001). The third edition of the dataset presents 96 indicators, no longer grouped into four pillars, but into 14 themes<sup>2</sup>. After this first initiative, a galaxy of sustainability indicators emerged and many international organisations engaged in the development of their own sustainability indicators: in 1997, for instance, the OECD launched a sustainable development initiative that culminated in a set of indicators used within the OECD economic surveys and the Environmental Performance Reviews to monitor member countries' environmental performance. While the first OECD initiative was characterised by a strong environmental focus<sup>3</sup>, in 2004 the organisation announced the need to create indicators based on a 'Capital Approach' able 'to reserve or conserve wealth in its different components' (Strange & Bayley, 2008) by maximising different types of capital.

In the late 1990s, also many national governmental and non-governmental actors produced their own sustainability indicators. Among them the 'Barometer of Sustainability' developed by the World Conservation Union (IUCN) and the International Development Research Centre (IDRC) in Canada, the 'Canadian Index of Wellbeing', the British 'Measuring National Well-Being', the 'Gross National Happiness Index' of Bhutan, the Thai 'Sustainable Development Index', the Korean 'Sustainable Development Index Resource', the 'Environmental Performance Index' for China, and the Malaysian 'Quality of Life Index'. Moreover, the UN Environmental Programme's 'Mediterranean Action Plan'

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<sup>2</sup> Poverty; Governance; Health; Education; Demographics; Natural hazards; Atmosphere; Land; Oceans, seas and coasts; Freshwater; Biodiversity; Economic development; Global economic partnership; Consumption and production patterns.

<sup>3</sup> These indicators included: reducing emissions of greenhouse gas; reducing air pollution; water pollution; improving natural resources management; reducing and improving the management of municipal waste; improving living conditions in developing countries; and ensuring sustainable retirement income.

(MAP) launched a regional project to construct metrics of sustainable development in the Mediterranean area.

In 2000, the UN launched the ‘Millennium Development Goals’ (MDGs), an ambitious initiative to stimulate the achievement of 15 global development aims. Many institutional interests and efforts in the field of sustainability were bundled and integrated into the so-called ‘Millennium Project’, aimed at formulating a set of strategies to meet the 15 targets (United Nations, 1990). The Inter-Agency and Expert Group on the MDG Indicators, led by the Department of Economic and Social Affairs of the UN’s Secretariat, united experts from the most important international organisations (UN, IMF, WB, WTO and OECD) to formulate indicators for monitoring progress towards the MDGs.

In 2001, also the EU established a sustainable development strategy in which the construction of sustainability indicators was considered pivotal to implement member states’ related strategies. This initiative resulted in 2005 in the formulation of 140 indicators grouped in eleven themes. These indicators are used to monitor EU member states’ compliance with the EU ‘Strategy for Sustainable Development’.

The growing demand for ‘measures of the immeasurable’ (Bell & Morse, 2008) were accompanied by a conceptual transformation (Warhurst, 2002) of sustainability. On the one hand, indicators of sustainability were integrated in a broad variety of measures ranging from development indices, over market and economy-based indices to ecosystem and welfare-focused measures (Singh, Murty, Gupta, & Dikshit, 2009). On the other hand, different institutions and stakeholders produced mono-dimensional metrics of sustainability, disaggregating the original idea of an integrated model of sustainable development. Both trends underline the need for an encompassing perspective on sustainability to balance the dynamics of the capitalist system in view of the depletion of natural and human resources with concerns of managing and safeguarding the latter for future generations. First, the division of the sustainability discourse into ‘pillars of sustainability’ has yet also diminished the idea of sustainability as a set of interlinked and interdependent concentric circles. Following this trend towards isolating priorities, *social scientists* define social sustainability as the ability to maintain human capital. *Economists* define an economy as sustainable if the system affords the monetary resources necessary to provide services, to satisfy community needs and to generate economic growth. *Ecologists* focus on environmental sustainability that implies maintaining natural capital. As result, sectorial indicators of social sustainability do not necessarily take into account the trade-offs between natural and social needs; and indicators of economic sustainability often erode the margins claimed by ecologists to safeguard the environmental equilibrium. Passing from conceptual interdependence towards independence, this trend has gradually promoted the formation of separate ‘markets of sustainability’ (Heal, 1999) in which the economic, social and environmental dimensions became independent assets of the survival of the contemporary neo-liberal mode of production<sup>4</sup>.

Second, taking up the logics of these separate markets, institutions and stakeholders have incorporated sustainability concerns into the production of their goods and the delivery of their services, by creating new ‘market opportunities’ (Heal, 1999) to reduce the negative externalities of the economic market production<sup>5</sup>. In this context, sustainable development is seen as ‘central to strategic positioning and competitive advantage, a key component in future economic success and market value’ (Rowledge, James, Barton, & Brady, 1999). For many stakeholders and institutions, the

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<sup>4</sup> According to Heal, the market plays a complex role: ‘it determines which resources are converted by technologies to goods and services that satisfy peoples preferences: It also manages the resource base, in the sense that if a resource is scarce its price rises, reducing use and providing incentives to search for more’ (Heal, 1999:83).

<sup>5</sup> According to Sutton (1997) this sort of incorporation is facilitated given that ‘there is something about the basic structure of the market which, until it is changed, makes it hard to have an environmentally sustainable economy. If firms want to help bring about ecological sustainability they need to not only produce the greenest products that are possible at any particular point in time, but they need to contribute to the restructuring of the market itself to favour sustainability eg. through ecotax and eco-investment strategies.’

commitment to sustainability has been justified by the need of creating ‘more efficient and liquid markets for environmental products and services’ (“Environmental markets,” 2014). While sustainability concerns created new demands<sup>6</sup> (Heal, 1999) the formation of such markets of sustainability is yet also part of the neo-liberal mode of production (Castro, 2004; Krever, 2013; Kumi, Arhin, & Yeboah, 2013) that gives special emphasis on the liberalisation of the economy. According to the UN, ‘free market mechanisms’ on the one hand make a positive contribution to sustainable development, on the other they stimulate the formulation of a compensative mechanism, ‘in which the prices of goods and services should increasingly reflect the environmental costs of their input, production, use, recycling, and disposal subject to country-specific conditions’ (United Nations, 1992).

Following this argument, sustainability has been conceptualised as a way to *compensate* the deterioration of non-renewable resources by introducing technological inputs or by improving capital productivity. This approach, however, does not aim to redeem unsustainable patterns of consumption and production. Quite the contrary, it tends to mitigate and regulate the externalities of the existing economy through the imposition of regulatory pressures (Rowledge et al., 1999).

### ***1.1 Pillars of sustainability***

Indicators to measure sustainability can be analysed on the basis of their structure, content, methodological choices and theoretical foundations. As illustrated in Table 1, several sustainability indicators have been formulated to refer to the social, economic, and environmental dimensions of sustainability. Some integrate all of these dimensions. While others have used the concept of sustainability to measure the quality or improvement of data related to human capital, well-being or development. The ‘Human Development Index’ for instance, measures human development as an aggregate of social and economic elements, such as life expectancy and income, while the Human Development Report takes into account also environmental factors including carbon dioxide emissions per capita or change in forest area. The ‘Barometer of Sustainability’<sup>7</sup>, for instance uses the concept of sustainability to measure well-being and comprises data for both socio-economic well-being and ecosystem preservation. Following the same approach, the Joint UNECE/OECD/EUROSTAT Working Group on Statistics for Sustainable Development (WGSSD) also elaborated a composite measure of sustainability.

Among the most prominent environmental sustainability indices are the ‘Ecological Footprint’ calculated by the Global Footprint Network, the ‘Environmental Sustainability Index’ (ESI) launched by the World Economic Forum (WEF) and the ‘Living Planet Index’, developed by WWF in 1998. Metrics of sustainability focusing on the social dimension of SD include the ‘Human Development Index’ (HDI), launched in 1997 by the UN Development Programme (UNDP). Metrics of economic sustainability include inter alia the ‘Genuine Savings’ and the ‘Index for Sustainable Economic Welfare’ (ISEW) (the current ‘Genuine Progress Indicator’ (GPI)). ISEW and GPI are generally considered hybrid metrics of sustainability including data such as income inequality and costs of crime, hence focusing on both the social and economic dimension of sustainability.

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<sup>6</sup> ‘Water is a good for which individuals or municipalities are willing to pay. They are willing to pay for quality as well as quantity, and this in effect puts a price on the water management and purification services provided by a watershed. It generates an indirect demand, what economists call a derived demand, for watersheds’ (Heal, 1999: 59).

<sup>7</sup> The ‘Barometer of Sustainability’ is part of the ‘Resource Kit for Sustainability Assessment’ developed by the International Union for the Conservation of Nature (IUCN) M&E Initiative with support from the International Development Research Centre (IDRC).

**Table 1. Metrics of Sustainable Development**

	Pillar	Provider	Measure	
<b>Indices of sustainable development</b>		United Nations UNDP	UN Sustainable Development Indicators Human Development Index (HDI)	
		Centre for Environmental Strategy (CES) and the New Economics Foundation (NEF)	Index of sustainable and economic welfare (ISEW)	
		European Commission	EU Sustainable Development Indicators	
<b>Indicators of sustainability</b>	<b>Environment-based</b>	Yale University's Center for Environmental Law and Policy Columbia University's Center for International Earth Science Information Network (CIESIN), World Economic Forum	Environment Sustainability Index	
		RobecoSAM	Sustainability Performance Index	
		WWF	Living Planet Index	
		Global Footprint Network	Ecological Footprint (EF)	
		ITT Flygt	Sustainability Index	
		Environmental Risk Rating	ECCO-CHECK Index	
		US environmental Protection Agency	Environment Quality Index	
		United Nations <i>Environmental</i> Program	Environmental Vulnerability Index	
		<b>Social-based</b>	UNDP	Gender Empowerment Measure
			Overseas Development Council	Physical Quality of Life Index
			Gallup-Healthways	Well-Being Index
			Sustainable Society Foundation	Index for sustainable society
		<b>Economic-based</b>	European Commission	Internal Market Index
			IFO Institute for Economic Research	Business Climate Indicator
			European Central Bank	European Labour Market Indicators
OECD	Composite Leading Indicators			
World Bank	Genuine Savings (GSs)			
UNEP	Composite sustainable development index			

Among the measures that integrate different pillars of sustainability, the ‘Genuine Progress Index’ (GPI), for instance, has been developed as a metric for well-being going beyond the constraints of the narrow GDP approach as it incorporates environmental and social factors not captured by the original GDP indicator. Also the ‘Sustainable Society Index’ (SSI) and the ‘Legatum Prosperity Index’ constitute such hybrid indices of sustainability: while the first includes both indicators of environmental and social sustainability, the second incorporates a wide array of factors in terms of wealth, economic growth and quality of life.

Yet, although there are such initiatives creating or refining measures of sustainability in a polycentric perspective, several scholars have concluded that only a few of them privilege a fully integrated approach (Bossel & Balaton Group, 1999) that takes into account features and thresholds deriving from all dimensions of sustainability. Following such a more integrated, yet not fully comprehensive approach, the ‘Sustainable Progress Index’, for instance, is designed as a metric for biodiverse sustainability measuring the total land area required to maintain the natural capital stock (food, water, energy and waste-disposal demands) per person, per product or per city. As such, it is a more comprehensive indicator that, however, does not capture the social dimension of sustainability. The ‘Index of Sustainable Economic Welfare’ indeed takes into account social and environmental components, but not economic indicators. While the UN Development Programme’s ‘Human Development Indicator’ (HDI) includes the three welfare components health, education and income, it does not intensively take into account environmental factors. For this reason, in 2010, UNEP introduced also a series of environmental indicators, like the Carbon dioxide emission per capita and change in forest area into the Human Development Report, that were not included previously.

## ***1.2 Growth theory and indicators of sustainability***

Indicators of sustainability can also be differentiated according to their theoretical foundation. While the concept of sustainable development emerged in reaction to the limits of economic growth (Meadows et al., 1972) many indicators of sustainability are conceptually based on the assumptions of neo-classical theories of growth, which explain growth as emanating from ongoing investments in public and human capital. The tendency to associate sustainability with non-declining consumption per capita has linked the concept to the idea of non-renewable resources potentially being substituted by introducing technological inputs (exogenous growth theories) or by improving capital productivity (endogenous growth theories).

Within the production of sustainability indicators that roots in such neo-classical growth theory assumptions, two trends have hence emerged. First, *exogenous growth* theorists support the notion that a sustainable growth can be achieved when exogenous technological inputs increase capital intensity. According to Solow (1974), only a free market ensures an efficient allocation of resources, able to stabilise economic growth. The key assumption of this model is that each country will converge towards the same economic stage. However, this approach raised criticisms even among liberal neo-classical economists (Stiglitz, 1974), and served as theoretical basis for only few metrics of sustainability. ‘Genuine Saving’, for instance, is an indicator provided by the World Bank, built on one of the core assumptions of the exogenous growth theory, the ‘Hartwick rule’<sup>8</sup> (Hartwick, 1977). Second, *endogenous growth* theorists reinterpret the neo-classical understanding of sustainability by affirming that growth results from ongoing investments in human capital. Since investments in human capital, through the reduction of the diminishing return to capital accumulation, have positive effects on the economy (Romer, 1986), the natural capital stock should be maintained in equilibrium with the other forms of capital. While exogenous growth theorists emphasise the possibility of substituting different forms of capitals by introducing technological innovations, the endogenous approach focuses

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<sup>8</sup> According to this rule, a country’s total capital stock should be kept constant to allow for sustained consumption over time (Boos & Holm-Müller, 2013).

on the idea of compensating environmental or social dysfunctions by providing investments in human capital. Here, contrary to the exogenous approach, technology is no longer an exogenous variable, but an endogenous component stemming from increased investments in formation and education. This endogenous model of growth establishes a threshold under which natural capital cannot be exploited. It is however still possible to maintain, or even raise, the economic value of the stocks by enforcing a positive exploitation, that is to provide a monetary compensation for the erosion of essential natural resources.

The endogenous model of growth builds the foundation of many contemporary metrics of sustainability: the ISEW or the 'Genuine Progress Index' include inter-generational equity considerations based on the idea of balancing the deterioration of physical capitals by increasing investments in human capital (like education or health spending). Also the 'Human Development Index' is based on the extension of Lucas' model of endogenous growth theory that, including the standard of living, education and health in its utility function, postulates that human capital raises the productivity of both physical and human capital.

### ***1.3 Strong versus weak sustainability, monetary and physical indicators***

In terms of further categorising we can explore the debate between strong and weak approaches to sustainability. The approach of strong sustainability assumes that natural resources are limited and not entirely substitutable with other forms of capital (Neumayer, 2004). In line with the idea of non-decreasing natural capital, a minimum level below which capital stocks should not be allowed to fall exists, and it is critical to define the amount of natural capital that cannot be substituted by capital productivity.

Contrary to this, the approach of weak sustainability (Pearce & Atkinson, 1993) assumes that it is possible to substitute natural capital by other forms of capital. Pearce and Atkinson (ibidem: 105) have introduced the idea that 'an economy is sustainable if its savings rate is greater than the combined depreciation rate on natural and man-made capital'. Here, the erosion of natural capital does not receive particular attention. Sustainability is expressed as a constant portion of consumption per capita for an infinite amount of time, where the non-declining total capital stock is a result of maintaining the country's savings higher (or equal) than the total depreciation of all the forms of capital.

While the strong sustainability approach has usually been associated to ecological theories, the concept of weak sustainability defines the environment as a renewable natural resource and resembles 'a by-product of growth theory with exhaustible resources' (Cabeza Gutiérrez, 1996). The theoretical difference between weak and strong sustainability indicators is supported by different methodological choices in view of the adoption of either physical or monetary aggregation. The monetary aggregation method supports the notion that the measurement of all capital stocks may be realised by using a common unit, a monetary one. On the other side, the supporters of the strong approach to sustainability have privileged the formulation of physical measures.

In view of this divide, monetary-focused indicators and indices measuring sustainability include: 'Genuine Savings' or total national wealth, the 'Measure of Economic Welfare' (MEW), the 'Index of Social Progress' (ISP), the 'Physical Quality of Life Index' (PQLI), the 'Economic Aspects of Welfare' (EAW), GDP and 'Index for Sustainable Economic Welfare' (ISEW). Physical indicators are included in measures like the 'Ecological Footprint', the 'Sustainability Performance Index', and the 'Living Planet Index'.

Beyond this preference for physical or monetary indicators, a second methodological distinction concerns the use of single data sources versus the aggregation of types of capital under a composite indicator. Among the aggregate indicators of sustainability are the 'Ecological Footprint', 'Human Development Index' (HDI), 'Sustainable Progress Index' (SPI), 'Index for Sustainable Economic Welfare' (ISEW), 'Genuine Progress Indicator' (GPI), 'Genuine Savings Indicator' (GSI), 'Barometer

of Sustainability', and the 'Environmental Pressure Indicators' (EPI). Among single data sources are the 'Sustainable Development Indicators' developed and computed both by the UN and the European Commission (EUROSTAT).

## 2. Fiscal sustainability

Among the conceptual endeavours to frame and further differentiate the sustainability paradigm, the concept of fiscal sustainability (FS) has attracted greater public and academic attention especially after the 2007/08 global financial crisis, when more theoretical effort was devoted to define how budgetary imbalances affect economic growth and stability (Ghosh, Kim, Mendoza, Ostry, & Qureshi, 2013). However, within this deepened conceptual debate, the concept of FS has scarcely been related to the mentioned multifaceted dimensions of sustainability. While different definitions of FS have been provided, they have yet strongly centred around arguments and theories of government budget constraint (Burnside, 2005; Friedman, 1957) that do hardly allow for convergence with the broad concept of sustainable development. In this perspective, fiscal sustainability is understood as the financial capacity of the public sectors to maintain the existing services and resources (Burger, 2005). While in this definition the fiscal attribute seems to be rather clear, the attribute 'sustainable' seems to be blurry.

Moreover, few efforts have been made to approach the production of FS indicators as part of the broader technology of governance (Davis, Fisher, Kingsbury, & Merry, 2012). According to many scholars, the development of indicators of sustainability cannot be steered by policy demands or prescriptions alone, since they arise from 'the system itself, and the interests, needs, or objectives of the system(s) depending on them (Bossel & Balaton Group, 1999: 10). While this view advocates some sort of neutrality in the formulation of these indicators, other perspectives look at such sustainability metrics as intrinsically normative (Cassiers & Thiry, 2010) and closely connected to policy interests, judgments and prescription (Singh, Murty, Gupta, & Dikshit, 2009; Castro, 2004). In particular, critical scholars have connected the production of sustainability metrics to the need of enforcing the knowledge infrastructure behind the formulation of neo-liberal policies (Krever, 2013).

### 2.1 Fiscal sustainability in context and contested varieties

Two interpretations of FS have been discussed within the literature: on the one side, scholars have linked the concept of FS to the solvency criterion. In line with the idea that governments must satisfy a long-run relationship between debt and growth (Domar, 1944), Domar defined sustainability as the convergence between the debt ratio and a finite value<sup>9</sup>. Other scholars introduced the idea of an inter-temporal budget constraint that relates to the option to maintain the initial public debt equal to the value of future public surpluses. The inter-temporal budget constraint assumes that the present debt must be compensated by the production of future surplus (the primary budget surplus). The inter-temporal dimension requires to calculate the public debt across different periods, the present ( $D_t$ ) and the initial one ( $D_0$ ): here, the government expenditure is sustainable when the present value of public debt ( $D_t$ ) is not higher than its initial level ( $D_0$ ), in other terms when  $D_t - D_0 > 0$  (Burnside, 2005).

In 1990, Blanchard proposed a most articulated definition according to which fiscal sustainability requires that 'the ratio of debt to GNP eventually returns to its initial level, and that the difference between the interest rate and the growth rate remains positive' (Blanchard, Chouraqui, Hagemann, & Sartor, 1991: 14). This definition should satisfy two conditions: the solvency criterion and the growth constraint. The inter-temporal constraint (Hamilton, 1986) introduces the basic claims made by the exogenous theory of growth (Solow, 1956) given that under the conditions of limited natural

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<sup>9</sup> In 1944 Domar defined 'burden of the debt', like 'the tax rate (or rates) which must be imposed to finance the service charges, and that the will rise is far from evident' (Domar, 1944: 798).



resources, capital accumulation cannot lead to persistent growth. Therefore, a technological factor should be introduced to stimulate a sustainable growth.

As a second interpretation, already at the end of 1980s neo-classical economists began to emphasise the need to keep the natural capital stock in equilibrium with other capital stocks (social and economic). Barro and Romer elaborated a theory of endogenous growth in which technological changes are no longer external to the production function, but determinant of growth since investments in human capital increase capital productivity (Barro, 1991; Romer, 1986). According to this model, public services serve ‘as input to private production’ (Barro, 1991:7). So, production can show decreasing capital returns if the government inputs do not expand. Applying this model to the concept of fiscal sustainability, the government is allowed to run budgetary imbalances leading to the emission of public debt. The key implication of this approach is that sustainable growth is achieved not only by the accumulation of physical capital, but by the formation of human capital, resulting from educational spending.

This conceptualisation of FS derives from the ‘Capital Approach’ according to which fiscal imbalances should be compensated by investments in human capital, increasing labour productivity (Greenwood, 2001). The approach does hence not aim to reduce either the total fiscal imbalance, or the causes leading states to be caught in fiscal imbalances. On the contrary, scholars and institutional providers aim to establish thresholds against which legal and regulatory regimes can be monitored and evaluated, in order to assess performances and define new prescriptions. Indicators, here, are pivotal to define the threshold under which consumption should not be allowed to fall. Therefore, indicators are ‘valuable in designing policies to avoid consuming capital to support current consumption’ (ibidem), but even in establishing the remuneration essential to balance the unsustainable behaviour.

Some scholars doubted the utility to equate solvency and sustainability, arguing that the concept of sustainability should be extended beyond the limits of the solvency criterion (Artis & Marcellino, 2000). However, many institutions that prioritise addressing sovereign debt continue to equate FS with solvency or debt sustainability. For the EU, fiscal sustainability relates to the ‘ability of a government to assume the financial burden of its debt in the future. Fiscal policy is not sustainable if it implies an excessive accumulation of government debt over time and ever increasing debt service’ (European Union, 2012). In a similar vein, for the IMF<sup>10</sup>, an ‘entity’s liability position is sustainable if it satisfies the present value budget constraint without a major correction in the balance of income and expenditure given the costs of financing it faces in the market’ (IMF, 2002). Table 1 summarises different definitions of fiscal sustainability.

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<sup>10</sup> Tanner pointed out: ‘What is a sustainable fiscal policy? What is a sustainable trajectory for public debt? As a prerequisite, a government must satisfy intertemporal solvency: it must raise enough resources (in present value terms) to service its obligations so as to preclude either default or restructuring. In this vein, a “sustainable policy” may be one that, if continued indefinitely and without modification, would keep the government solvent. A policy may be defined either as some chosen primary surplus or some rule or reaction function, explicit or implicit. Alternatively, in cases of severe fiscal stress, an ‘unsustainable’ situation may be one where the primary adjustment required to avoid a debt restructuring or outright default is not feasible; conversely ‘sustainability’ would imply that the necessary adjustment is feasible’ (Heal, 1999).

**Table 1 Different Definitions of Fiscal Sustainability**

	Definition
<b>Domar (1944)</b>	'Burden of the debt', like the tax rate (or rates) which must be imposed to finance the service charges, and that the will rise is far from evident' (Domar, 1944: 798).
<b>Buiter et al. (1985)</b>	'A sustainable policy is one capable of keeping the ratio of public sector net worth to output at its current level' (Buiter, Persson, & Minford, 1985)
<b>Blanchard (1990)</b>	'The ratio of debt to GNP eventually converges back to its initial level ...' but '... the present discounted value of the ratio of primary deficits to GNP... is equal to the negative of the current level of debt to GNP ...' (Blanchard, 1990: 12)
<b>EU (2012)</b>	'Ability of a government to assume the financial burden of its debt in the future. Fiscal policy is not sustainable if it implies an excessive accumulation of government debt over time and ever increasing debt service' (European Union, 2012:1)
<b>IMF (2002)</b>	'An entity's liability position is sustainable if it satisfies the present value budget constraint without a major correction in the balance of income and expenditure given the costs of financing it faces in the market' (IMF, 2002:5)
<b>OECD (2009)</b>	Government solvency, continued stable economic growth, stable taxes and intergenerational fairness (Schick, 2005 in OECD, 2009:86). Solvency is the ability to pay financial obligations. Stable taxes allow programmes to be financed without modifying the tax burden on citizens. Fairness is the capacity to pay for current public services with today's revenues, rather than shifting the cost to future generations or denying them the services available today (OECD, 2009:86).
<b>UN (2001)</b>	'The total amount of outstanding debt (internal and external) issued by the general government divided by gross national income' (United Nations, 2001: 282).

## 2.2 Metrics of fiscal sustainability

Indicators of sustainable public finances have acquired great relevance during the last decades and especially with the 2007/08 global financial crisis. Yet, since agreement on how to group existing measures is rather weak, this paper proposes to categorise them into two clusters: indicators 'defining the gap' and indicators 'filling the gap'.

The first group ('defining the gap') is composed of indicators of budgetary constraints measuring whether a government's debt exceeds the present discounted value of its expected future primary surpluses. Here, many economists agree to define the sustainability of public finances by using the government's inter-temporal budget constraint for which the level of public debt must be equal to the difference between interest payments, primary balance and 'seigniorage' (that is, the face value of the money minus the cost of physically producing and distributing it) (Burnside, 2005). Measures 'defining the gap' include also indicators that define fiscal policy as sustainable if it delivers a public debt to GDP ratio that may be considered a stable one. Within this group we can include 'Central government debt, total (% of GDP)' released by the World Bank for the Millennium Development Goals. Within the toolkit for 'Debt-Sustainability Risk Analysis' (DSRA), the World Bank has

developed both debt- and budget-related indicators providing for metrics to identify public-debt vulnerabilities and risks. Under the same conceptual umbrella, the IMF has formulated the ‘Financial Soundness Indicators’ comprising data on 12 core dimensions of fiscal vulnerability.

The second group (‘filling the gap’) defines fiscal sustainability by establishing ‘sustainable thresholds’ and by measuring the gap that needs to be filled to reach a sustainable debt ratio. This approach focuses on the relation between different variables, such as government revenue and expenditure (Afonso, 2005), primary surplus and the initial public debt ratio (Bohn, 1995), the evolution between present and future spending (the primary gap and the tax gap), or the target value of debt established at the end of precise horizon to fill the original gap.

This second group of indicators includes, for instance, the ‘tax gap’ indicator computed by the OECD and formulated by Blanchard (1990), the ‘Debt to GNI ratio’ computed by the UNCSD, the ‘Fiscal Sustainability’ gap indicators (S1 and S2 ‘Gap to the debt-stabilizing primary balance’) provided by the European Commission within the EU’s Fiscal Sustainability Report, and the ‘Growth rate of real GDP per capita’ provided by EUROSTAT as a metric for sustainable socio-economic development within the Sustainable Development Indicators. Table 3 summarises these two typologies of measures.

**Table 3 Indicators of Fiscal Sustainability**

Type of indicator	Provider	Indices/Report	Indicator
<b>Indicators of budgetary constraints</b>  <b>'Defining the gap'</b>	-United Nations Commission on Sustainable Development	-Indicators of Sustainable Development	<b>-Debt to GNI ratio</b>
	-United Nations	-Millennium Development Indicators	<b>-Central government debt, total (% of GDP)</b>
	EUROSTAT	Sustainable Development Indicators	<b>Growth rate of real GDP per capita</b>
	International Monetary Fund	Financial Soundness Indicators	
	World Bank	-WBI  -Debt-Sustainability Risk Analysis (DSRA)	<b>-Central government debt, total (% of GDP); debt-to GDP ratio</b>  -Macroeconomic, budget, debt, variables
<b>Indicators of sustainable thresholds</b>	OECD	OECD Method	<b>Sustainable gap quota</b> (Blanchard, 1990)
<b>'Filling the gap'</b>	European Commission	Fiscal Sustainability Report	<b>S0 indicator</b> , early detection of fiscal stress; <b>S1 indicator</b> , debt compliance risk; <b>S2 indicator</b> , ageing-induced fiscal risks

### 2.3 Criticisms

Most of the criticism related to measuring sustainability and fiscal sustainability concerns the definitional incongruences; the selection of data; the construction of monetary, material or aggregate measures (like normalisation and aggregation); and the comparability of different indices and typologies of indicators. The following section addresses some of the conceptual, methodological and ontological concerns raised in the literature.

#### 2.3.1 Conceptual shortcomings

The present analysis follows the assumption that 'disagreements on quantification choices are far more than a methodological question' (Thiry, 2011: 2). Following from this, one of the most important criticisms related to FS indicators concerns their underdeveloped capacity to account for the complexity of the sustainability discourse (Jollands, 2004), turning a blind eye to the concentric relationship between the different dimensions of sustainability (Gustafsson, 1998).

For the further illustration of this criticism, two of the most applied approaches of indicators of FS shall be analysed more in-depth: the 'Generational Accounting' and the 'OECD method'. 'Generational Accounting' computes the fiscal adjustment required to satisfy the government's inter-temporal budget constraint. This method calculates the generational balance of public finance by evaluating the difference between the present burden and that of a youngest generation (Langenus, 2006). In contrast to this understanding, Blanchard, as mentioned above, brought forward the idea of

formulating new indicators<sup>11</sup> of FS (Blanchard, 1990) that have been subsequently adopted by the OECD; among them, Blanchard calculated the sustainable tax quota, a finite metric of FS, defined as a the constant quota of taxes for all years considered in the time horizon.

The most important difference between the two approaches concerns the time horizon adopted: the ‘Generational Account’ adopts an infinite time horizon. Public finances are sustainable if, over an infinite time horizon, the present value of the primary deficits  $\frac{E_j - R_j}{(1+i)^j}$  equals the initial Debt  $D_0$ :

$$\sum_{j=1}^{\infty} \frac{E_j - R_j}{(1+i)^j} = -D_0$$

Especially by adopting an infinite time horizon, this method does not violate the principle of inter-generational constraint.

The tax gap indicator calculated by Blanchard and used by the OECD assumes that fiscal sustainability is satisfied when the difference between the sum of the primary deficit  $\sum_{j=1}^{\infty} \frac{E_j - R_j}{(1+i)^j}$  and the public debt  $\frac{D_T}{(1+i)^T}$  is equal to the initial Debt  $-D_0$ :

$$\sum_{j=1}^{\infty} \frac{E_j - R_j}{(1+i)^j} - \frac{D_T}{(1+i)^T} = -D_0$$

Indicators of FS based on a finite time horizon, however, ‘violate’ (Benz & Fetzer, 2006) one of the basic assumptions of the concept of sustainability. As observed by Balassone and Franco (2000), the tax-gap ratio proposed by Blanchard faces two important shortcomings: ‘the arbitrary nature of the choices required about the time horizon (n) and the target debt to GDP ratio at the end of the period (d0)’.

### 2.3.2 Methodological shortcomings

The lack of a common (theoretical) understanding of sustainability contributed to the proliferation of a broad variety of indicators and methodologies. In view of this range of differentiation, a first methodological problem relates the selection of data and variables. Given the difficulty to collect data on government assets, especially in developing countries, indicator providers often rely on a gross measure of debt. Further difficulties emerge with regard to defining variables such as the gross or net debt<sup>12</sup>.

Moreover, the debt to GDP ratio does not seem to be a very reliable predictor of which country will default or not. Balassone and Franco (2000) have addressed a problem of co-variation here. Also according to Benz and Fetzer (2006) the evolution of the debt quota increases with the growth/interest difference. According to Huang and Xie, indicators of debt-to GDP ratio are extremely sensitive to the expenditure GDP ratio. This criticism holds an important policy implication, since several scholars have criticised the meaningless (Huang & Xie, 2008) and the arbitrariness (Balassone & Franco, 2000)

<sup>11</sup> Blanchard in 1990 brought forward the idea that no single indicator can answer the different questions raised by the concept of fiscal sustainability. Hence, he proposed to construct four types of metrics: indicators of discretionary fiscal policy, of sustainability, of fiscal impact and fiscal distortions (Blanchard, 1990).

<sup>12</sup> As observed by Bassalone and Franco (2000:31): ‘As the assets owned by government can be sold to repay the debt, a net debt measure may perhaps constitute a clearer benchmark (although the issue of the degree of liquidity of government assets should also be taken into account). However, data on assets are often regarded as unreliable, especially those on non-interest bearing assets, so that on practical grounds one may opt for a gross measure of debt.’

of having a single criterion in Debt-to GDP ratio, as the one employed in the European Stability and Growth Pact. This criticism is supported by a twofold empirical evidence. First, many countries maintained a high public debt without falling into a financial crisis. And second, as noted by Huang and Xie (Huang & Xie, 2008) ‘55 percent of the defaults in emerging markets occurred when the public debt was below 60 percent of GDP, and 35 percent of the defaults occurred when the debt ratio was less than 40 percent of GDP’

Furthermore, additional concerns have been raised about the reliance on a single or aggregate methodology (Jollands, 2004). Different indices of sustainable development are based on an aggregate methodology like the ‘Index of Sustainable Economic Welfare’ (ISEW), the ‘Genuine Progress Indicator’, the ‘Ecological Footprint’ and the ‘Human Development Index’ (Neumayer, 2001). Among the indicators of fiscal sustainability, one of the FS indicators computed by the EU (the S0) results from an aggregation methodology, based on the ‘signal’ approach<sup>13</sup>: the S0 is composed by 28 fiscal and macro-financial variables collected by different surveys (AMECO, EUROSTAT, WEO and BIS).

The construction of composite indicators of FS has both strengths and weaknesses. On the one side, the aggregate methodology is a simple approach, capable of incorporating and summarising many variables and information, but also able to accommodate differences in data. By summarising information, aggregate indicators are better suited to assist policy-makers in formulating their agenda. On the other side, one can also argue that a large amount of information is lost (Meadows, 1998) or distorted (Lindsey, Wittman, & Rummel, 1997) in the process of simplifying or aggregating different components. Aggregation of data presents in fact the risk of creating space for discretion in policy-making processes. Especially when institutions and practitioners use the indicators in a way that, intentionally or not, ignores some methodological aspects that are indeed crucial to better understand and contextualise the meaning of the numbers (Jollands, 2004).

Further criticism concerns the validity and robustness of the method employed to evaluate the impact of demographic changes on public expenditure. During the last decades, many contributions have carried out long-term analysis. However, a selection bias affects these long-term projections on the future deterioration of fiscal balance. Simplistic or policy-oriented models often orient these projections to demonstrate the impact of ageing on public expenses, but without taking into consideration the impact of other relevant variables. Moreover, many of these analyses presuppose an ‘implausible’ absence of economies of scale (Balassone & Franco, 2000:40), assuming that the ‘age-related per capita expenditure levels remains constant in real terms or in per capita GDP terms at the initial level over the projection period’ (ibidem: 39).

### 2.3.3 Ontological criticisms

After the economic crisis of the 1970s, cutting existing welfare programmes has become a policy imperative to deal with both the sustainability of growth and public finances. The formulation of FS indicators has been sensitive to such neo-liberal policy prescriptions (Arza & Kohli, 2007) managing the fiscal crisis in a way that reduces state responsibilities<sup>14</sup> and establishes a new role for the market in the provision of welfare.

The construction of FS indicators has been influenced by this potential policy prescription in a way that compromises their function as simple instrument of social representation. FS indicators are based

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<sup>13</sup> ‘The approach is designed to determine the optimal threshold as the one that maximizes the ability to predict fiscal stress episodes based on the value taken by the variable in question’ (Berti, Lequien, & Salto, 2012)

<sup>14</sup> As affirmed by Arza and Kohli (2007:4) ‘Pension schemes face increasingly stringent financial challenges, partly through the combined demography of low fertility and increasing life expectancy, and partly through the stronger exposure of national economies to global competition. But the translation of fiscal pressures into specific institutional changes owes much to the new mainstream of economic thinking and lobbying about the need for welfare state retrenchment and the merits of privatisation.’

on long-term projections focusing on the impact of changes introduced by welfare reforms, even if ‘reforms curtailing pension benefits are implemented gradually and only display their full effects a long time later’ (Holzmann, 1988) Long-term projections are justified by the assumption that demographic changes are the only factors compromising public expenditures. This policy-oriented aim has yet been criticised as empirically inconsistent. Indicators of FS are, for instance, pivotal to the formulation of pension reforms through the introduction of capital funded pension systems and the partial privatisation of public pay-as-you-go (PAYG) systems. International institutions like the OECD and the World Bank, and most recently the EU have promoted such ‘reforms’<sup>15</sup> as crucial for the sustainability of public finance. However, recent studies (Zandberg & Spierdijk, 2010) did not find any significant correlation between growth and a changed funding mechanism to pay pensions.

According to Zandberg and Spierdijk (considering 54 countries and including both OECD and non-OECD member states), in the short-run there is no effect of changed pension funding on growth, while in the long-run, there might only be a modest effect. Other scholars have pointed out that funded pension systems have no positive effects on macro-economic variables in both emerging and consolidated countries (Bosworth & Burtless, 2004). Additionally, Huffs Schmid pointed out that the shift from public to private funding system are part of those financial innovation that are contributing to destabilise the current economic and financial system, by expanding privatisations and undermining the provision of public services (Huffs Schmid, 2005, 2008).

#### **2.4 Demands for FS indicators**

Even considering the absence of a homogeneous normative prescription to inform the demand for metrics of sustainability, indicators of FS are increasingly open to policy demands arising from the need to improve market regulation and reduce state intervention. Since market distortions create vulnerabilities and discontinuities, the only valuable solution to fiscal vulnerabilities are viewed to be the creation, or restoration, of conditions of perfect competition, resources rationalisation and efficiency. This political use (Hezri, 2004) of the indicators holds a series of important implications.

First, the fiscal sustainability narrative has tried to mitigate its strong unpopularity by employing the rhetoric of inter-generational responsibility, although it still misbalances inter-generational and intra-generational constraints essential to qualify policies as sustainable. Hence, there has been a growing use and abuse of the term sustainability. While there is little doubt that sustainability increases profitability and productivity, many doubts are raised about whether productivity, market-regulation and efficiency really increase sustainability (Bosworth & Burtless, 2004; Castro, 2004; Huffs Schmid, 2005, 2008; Zandberg & Spierdijk, 2010).

Second, even if many international institutions justify their interest in indicators of FS by referring to the international ‘fight against poverty’ agenda, many of them use indicators of FS to address specific interests that actually seem to contradict the principle of intra-generational equity, the anti-poverty commitment, and the basic rules of sustainability. The World Bank, for instance, uses indicators of fiscal sustainability to manage investment risks, given the necessity to control and examine debt-stabilising policies. However, there is growing empirical evidence that macro-economic policies and structural adjustments to restructure public debt addressed by the World Bank run counter to poverty reduction in many developing countries (Caufield, 1996; Chossudovsky, 2003; Krever, 2013).

Third, criticism has been articulated about fiscal austerity measures having positive or expansionist effects on economic growth (Erixon, 2013) or having played any positive role in past financial crises.

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<sup>15</sup> ‘We speak of ‘reform’ here because it has become the general terminological currency (...) But the translation of fiscal pressures into specific institutional changes owes much to the new mainstream of economic thinking and lobbying about the need for welfare state retrenchment and the merits of privatisation (Arza & Kohli, 2007). This should be kept in mind when speaking of ‘reform’. On this criticisms see also Scharpf and Schmidt (2000).

In this context, the European Commission pointed out that the sustainability of government expenditure is undermined by limitations to access the free market. This argument yet produces a tautological reasoning: if the debt crisis limited the market access, and not vice versa, why should market deregulation or privatisation interventions be able to prevent the fiscal crisis?

### **3. Comparing metrics: Debt to GNI ratio (UN) and FS gap indicators (EU)**

The present chapter presents a comparison of two metrics of fiscal sustainability: the UN's 'Debt to GNI ratio' and the European Commission's 'fiscal sustainability gap' indicators.

One of the first indicators of fiscal sustainability has been developed by the UN Commission for Sustainable Development within the 'Indicators of Sustainable Development'. In 1995, the UNCSO decided to formulate a list of development indicators. A first version including 136 indicators was published in 1996. In 2007, the updated third edition was launched. Among the indicators of economic development, the 'Debt to GNI ratio' represents an indicator useful to assess the level of sustainability of public finances.

One of the most recent initiatives to construct FS indicators has been launched by the EU, after the European Council underlined the need to prepare a Sustainability Report based on the EU Member States' budgetary situations and projections. In 2005 the European Commission presented the first indicators of FS for the then 25 EU member states. The production of these indicators was meant to support the Ageing Working Group of the EU Economic Policy Committee in evaluating the economic impact of ageing populations on the Member States.

#### ***3.1 Concepts, Data and Strategies***

The two above metrics use different definitions of fiscal sustainability. The UN defines the sustainability of public finance as equivalent to a low degree of government indebtedness. So, the Debt to GNI ratio has been defined as the 'total amount of outstanding debt (internal and external) issued by the general government divided by gross national income' (World Bank, 2005: 282).

'Debt' comprises the total amount of internal and external debt issued by the government, while 'Gross National Income' corresponds to 'the sum of value added by all resident producers plus any taxes (less subsidies) not included in the valuation of output, plus net receipts of primary income (compensation of employees and property income) from abroad' (*ibidem*).

The European Commission has provided a broader definition that describes fiscal sustainability as 'the ability to continue now and in the future, current policies without changes regarding public services and taxation, without causing the debt to rise continuously as a share to GDP' (European Union, 2012).

From these definitions, two different operationalisations of fiscal sustainability derive. While the UN definition provides a parsimonious metric, obtained by dividing total public debt by total GNI, the EU Fiscal Sustainability Report takes into consideration three types of indicators: the S0 indicator ('early detection of fiscal stress') to detect short short-term challenges, the S1 indicator ('debt compliance risk') focused in the definition of medium-term challenges, and the S2 indicator ('ageing-induced fiscal risks') that touches upon long-term challenges.

So, the EU's approach towards indicators of sustainable finance is more variegated, since it has evolved from an exclusive focus on the long-term dynamics (S1 and S2 indicators) towards an integration of short-term risks and challenges (S0 indicator). The S1 indicator (medium-term) is a type of tax-gap metric that assesses the value of the average tax ratio required to produce a debt ratio equal to the 60% of GDP. This is the 'sustainability benchmark' established in the Maastricht Treaty. Following this definition the indicators applied allow to assess EU member states' performance



according to three levels of fiscal sustainability: low (when the S1 value is lower than zero,  $S1 < 0$ ), medium ( $0 < S1 < 3$ ) and high risk (when  $S1 > 3$ ).

In 2009, the European Commission also established the S2 indicator measuring the correction to the structural primary balance required to fulfil the inter-temporal budget constraint at the infinite horizon<sup>16</sup>. This metric computes the difference between the present and future primary balances, the gap between the current (or initial) structural primary balance and the debt-stabilising primary surplus to ensure sustainability. The higher the values of S2, the greater the sustainability gap and hence the required fiscal correction. Also this measure has allowed the assessment of the evaluated states: low (when S2 is less than 2), medium (when  $2 < S2 < 6$ ) and high risk (when  $S2 > 6$ ).

The third indicator used by the European Commission is the S0 indicator, a new metric launched in 2011, which illustrates the level of fiscal stress in the shorter term. The European Commission defined the S0 indicator as an ‘early-detection indicator’, because it shows the fiscal risks in a short horizon (1 year). S0 is a composite indicator that includes both fiscal and financial-competitiveness variables.

In view of the two institutional practices, also the data gathering focus and the methodology employed to create indicators differ. Data used by the UN to construct the indicators are collected from a variety of institutions. Data on the external and internal debt come from the Global Development Finance (GDF) database run by the World Bank, which brings together reports collected by national central banks or finance ministries to the World Bank Debt Reporting System. Data used in the EU to compute the S1 and S2 indicator are based on EUROSTAT on general government debt. Data used to compute the sustainability of the S0 indicator derive indeed from aggregating 28 fiscal and macro-financial variables collected by EUROSTAT, AMECO, WEO and BIS.

### **3.2 Policy demands and implications**

The Debt to GNI ratio can be considered a policy-oriented indicator because of its strict connection to the Millennium Development Goal (target 15, goal 8), which aims to ensure the sustainability of external debt for poor countries. This indicator lays particular emphasis on the idea of preserving the health of public finance, specifically addressing objectives described in Agenda 21<sup>17</sup>.

The evolution of the EU’s strategy towards indicators of short-term financial sustainability seems to stem from the difficulty of linking the indicators of long-term fiscal risk with comprehensible policy prescriptions<sup>18</sup>. The S0 indicators expresses the need of creating an instrument able to detect short-term risks and to address also short-term adjustments, to reduce ‘fiscal stress’, by establishing a target time horizon and a target debt level. The EU hence pursues a multi-dimensional strategy, integrating medium- and long-term prescriptions with more immediate challenges and risks. The three dimensions of fiscal sustainability in fact hold different policy implications. While the S0 indicator has policy implications related to creating flexible measures of fiscal containment, S1 and S2 serve to generate medium- and long-term projections on the sustainability of the Euro-zone.

General policy implications related to the use of these indicators concern the need to preserve the sustainability of public finances in EU member states, considering the impact of the financial crisis

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<sup>16</sup> That is the difference between the present and future primary balances, also called the Required Primary Balance.

<sup>17</sup> ‘Using the CSD indicators as basis for national indicators of sustainable development can assist countries in monitoring national implementation of their international commitments too. In this regard, the CSD indicators are useful for measuring the outcome of policies towards achieving sustainable development goals’ (United Nations, 2007).

<sup>18</sup> While the infinite horizon gives a comprehensive picture of the sustainability of public finances, it can prove weak from a policy point of view due to its lack of immediacy and it can raise issues of time consistency.

and the demographic factor, which is the ageing of societies<sup>19</sup>. So, on the one hand, the demand for fiscal sustainability indicators has impacted on the development of benchmarks to measure the compliance with norms or to construct and regulate specific policies. Within the Maastricht Treaty for example, fiscal sustainability forms a central pillar of the European Economic and Monetary Union. The Treaty requires EU member states to maintain budget positions with deficits below 3 per cent of GDP and the reduction of debt to GDP ratios to 60 per cent or lower. However problematic the implementation of this instrument currently may be in reality, this benchmark has acquired relevance as a metric of the EU member states' compliance with a European norm and as an explicit benchmark for a country's eligibility to the European Monetary Union.

On the other hand, the EU needs to develop and implement pensions and health care reforms capable of maintaining sustainable public finances in the medium- and long-term (European Union, 2012, 2014). However, the processes of budget cuts, privatisation and rationalisation of basic services raise major doubts about the sustainable impact of these reforms on the universal access to basic services. Here, the definition of fiscal sustainability provided by the Fiscal Sustainability Report (European Union, 2012) offers an interesting point to evaluate this threshold:

'Fiscal sustainability relates to the ability of a government to assume the financial burden of its debt in the future. Fiscal policy is not sustainable if it implies an excessive accumulation of government debt over time and ever increasing debt service. Sustainability means avoiding an excessive increase in government liabilities – a burden on future generations – *while ensuring that the government is able to deliver the necessary public services*, including the necessary safety net in times of hardship, and to adjust policy in response to new challenges.'

The main question yet remains how this idea is put into sustainable fiscal practice.

### 3.3 Criticisms

Both the UN and EU FS indicators have policy implications that raise important questions about the consistence between the original meaning of sustainability and the exclusive nature of the solvency criterion associated with the operationalisation of fiscal sustainability.

The main criticism in view of the UN Debt to GNI ratio relates to the lack of considerations about different macro-economic variables. Whereas increasing value of debt ratios are perceived as an indication of unsustainable public finances, this metric is not able to measure the implementation of specific actions as it does not take into consideration under which conditions the real economy enters into a critical stage. Most importantly, it is not suited to express whether the increased value of public debt is necessary to sustain general well-being. This constraint has been openly recognised by the same UN Commission on Sustainable Development: 'a high ratio by itself is not a definite sign of trouble', especially because 'there are no absolute rules to determine when the ratio of debt to GNI is too high' (World Bank, 2005). In particular, other signs of stability of the economy must be taken into consideration.

The key criticism concerning the EU's fiscal sustainability gap indicators relates to the lack of consideration of social indicators of sustainability. If indicators of public health provided by EUROSTAT (2014) are taken into consideration, in Greece, for instance, the 'Healthy life years and life expectancy at birth', for women has decreased from 67.7 in 2010 to 64.9 in 2012. If we consider data about health equality and in particular the 'Self-reported unmet need for medical examination or treatment, by income quintile', the percentage of people belonging to lower income groups that have felt unable to afford medical expenses have passed from 7.8 in 2010 to 11 in 2012. Also data for the EU as a whole show that the degree of inequalities in access to health care between socioeconomic

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<sup>19</sup> According to the Ageing Working Group established by the EC in the coming decades, Europe's population ageing is expected to increase and have a significant impact on growth and to lead to significant pressures to increase public spending.

groups has increased between 2005 and 2009<sup>20</sup>. Thus, a key danger is that data on the sustainability of the fiscal system might not be closely related to data on social sustainability and its potential erosion, contradicting the intra-generational principle indispensable to define a development strategy as sustainable.

#### **4. Conclusions**

The deterioration of fiscal positions and increases in government debt since 2007, together with the budgetary pressures posed by population ageing, are mutually enhancing and make fiscal sustainability an acute policy challenge across the globe. Indicators of fiscal sustainability, bypassing their function as mere representation of the reality, have played a key role in *de facto* governmentalising fiscal sustainability. As we saw throughout the analysis, a series of conceptual and methodological problems arise from this trend.

From a conceptual point of view, many definitions of the premises of fiscal sustainability merged with its realities within the related policy and reform discourse (Cassiers & Thiry, 2010). In the Euro area, for instance, many indicators quantify the budgetary impact of ageing in order to deal with population ageing by privileging efforts to reduce pension and health care spending. Moreover, many institutions tend to incorporate policy prescription within their definition of fiscal sustainability, rendering the latter construction of the term rather biased.

In many respects, the long-term perspective of sustainability is hence contradicted by the concept of fiscal sustainability that brings short-term risks into play that requires direct interventions. As pointed out by Schick, 'Fiscal sustainability is more than projecting the future; it is about the *urgency* of policy change' (Schick, 2005). From the conceptual debate on both sustainability and fiscal sustainability, important questions remain to be answered: Why should fiscal austerity rules be conceptualised as sustainable? How does the debt to GDP or GNI ratio relate to other macro-economic variables, such as unemployment or the access to basic welfare? How does the short-time horizon of many fiscal indicators relate to intergenerational justice? How do policy-makers using FS indicators incorporate intra- and intergenerational constraints?

From a theoretical perspective, the production of FS indicators bypasses important aspects of the discourse about sustainability (Ortega-Cerdà, 2005) and poses important questions as well: Is a sustainable development compatible with an exponential growth under the conditions of finite resources? How do fiscal policies support growth if most governments in times of crisis consolidate public finances? To what extent does the notion of government budget constraint impose financial limitations on the government's ability to fulfil its socio-economic policy ambitions? Do indicators of sustainability establish sectorial thresholds that hamper the achievement of a discrete equilibrium between the dimensions of sustainability? How does the solvency criterion relate to the intra-generational element of sustainable development?

The theoretical components of endogenous growth within indicators of FS pose another constraint related to the validity of the growth assumptions beyond industrialised countries. Most developing countries, especially in Africa have low rates of capital accumulation and low technological capabilities (Wiebe, 2012). Measuring the net debt in these countries raises difficult issues due to differences in the definition of government assets (Baldacci, McHugh, & Petrova, 2011). How do the indicators of FS hence account for their translation from the global to regional, national or local levels? How does the ageing criterion informing FS indicators fit to countries in which other factors,

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<sup>20</sup> 'Between 2005 and 2009 the proportion of people reporting unmet needs for healthcare fell for all income groups. In addition, over the same period the gap between the lowest and the highest income group decreased. At the same time there has been an increasing trend of cost sharing by patients, in particular out-of-pocket payments which would be expected to put an increasing pressure on accessibility to health care, especially for low-income groups' (Eurostat, 2014).

and opposite demographic trends, affect the sustainability of public finance? This paper may rather have raised additional questions, than provided answer for those brought forward. By doing so, it yet seeks to stimulate the discussion on additional empirical and theoretical issues framing the normative origin and the policy implications of indicators.

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