SUSTAINABLE TAX POLICY
CONCEPTS AND INDICATORS BEYOND THE TAX RATIO

Margit Schratzenstaller
Austrian Institute of Economic Research (WIFO)

The current academic and political debate about the quality of tax systems does not systematically take into account aspects of sustainability. For some time now, OECD, International Monetary Fund and European Commission have been pushing the case for enhancing the growth-friendliness of tax systems. Ecological and social/equity considerations appear to have lower priority in the hierarchical order of objectives guiding the recommendations for the design of tax systems. The European Commission and the OECD regularly publish an increasing number of indicators and the underlying data that can be used to assess different sustainability dimensions of tax systems and/or individual tax categories also in a cross-country comparison and over time. In particular, the European Commission has developed a set of indicators trying to capture the contribution of member states' tax systems to the goals of the Europe 2020 strategy. This set of indicators, however, focuses on the growth-friendliness of member states' tax systems, while indicators for their distributional and environmental impact play a less prominent role. The paper attempts at establishing a conceptual basis for the development of a consistent set of indicators to capture the sustainability impact of tax systems. Firstly, we formulate fundamental objectives underlying a sustainable tax system. Then we present some fundamental deliberations about the function of indicators and a classification of indicators which may be useful to assess the sustainability impact of tax systems. Against this background, we critically review the European Commission's indicator-based approach to evaluate EU member states' tax systems within the European Semester. Finally, we address open questions and next research steps.

Keywords: tax structure, sustainable tax system, indicators, sustainable development, tax policy.

e-mail: Margit.Schratzenstaller@wifo.ac.at

1. Introduction

Rather coincidentally, together with the outbreak of the current financial and economic crisis a fundamental debate emerged among economists focusing on two main inter-related issues: First, to develop alternative concepts to secure and improve economic, social and environmental sustainability. Second, to replace the conventional approach to define and measure the welfare of an economy and its members via the steady growth of GDP by an approach taking into account a broad set of economic, social and ecological aspects and indicators. This recent debate is led under the catchphrase "Beyond GDP" and roots in an initiative started by European Commission, European Parliament, Club of Rome, OECD and WWF in 2007 by hosting a high-level conference titled "Beyond GDP". The "Report by the Commission on the Measurement of Economic Performance and Social Progress" (the so-called Stiglitz-Sen-Fitoussi-Report) issued in 2009 serves as the starting point for a growing number of contributions from the academic as well as from the political side, the latter both on the national and the supranational levels, concentrating on alternative concepts for welfare and well-being for economies and societies as well as on alternative indicators to assess overall social, economic and environmental progress[1].

Up to now, the "Beyond GDP"– activities following the Stiglitz-Sen-Fitoussi-Report of 2009 have been focusing on the outcome of the total of (economic) policies on individual and societal well-being and welfare as well as on economic, social and ecological sustainability. Single policy areas have barely received any attention. Especially the potential contribution of public sector activities and interventions to improve economic, social and environmental sustainability has not played a very prominent role in this recent debate. This is particularly surprising with respect to tax policy. Given the level of tax ratios in industrial countries, reaching about 40 percent of GDP on the EU average, tax policy can be expected to exert a significant influence on decisions of

1. Also within the EU research project *WWWforEurope* alternative welfare indicators and concepts are elaborated, see e.g. Kettner, Köppl and Stagl (2012) and van den Bergh and Antal (2014).

private firms and households on production and consumption as well as on labour supply and demand and thus on their respective contributions to the sustainability of the lifestyle of economies and societies. Moreover, tax policy has a considerable potential to change the market distribution of incomes and wealth and is therefore one important factor influencing individual well-being as well as social cohesion.

At the same time, aspects of sustainability are not systematically taken into consideration in the current academic and political debate on the quality of public finances in general and of tax systems in particular. For the last few years, OECD, International Monetary Fund as well as the European Commission have been pushing the case for enhancing the growth-friendliness of tax systems: According to this work, tax systems should primarily promote economic growth (Arnold *et al.*, 2011; Acosta-Ormaechea and Yoo, 2012). Ecological and social/equity considerations are not completely neglected, but appear to have lower priority in the hierarchical order of aims and objectives guiding the design of tax systems. Moreover, the (social and environmental) "quality" of economic growth does not play any role. The concept of green tax reforms has a wider focus, explicitly combining environmental and employment goals via the "double dividend hypothesis": Revenue-neutral green tax reforms aim at reducing environmental damage by increasing ecotaxes, the proceeds of which are used to cut labor taxes and thus to increase employment.[2]

Altogether, currently tax theory and tax policy are addressing partial aspects of sustainability, but do not adopt an integrated perspective. On an internationally comparable basis, an increasing number of data and indicators are regularly published by the European Commission and the OECD that can be used to assess different sustainability dimensions of tax systems and/or individual tax categories also in a cross-country comparison and over time. In particular, the European Commission has developed a set of indicators trying to capture the contribution of member states' tax systems to the goals of the Europe 2020 strategy. This set of indicators, however, focuses on the growth- and employment-friendliness of member states' tax systems, while indicators for their distri-

2. See, e.g., the contributions in Ekins and Speck (eds.) (2011).

bution and environmental impact are largely neglected. Thus, a consistent set of indicators conveying an overall picture of a tax system's contribution to sustainable development is still missing.

This short paper attempts at establishing a conceptual basis for the development of such a set of indicators. We firstly formulate fundamental objectives underlying a sustainable tax system (chapter 2). Chapter 3 presents some fundamental deliberations about the function of indicators and a classification of indicators which may be useful to assess the sustainability impact of tax systems. Against this background, chapter 4 critically reviews the European Commission's indicator-based approach to evaluate EU member states' tax systems within the European Semester. Chapter 5 concludes by addressing open questions and next research steps.

2. Sustainability challenges for tax systems and features of a sustainable tax system

The concept of sustainability, which has been developed, refined and modified since decades based on the so-called *Brundtland report* (WCED, 1987), encompasses three dimensions:[3] the economic, the social (or socio-cultural), and the environmental dimension (Rogall, 2008). Very generally, the economic dimension encompasses growth, efficiency and stability; the social dimension includes empowerment, inclusion and governance; and the environmental dimension is concerned about resilience, natural resources, and pollution (Lozano, 2008). It is debated in the literature whether these three dimensions hold equal positions in terms of relevance, as is assumed by Munasinghe (2007) in his well-known sustainability triangle, or whether there is a hierarchical order, as put forward by Daly (1973) who frames the natural environment as the "ultimate means" constituting the foundation of the triangle, while the economy is interpreted as "intermediate means" to reach equity and human well-being (i.e. the social dimension) as "ultimate ends". Some authors, e.g. Hart (2000), even postulate environmental sustainability as the precondition for economic and social sustainability: while the environment can

3. For an extensive overview over the most relevant definitions of sustainability and the related literature see Dimitrova *et al.* (2013).

exist without the society and the economy, and the society can exist without the economy, neither society nor economy can exist without the environment. This paper assumes, however, that the three sustainability dimensions are equally ranking.

These three sustainability dimensions break down into several sustainability challenges for tax systems. From the perspective of economic sustainability, an important challenge – particularly in the aftermath of the recent financial and economic crisis – is restoring sound public finances, i.e. to contribute to long-term fiscal sustainability. Related is the increasing international mobility of capital and profits, as well as demographic change (i.e. ageing of societies). Further challenges for economic sustainability which are relevant also for tax systems are the ongoing instability of the financial system, as well as weak (employment) growth and high unemployment. Environmental challenges refer to climate change, energy transition and the depletion of natural resources. Challenges from the view of social (socio-cultural) sustainability include the increasing inequality and concentration of income and wealth that can be observed quasi globally (Förster *et al.*, 2014), as well as the persistent gender gap prevailing in many countries worldwide (World Economic Forum, 2014).

From these sustainability challenges, several objectives a sustainable tax system should pursue can be derived.

An economically sustainable tax system should generate sufficient revenues to finance government activities. This includes curbing tax flight, i.e. legal tax avoidance and illegal tax evasion: An economically sustainable tax system should take into account the international framework, in particular the mobility of (capital) income and wealth which has increased dramatically over the last few decades. An economically sustainable tax system should furthermore avoid negative incentives for economic decisions in general. In particular, it should minimize employment barriers, particularly – but not exclusively – for women and low-wage earners. It should contribute to stabilizing the financial system, and it should have a role in the internalisation of externalities as well as with regard to the production or consumption of (de)merit goods (e.g. health or education). Not least, compliance costs and costs of tax collection should be kept as low as possible.

A tax system which aims at contributing to environmental sustainability should discourage consumption and production activities which contribute to climate change and environmental degradation. Moreover, it should encourage energy transition.

A socially sustainable tax system should reduce the increasingly unequal market distribution of income and wealth, and it should aim at contributing to equal opportunity. Related is the objective to contribute to the reduction of gender gaps. Also from the perspective of social sustainability tax systems may be used to further or to curb, respectively, the consumption or production of (de)merit goods. A socially sustainable tax system should also minimise tax flight and be as transparent and simple as possible to ensure acceptability and legitimacy of taxation.

Altogether, many of the objectives mentioned above contribute to more than one dimension of sustainability; as – for example – the internalisation of negative externalities or the containment of tax flight.

3. The role of indicators

Analogously to GDP, which often serves as the central indicator to measure economic and societal success and progress of an economy, the overall tax ratio (i.e. total tax revenues in relation to GDP) is often used as the most important indicator to assess a country's tax system. As GDP, the overall tax ratio has the advantage that it is easily available, also in an international comparison and over long periods of time, and easily communicable. Analogously to GDP, however, the overall tax ratio is of rather limited value to assess a tax system in general and its contribution to sustainability in particular. The overall tax ratio does not give any indication on the social and environmental impact of a tax system. It also does not convey any specific information on potential economic effects of a tax system, as these depend on the overall tax structure and on the concrete design of individual taxes contributing to overall tax revenues. As ample empirical evidence shows, there is no clear-cut relationship between the level of the overall tax ratio and economic growth. The existing empirical results allow to conclude safely only that further tax increases will harm economic growth when the total tax burden has reached a very

high level already.[4]) With respect to fiscal sustainability, the overall tax ratio can be seen as a snapshot indicator to gauge – in comparison to public expenditures – whether the state receives sufficient funds to fulfil its tasks or whether there is a shortcoming of tax revenues which needs to be compensated by new government deficit. However, to evaluate a tax system's contribution to fiscal sustainability in the longer run, additional indicators (e.g. overall revenue elasticity or the tax gap) are needed.

3.1. Purpose of indicators to assess the sustainability of tax systems

From what has been said above, it should have become clear that in the context of efforts to improve the sustainability properties of tax systems indicators beyond the tax ratio (similarly to indicators beyond GDP) are required. These are needed for several purposes. Firstly, they are necessary to assess the overall sustainability of a given tax system at a given point in time, also in an international comparison. Secondly, they should help to identify specific sustainability gaps in a given tax system. Thirdly, indicators are needed to measure progress over time on the way to a sustainable tax system. Fourthly, they should help to capture incentive effects and the incidence of individual taxes or whole tax systems which may be relevant for all or selected dimensions of sustainability. Thus they should provide adequate information as well as guidance for political decision-making aiming at achieving progress towards sustainable development of countries or regions. Fifthly, indicators are an important communication instrument directed not only at policy-makers and stakeholders, but also at the general public. Overall, a set of indicators would be useful to grasp the complexity of whole tax systems and to account for the three sustainability dimensions when trying to assess overall tax systems. In this respect, a set of indicators is much more useful and appropriate than the attempt to derive one composite index aiming at grasping the potential overall sustainability impact of a tax system.

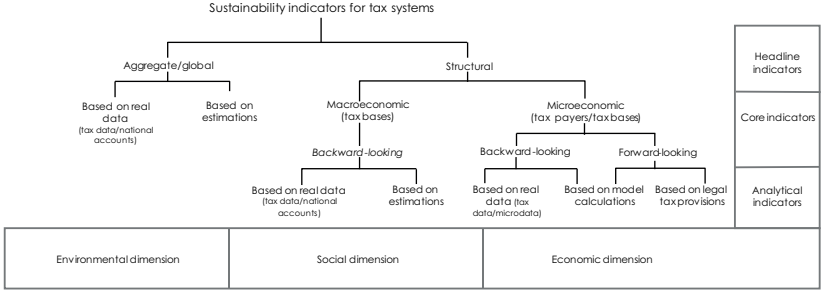
4. See for recent overviews about the current state of the empirical literature *Arnold* (2008), *Myles* (2009) and *European Commission* (2010).

3.2. Types of sustainability indicators for tax systems

In general, indicators used to gauge the sustainability properties of a tax system should meet the usual requirements guiding the selection of indicators. In particular, an indicator should be easily communicable and globally available, also in an internationally comparable form. An indicator should also permit a clear and broadly accepted normative interpretation, i.e. there should be consensus about the desirable development of the indicator. And finally, an indicator should be valid (i.e. it should really measure what it is intended to measure) and reliable (i.e. it should measure the phenomenon of interest reliably).

In the context of an assessment of a tax system's contribution to sustainability, various types of indicators can be distinguished (Figure 1).

Figure 1. Sustainability indicators for tax systems



Source: own.

3.2.1. Aggregate/global indicators versus structural indicators

Aggregate indicators convey a global picture of the overall tax system. They can be based on real data (taken from tax statistics or national accounts) or can be the result of estimations. The tax ratio is the most encompassing aggregate indicator. The picture it conveys, however, is limited to the total amount of tax revenues in relation to GDP. The tax ratio does not give any indication about the structure of overall tax revenues, i.e. about their sources with respect to tax bases and tax payers, and about the distribution of overall tax revenues among the overall group of tax payers. The only differentiation possible on this global level is to distinguish between the tax ratio including and excluding social security

contributions. This differentiation is important insofar as financing social security systems via genuine taxes may impact differently on sustainability compared to social security contributions levied on labour incomes. To get a more in-depth and detailed impression about tax revenue sources and about their potential impact on the different sustainability dimensions, however, structural indicators are needed. The same holds true for a second, important macroeconomic indicator: namely the overall revenue elasticity of a tax system, which is a first indicator for the sufficiency of tax revenue to finance public expenditures and thus gives some idea about a tax system's contribution to fiscal sustainability in the longer turn, but does not offer any details about the contribution of individual taxes.

Naturally, tax gap indicators, which capture the difference between the amount of tax revenues that should be collected based on the existing tax provisions and the amount that is actually collected, have to be determined by estimations. The total tax gap is the result of legal tax avoidance and illegal tax fraud (criminal attacks, tax evasion and "hidden economy"); it indicates tax revenues foregone in relation to overall tax revenues actually collected.

3.2.2. Macroeconomic versus microeconomic indicators

Macroeconomic indicators relate to macroeconomic tax bases and are based on macro data (tax data or data from national accounts). Macroeconomic indicators may capture structural characteristics of the overall tax system from a macroeconomic perspective (most important the composition of overall tax revenues[5]) or the effective tax burden on macroeconomic tax bases (e.g. the effective macroeconomic tax burden on labour, on consumption, on capital and energy as calculated regularly by Eurostat in its annual publication "Taxation Trends in the European Union"). Microeconomic indicators are directed at the individual level, at individual subjects, i.e. towards a "typical" individual representative tax payer[6] or an individual representative tax base,[7] and build on micro data. They give an indication about the

5. The most important data sources are Eurostat's annual publication "Taxation Trends in the European Union" and the OECD's annual publication "Revenue Statistics".
6. E.g. the marginal and average labour tax rates regularly calculated for different household types by the OECD in its annual publication "Taxing Wages".

tax burden individual tax payers (e.g. specific household types) or individual tax bases (e.g. specific investment projects) are carrying. As due to their different socio-economic situations men and women are affected differently by tax policy on the one hand, and as on the other hand sustainable tax systems should be designed in a gender-sensitive way, microeconomic indicators should – if they address tax payers – be gender-differentiated.

3.2.3. Forward-looking versus backward-looking indicators

Backward-looking indicators depict past developments within tax systems. They may be based on real data coming from tax statistics, national accounts (macroeconomic indicators) or micro data sources (tax data, other micro data, e.g. firm data bases), or they may be the result of model calculations. As already mentioned above, it is in the nature of some specific tax-related phenomena – namely those having to do with legal or illegal tax avoidance – that there are no real data showing their quantitative dimension. This calls for the use of estimates (e.g. to quantify tax gaps[8]).

Backward-looking indicators comprise indicators depicting the structural characteristics of the overall tax system from a macroeconomic perspective (e.g. the share of labour, property or environmental taxes in overall tax revenues) as well as indicators reflecting the effective tax burden on a macroeconomic level (e.g. the effective macroeconomic tax burden on labour) or on a microeconomic level. Forward-looking indicators are based on current or future tax provisions. They range from nominal tax rates (e.g. corporate tax rates, personal income tax rates) as the simplest indicators to rather complex indicators derived from model calculations (e.g. effective company tax rates or effective tax rates on labour incomes for specific household types). Generally, these forward-looking indicators are directed at the microeconomic level.

Another aspect is important when distinguishing between forward-looking and backward-looking indicators: Forward-looking indicators – when capturing the marginal tax burden on an indi-

7. E.g. the effective marginal and average corporate tax rates for model investment projects calculated by ZEW for the European Commission.
8. E.g. the VAT tax gaps presented by the European Commission in its regular publication "Tax Reforms in EU Member States" or the estimates of corporate tax losses by profit shifting undertaken by Zucman (2014).

vidual level (e.g. effective marginal company tax rates or the marginal tax wedge on labour incomes) – are useful to evaluate the incentive effects of taxation and thus are particularly relevant with regard to the economic dimension of sustainability, as they influence economic decisions. Backward-looking indicators capturing the average tax burden for individual tax payers are more relevant to gauge the distributive effects of taxation and thus for the social sustainability dimension.

3.2.4. Indicators at various hierarchical levels

Finally, indicators may be differentiated according to hierarchical levels (Kettner *et al.*, 2012). Headline indicators address high-level policy making and the general public. Core indicators serve to evaluate core policy areas and are used for communication between experts, politicians, and the wider public. Further in-depth policy analysis and a thorough understanding of specific issues require analytical indicators.

3.2.5. Potential impact of individual tax categories on different dimensions of sustainability

To gauge the sustainability properties of tax systems, input indicators are required. These input indicators refer to the design of a tax system and aim at capturing its (potential) impact on various dimensions of sustainability. Thus these indicators may serve to assess the ambition of tax policy makers dedicated to the sustainability impact of tax systems. In a next step, the outcome in the various sustainability dimensions should be determined, by applying quantitative methods to identify systematic relationships between sustainability – relevant features of a tax system (e.g. share of environmental taxes) and sustainability – relevant outcomes (e.g. development of greenhouse gas emissions). This requires the identification of output indicators which specify the various sustainability dimensions.

Table gives a first qualitative indication on the potential impact different individual tax categories may have with regard to the three sustainability dimensions according to conventional textbook wisdom. It is obvious at first sight that the potential impact we assign to the individual tax categories may be disputed in several cases, as neither theoretical nor empirical relationships

between individual tax categories and sustainability dimensions are always clear-cut. Moreover, the direction of the relationship may be ambiguous: For example, environmental taxes may one the one hand impact on the level of greenhouse gas emissions; it might as well be the case, on the other hand, that policy-makers increase environmental taxes to react to undesirably high levels of greenhouse gas emissions. Also the individual sustainability dimensions may include several contradictory aspects, which may preclude clear statements about the impact of a specific tax category on the sustainability dimension in question: For example, sin taxes on alcohol and tobacco consumption may positively impact on individuals' health and thus on social sustainability, whereas their regressive distribution effects hamper social sustainability. These potentially conflicting effects on a specific sustainability dimension should be disclosed; it is then up to tax policy-makers to decide which specific effect should be prioritized.

Table. Qualitative assessment of potential impact of different tax categories on different dimensions of sustainability

	Economic sustainability	Social sustainability	Environmental sustainability
Inheritance and gift tax	+	+	0
Net wealth tax	+	+	0
Real estate tax	+	+	0
Capital transfer taxes	-	+	0
Environmental taxes	+	-	+
Sin taxes (tobacco, alcohol)	+	?	0
Value added tax	-	-	0
Personal income tax	-	+	0
Social security contributions	-	-	0
Corporate income tax	-	+	0
Tax exemptions	-	?	(-)[1)]

Source: Own. + positive impact. – negative impact. – 0 neutral. - ? impact unclear/ambiguous. - 1) in case of environmentally harmful tax exemptions.

Nonetheless this exercise conveys a first impression that many tax categories may impact on more than one sustainability dimension, and that while the impact may be positive regarding one sustainability dimension, it may be negative regarding the other(s), suggesting trade-offs and conflicts, respectively. At the same time, it can be assumed that a number of indicators positively impact on different sustainability dimensions simultaneously, which indicates the existence of synergies. In any case, the indica-

tors to be developed need to be based on solid empirical evidence on the impact of tax structures and individual tax categories on the various dimensions of sustainability.

4. The European Commission's indicator-based approach

Indicator-based approaches to assess (economic) policy in general seem to have gained in popularity (again) in the last few years. This development has probably been inspired, inter alia, by the already mentioned work on indicators beyond GDP and the ensuing efforts to evaluate (economic) policy not only with a focus on its growth implications but based on a much broader view of overall sustainability. However, as elaborated on above, the evaluation of individual tax categories or specific tax policies often is more or less explicitly based on selected indicators, but up to now no encompassing system of indicators exists to evaluate the (potential) sustainability impact of whole tax systems.

The most comprehensive indicator-based approach to assess tax systems has been presented recently by the European Commission. Two key issues guide the selection of indicators in this recent work, namely "… the need and scope for either consolidation on the revenue side or shifting taxes away from labour." (Wöhlbier, Astarita, and Mourre, 2014) More concretely, the European Commission in the context of the use of tax policy for fiscal consolidation is mainly concerned about two issues: Firstly, about the high tax burden on labour prevailing in many EU member states, particularly for low-skilled workers and second earners in couples. According to recent empirical research identifying a "tax-and-growth-hierarchy", a shift away from direct taxes and especially from high labour taxes towards more growth-friendly taxes – consumption taxes including "sin taxes" on tobacco, alcohol and polluting activities as well as recurrent taxes on property including inheritance taxes – can be expected to increase the overall growth-friendliness of tax systems in the long run and price competitiveness in the short run.[9] The European Commission's second concern is – departing from the fact that many countries for several reasons have not been relying exclusively on spending cuts in their fiscal consoli-

9. See Wöhlbier, Astarita and Mourre (2014) and the literature cited therein.

dation efforts to reign in rapidly expanding debt ratios in the aftermath of the financial and economic crisis – that these tax increases should be designed as growth-friendly as possible, again according to the "prescriptions" that can be derived from the above-mentioned tax-and-growth-hierarchy.

Both these issues focus on growth- (and actually employment-) friendliness of tax systems, and thus primarily on the economic dimension of sustainability. If growth-friendly tax categories are favourable also from the perspective of environmental and/or social sustainability, then this appears to be welcomed as a positive side effect. However, there seems to be a clear hierarchy favouring economic sustainability vis-à-vis environmental and social sustainability. Accordingly, the indicators used (mostly backward looking indicators) mainly focus on economic sustainability, although quite a few of them may also capture the social and the environmental dimension of sustainability, even if these are not explicitly mentioned.

The European Commission's regular assessment of EU member states' tax systems, which is one key element of the European Commission's monitoring activities through the European Semester, is characterized by a broader approach.[10] In its most recent evaluation (European Commission, 2014), the European Commission widens its focus to include – as the Europe 2020 strategy aiming at smart, inclusive and sustainable growth and therefore at all three dimensions of sustainability does – also the social and the environmental dimension of sustainability. The choice of the indicators used in this screening exercise is guided by a selection from those headline indicators formulated to operationalize the Europe 2020 strategy. Insofar the European Commission attempts to relate input indicators, which are used to capture certain sustainability properties of member states' tax systems, to those Europe 2020 headline indicators the European Commission expects to be influenced by those structures and features of national tax systems captured by the input indicators. The headline indicators selected by the European Commission to be related to member states' tax systems include employment rates

10. The so-called European Semester is the yearly cycle of economic policy coordination and monitoring of member states' progress towards the Europe 2020 targets.

(total as well as for males and females), covering economic sustainability; and greenhouse gas emissions, covering environmental sustainability. Instead of the headline indicators used within the Europe 2020 strategy in the realm of poverty and social exclusion, i.e. the social dimension of sustainability, namely people at risk of poverty or social exclusion, several core and analytical indicators are used as output indicators. Also within the economic and the environmental sustainability dimension the headline Europe 2020 indicators applied in the European Commission's screening exercise are complemented by additional core and partially analytical indicators, as for example employment rates for specific labour market groups (second earners, low-skilled and young people) or the consumption of petrol and diesel as propellants.

Altogether, the European Commission pursues, compared to the bulk of theoretical and empirical literature mostly addressing specific aspects and subareas of tax systems in a rather narrowly focused way, a relatively broad approach to assess, based on input and mainly backward looking indicators, the potential contribution EU member states' tax systems may make to the three sustainability dimensions. However, this approach has its limitations.

These are, first of all, grounded in the break-down of sustainable growth and development into selected headline indicators within the Europe 2020 strategy that capture only partial aspects particularly of the social and the environmental dimension of sustainability. It seems that this is an especially severe restriction when trying to comprehensively assess the sustainability properties of tax systems: These – intentionally or not – affect quite a few sustainability aspects not addressed in the Europe 2020 strategy and its headline indicators. Just to name a few examples: Social sustainability does not only include preventing and combating poverty as well as a "fair" income distribution. It also comprises the distribution of wealth, including inheritance; the distribution of resources among men and women and equal social participation of women and men; equality of opportunity; intergenerational equity; as well as health aspects. Environmental sustainability is not only about green house gas emissions, the use of renewable energy and about primary energy consumption, but also about resource use in a broader sense. This neglect of certain sustainability aspects auto-

matically precludes certain taxes and tax categories as well as tax design options from being considered in a sustainability check – as for example inheritance taxes or resource taxes. Related is the danger that certain sustainability deficits inherent in member states' tax systems – which may perhaps be even more harmful to sustainability than those identified based on the indicators applied for the European Commission's screening – remain undetected.

This limited perspective is restricted further in the European Semester process. The starting point of the European Semester is the European Commission's Annual Growth Survey which puts forward priorities for the respective upcoming European Semester for various policy fields and thus also for tax policy. Again the main focus are growth-friendly reforms, and thus the tax priorities for the 2014 European Semester as formulated in the *Annual Growth Survey 2014* (European Commission, 2013) are broadening tax bases and removal of ill-targeted exemptions; shifting the tax burden away from labour – in particular for the low skilled and young workers – towards consumption, property and pollution; improving tax compliance through fighting tax fraud and tax evasion; reviewing tax schemes which lead to debt biases in taxation.

Secondly, the European Commission's assessment of member states' tax systems is based not only on an incompletely defined concept and operationalization of sustainability, but also by a set of indicators which is incomplete insofar as the European Commission does not necessarily use the "best needed" indicators, but rather the "best available" indicators.[11] One example is the impact of tax systems on income distribution, which is measured by the difference of the Gini coefficient for the income distribution before and after taxes and transfers. When focusing on the redistributive impact of tax systems, this indicator is too rough, as it does not allow to identify separately the contribution of the tax system (which compared to the transfer system in many countries is rather limited) to the extent of redistribution organized via public sector activities.

Thirdly, there is a striking neglect of the recognition of links and interrelations between the three sustainability dimensions.

11. See for this distinction Kettner *et al.* (2012).

With the exception of environmental taxes and recurrent taxes on immovable property, which are considered as growth-friendly alternatives to high labour taxes to improve the economic sustainability of tax systems, a comprehensive assessment of the impact of individual tax categories on all three sustainability dimensions is missing. As a consequence, synergies as well as conflicts which may arise from the use of certain taxes/tax categories with regard to the individual sustainability dimensions do not receive adequate attention.

5. Next steps and open questions

This paper can be seen as a first step towards the development of a consistent set of indicators to capture the potential sustainability-related impact of tax systems. Further research should aim at analysing the usefulness of important and often-used existing indicators, some of which are mentioned as examples in this paper, taking into account recent empirical results on the impact of tax structures and tax categories, respectively, on the individual dimensions of sustainability. In this respect, it is also a task of future research to identify the need for additional or alternative indicators, respectively, and to formulate these, to overcome potential gaps between "best available" indicators, which can be filled with existing data, and "best needed" ones. Hereby specific attention needs to be given to links between individual indicators and to indicators addressing more than one sustainability dimension.

The deliberations in this paper have been limited to input indicators. Further work on the sustainability impact of tax systems should identify also output/outcome indicators: i.e. indicators to measure the degree of sustainability achieved in a given sustainability dimension (e.g. CO2 emissions, labour market performance indicators, or GINI coefficients before and after taxes) which can be influenced by taxation. Actually, the development of adequate input indicators should be guided substantially by an output/outcome perspective.

A further interesting exercise would be to assess the overall sustainability of European tax systems, going beyond the recent evaluations undertaken by the European Commission discussed above. Various approaches are conceivable. A given tax system

may be evaluated with respect to its development over time. In this case, the evaluation may focus on the development of relevant sustainability indicators – e.g. the share of environmental taxes in overall tax revenues – over a certain period of time to identify developments within the country analysed. However, it may be more meaningful to put a specific country within a comparative context, i.e. to benchmark the country under evaluation against a group of other countries. This approach is pursued by the European Commission in its indicator-based approach presented above (Wöhlbier, Astarita, and Mourre, 2014): The countries involved in the benchmarking exercise are divided into three groups according to the concrete value of a given indicator representing a specific tax policy area, and a country is considered to do well (badly) if it is amongst the "best" ("worst") third. Alternatively, the countries are just ranked based on a simple ordinal approach. Obviously, one question this benchmarking approach raises (even if internationally comparable data are available, which in itself will be problematic for numerous indicators) is the issue of comparability of the countries involved. The EU is a very heterogeneous group of countries, and how serious the potential negative impact of a country's position in the group of worst performers with respect to a specific indicator is will also depend on the general socio-economic conditions as well as the concrete challenges the country is facing in the respective policy area. Related is the question whether there are specific threshold values above/below which a country's tax system or specific taxes/tax categories can be expected to impact positively or negatively on overall sustainability. Or to put it differently: Can/should a tax system's potential impact on sustainability be measured in relative or in absolute terms – and if the latter is the case: How do we arrive at appropriate threshold values? And if we consider a one size fits all-approach as inadequate: How do we arrive at country-specific threshold values?

In general, regardless of whether we analyse a specific country for itself or its position within a larger group of countries, there are numerous open questions and problems work on indicators for the sustainability impact of tax systems is confronted with. First of all, synthesising a country's respective positions with regard to individual indicators to arrive at a bigger and consistent picture is a great challenge, which poses the question of which weight should

be given to individual indicators. A second, related question is how to deal with inter-linkages (trade-offs versus synergies) between the different sustainability dimensions and or/indicators. For example, higher environmental taxes may strengthen a tax system's sustainability with regard to the environmental dimension, but may at the same adversely affect social sustainability due to the regressive distributionary effect of many environmental taxes. Third, there is the question how comprehensive a set of indicators to capture the potential sustainability impact of tax systems should be: there is certainly a trade-off between accuracy and level of detail on the one hand and manageability and communicability on the other. A fourth question is whether to use quantitative indicators only, or whether to complement the quantitative picture by qualitative indicators, e.g. indicators giving an indication in how far the tax system is perceived as fair, or about the degree of trust in the tax system. Fifth, a meaningful interpretation of individual indicators and their (desirable) development requires relatively clear-cut empirical evidence about the impact of respective taxes/tax categories on the various dimensions of sustainability, which is not always available.

Finally, the analysis of the potential sustainability impact of a tax system needs to be embedded in a bigger picture. The effectiveness of specific tax policies – as captured by appropriate indicators – depends inter alia on other policy instruments and their coordination with tax policy. And certainly the debate about a tax system's potential sustainability impact needs to be embedded into a broader perspective of the overall contribution of the public sector (particularly public expenditures) to sustainable development.

References

Acosta-Ormaechea S. and J. Yoo, 2012. "Tax Composition and Growth: A Broad Cross-Country Perspective." *International Monetary Fund Working Paper* WP, 12-257.

Arnold J., 2008. "Do Tax Structures Affect Aggregate Economic Growth?." *OECD Economics Department Working Paper*, ECO/WKP, 2008-51.

Arnold J. M., B. Brys, C. Heady, Å. Johansson, C. Schwellnus and L. Vartia, 2011. "Tax Policy for Economic Recovery and Growth." *The Economic Journal,* 121(550): 59–80.

Daly H., 1973. *Towards a Steady-State Economy*. San Francisco: W.H. Freeman and Company.

Dimitrova A., K. Hollan, D. Laster, A. Reinstaller, M. Schratzenstaller, E. Walterskirchen and T. Weiss, 2013. "Literature Review on Fundamental Concepts and Definitions, Objectives and Policy Goals as Well as instruments relevant for Socio-ecological Transition." *WWWforEurope Working Paper,* 40.

Ekins P. and S. Speck (eds.), 2011. *Environmental Tax Reform (ETR). A Policy for Green Growth*. New York: Oxford University Press.

European Commission, 2013. *Annual Growth Survey 2014*. COM 2013-800, Brussels.

European Commission, 2010. *Public Finances in EMU 2010*, Brussels.

Förster M., A. Llena-Nozal and V. Nafilyan, 2014. "Trends in Top Incomes and their Taxation in OECD Countries." *OECD Social, Employment and Migration Working Paper,* 159.

Harris J. M. and N. Goodwin, 2001. "Volume Introduction." In Harris J., Wise T., Gallagher K., and N. Goodwin (Eds.), *Survey of Sustainable Development: Social and Economic Dimensions*, Washington: Island Press.

Hart M., 2000. *Better View of a Sustainable Community*, retrieved from: http://www.sustainablemeasures.com/Sustainability/ABetterView.html.

Kettner C., D. Kletzan-Slamanig, A. Köppl and K. Köberl, 2012. *Indicators for Sustainable Energy Demand – The PASHMINA Approach,* Vienna.

Kettner C., A. Köppl and S. Stagl, 2012. "List of Well-being Indicators." *WWWforEurope Working Paper,* 2.

Munasinghe M., 2007. "Sustainable Development Triangle." in: C. J. Cleveland (ed.), *Encyclopedia of Earth*, Washington D.C.

Myles G., 2009. "Economic Growth and the Role of Taxation – Aggregate Data." *OECD Economics Department Working Paper* ECO/WKP, 2009-714.

Rogall H., 2008. Ökologische Ökonomie, Eine Einführung. 2nd ed. Wiesbaden: VS Verlag für Sozialwissenschaften.

Van den Bergh J. and M. Antal, 2014. "Evaluating Alternatives to GDP as Measures of Social Welfare/Progress." *WWWforEurope Working Paper, 56*.

WCED, 1987. *Our Common Future*. New York: Oxford University Press.

Wöhlbier F., C. Astarita and G. Mourre, 2014. "Consolidation on the Revenue Side and Growth-friendly Tax Structures: An Indicator Based Approach." *European Economy Economic Papers,* 513.

World Economic Forum, 2014. *The Global Gender Gap Report 2014*. Geneva.

Zucman G., 2014. "Taxing Across Boarders: Tracking Personal Wealth and Corporate Profits." *Journal of Economic Perspectives,* 28(4): 121–148.