Fiscal resilience: an unexplored domain

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Abstract

This paper argues that the concept of fiscal resilience, which can be seen as a part of economic resilience, is poorly covered in the present literature on economic resilience.

In order to operationalize the concept of economic resilience economists often use indices, taxonomies, indicators, etc. Many of these indices include elements related to public finance such as government deficit, government debt, etc. These approaches have the effect of integrating public finances into the resilience narrative, but remain somewhat superficial and anecdotical. This reflects the fact that, despite the growing attention to resilience in general, fiscal resilience is a relatively little researched concept, receiving relatively little focus in public finance textbooks and in academic literature compared to general and economic resilience.

The first part of the paper reviews the existing literature on operationalizing economic resilience with a focus on the inappropriateness of the public finance elements therein. The conclusion here is that alternatives are needed for the present approach.

Such an alternative is presented in the second part of the paper with the concept of the "quality of public finance" (QPF). QPF takes a holistic stand and focuses on how public finances should be structured to optimally contribute to sustainable growth, long-term challenges and resilience to economic shocks. QPF combines various, long-studied, public finance elements into a conceptual framework, focusing on all aspects of public finance instead of the selective approach that was covered in the first part of the paper.

The analyses finds that QPF very well covers the factors needed for resilient public finances and that more that sufficient data are available to be used in the construction of more general resilience indicators.

Keywords: economic resilience, fiscal resilience, quality of public finance

1. Introduction

In this paper, an academic perspective on fiscal resilience will be provided. It is obvious to see fiscal resilience as a subset of economic resilience, a concept that has gained significant traction in recent decades. However, this paper argues that the concept of fiscal resilience, which can be seen as a part of economic resilience, is poorly covered in the present literature on economic resilience.

In order to operationalize the concept of economic resilience economists often use indices, taxonomies, indicators, etc. Many of these indices include elements related to public finance such as government deficit, government debt, etc. These approaches have the effect of integrating public finances into the resilience narrative, but remain somewhat superficial and anecdotical. This reflects the fact that, despite the growing attention to resilience in

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general, fiscal resilience is a relatively little researched concept, receiving relatively little focus in public finance textbooks and in academic literature compared to general and economic resilience.
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Such an alternative is presented in the second part of the paper with the concept of the "quality of public finance" (QPF). QPF takes a holistic stand and focuses on how public finances should be structured to optimally contribute to sustainable growth, long-term challenges and resilience to economic shocks. QPF combines various, long-studied, public finance elements into a conceptual framework, focusing on all aspects of public finance instead of the selective approach that was covered in the first part of the paper.

2. What is Economic Resilience?

Economic resilience is one form of resilience besides many others. The attention for resilience is a relatively new phenomenon. Folke (2016) points at an explosion of resilience research since the present century took off.
In this section the following points will be covered:

- What is economic resilience? How can we define it?
- How does fiscal resilience relate to economic resilience?

2.1. Economic resilience

Economic resilience can be approached in a narrow sense and in a broad sense.
In the narrow sense economic resilience is about 'the ability of the country to withstand a shock and recover quickly to potential after it falls into recession' (European Commission 2017). According to the OECD (2016) economic resilience is about 'the capacity of an economy to reduce vulnerabilities, to resist to shocks and to recover quickly'. The focus in these definitions is narrow because the simple requirement for resilience to be present is to recover quickly after an economic shock and as such return to business as usual, a situation that largely resembles the situation before the shock.
Besides this narrow approach a broader definition of economic resilience can be formulated. Alessi et al. (2020) define economic resilience as 'the ability to face shocks and persistent structural changes in such a way that current societal well-being is preserved, without compromising that of future generations'. It encompasses two possible elements, the first being a bounce back to a pre-shock situation, the second is about bouncing forward to a different development path. Manca et al. (2017) proceed in a similar vein and define a resilient society as a society that 'is able to cope with and react to shocks or persistent structural changes by either resisting to it (absorptive capacity) or by adopting a degree of flexibility and making small changes to the system (adaptive capacity). At the limit, when disturbances are not manageable anymore, the system needs to engineer bigger changes, which in extreme cases will lead to a transformation (transformative capacity)'.

Two aspects are important. The first is the insight that resilience is not only about bouncing back returning to a pre-shock situation, but also about bouncing forward, moving to a new development path which includes adapting and even transforming.

Secondly, resilience is not only about shocks like recessions, financial crises, extreme weather, natural disasters, pandemics, energy crises, wars etc., but also about persistent structural changes. Climate change, for example, unlike an earthquake or a pandemic, does not come unexpectedly. Like demographic changes, we see climate change coming from decades away. These slow-progressing phenomena ((de-)globalization, migration, technological innovation are other examples) also require resilience. Additionally, both shocks and persistent structural changes have always existed, meaning the need for resilience is timeless and not specific for our times. Something that we tend to forget in the heat of the moment.

An important academic question is how we can fit the concept of resilience into the prevailing economic theories, particularly welfare economics. This can be done by viewing resilience as being needed primarily to enhance individual well-being and utility. Resilience is part of the private welfare function. We can then move from the individual to the societal well-being, by aggregating individual utilities into the social welfare function and so giving resilience a place in this social welfare function (see Hallegatte 2014).

Another issue is who or what has to be resilient. It seems that a whole range of subjects comes up for consideration. It can be about individuals or households who are responsible for their own wellbeing and therefore should work towards sufficient resilience. At the other end of the specter there is a resilient society. In between there is a broad range of subjects for resilience: the economy comprising consumers, businesses, economic sectors, financial institutions, governments, the educational system, the public health system, the infrastructure. For the purpose of this paper there is also the need for resilience of public finance.

Closely related to the question who or what has to be resilient is the question of responsibility for resilience. Is it solely the responsibility of individuals or is society, government, the governance system required to take up a role in keeping up resilience?

2.2. Resilience of public finance

According to Barbera (2017) resilience of public finance is to be found in "governments' ability to anticipate, absorb and react to shocks affecting their finances over time". Two perspectives are relevant and closely resemble the general approach to resilience. The first is the engineering perspective, which implies recovery from a shock and the ability to bounce back to an original state ('bounce back'). The second is the evolutionary perspective and relates to the capacity to reorganize as a response to, or in anticipation of, disturbances ('bounce forward'). In more concrete terms bouncing back implies concepts such as budget cuts, higher taxes, deferring investment, selling assets, cost reduction, buffering, etc. Bouncing forward however is about self-sufficiency, entrepreneurship, changes in organization, redefining methods of providing public services, PPP's, new services, etc.

Another definition, which is more hands on, comes from the Word Bank (2021) and views fiscal resilience as "a country's ability to respond to major shocks promptly with appropriate policies". This "depends to a large extent

on the adequacy of its preexisting fiscal and financial buffers and the quality of its fiscal and financial sector institutions".

These approaches are useful and have the effect of integrating public finances into the resilience narrative but remain somewhat superficial and anecdotical. This reflects the fact that, despite the growing attention to resilience in general, fiscal resilience is a relatively little researched concept, receiving relatively little focus in public finance textbooks and in academic literature compared to general and economic resilience.

2.3. Measuring economic resilience and the place of fiscal resilience therein

Moving from the theoretical to the more practical level there is the question of how to quantify economic resilience and the role therein of public finance resilience. In table 1, derived from Martin & Sunley (2015), 4 methods are described that are been used in the literature. The first method is case study based and uses simple descriptive data, interviews and interrogation of policies. The second method is using singular or composite indices to measure resilience. This is the method that will be the focus of this paper. A third method uses statistical time series, estimating the length of time it takes for the impact of a shock to dissipate. A fourth method are causal structural models that embed resilience in economic models.

Table 1: Some alternative approaches to measuring economic resilience

Method	Focus
1. Case study based	Mainly narrative based, may involve simple descriptive data and interviews with key actors, interrogation of policies.
2. Resilience indices	Singular or composite, comparative, measures of (relative) resistance and recovery, using key system variables of interest.
3. Statistical time series models	Impulse response models; error correction models. These estimate how long it takes for impact of shock to dissipate (how much of the impact is subsequently eliminated per unit time period).
4. Causal structural models	Embedding resilience in regional economic models to generate counterfactual positions of where system would have been in the absence of shock.

Source: Martin & Sunley (2015)

As mentioned before the focus will further be on the use of indexes, taxonomies and indicators. Many of these indices include elements related to public finance such as government deficit and government debt.

In this section we survey studies using indexes to measure resilience. We limit the survey to indicators of economic resilience for countries or regions, as we want to have a public finance angle involved. These studies were retrieved from Google Scholar. The search terms were 'measuring economic resilience', 'measuring public finance resilience' and 'indicators of economic resilience'. These searches produced over a million of results. A selection of relevant articles was made based on the first hundred results leading to a list of 13 papers in which an economic resilience indicator is discussed (see table 2).

Table 2: Economic resilience indexes in the literature

Authors	**Indicators**	**Fiscal indicator**
Alessi et al. (2019)	Selection of 34 key indicators of economic performance and societal well-being, going well beyond the merely economic growth perspective	Government debt and budget balance as % of GDP
Briguglio et al., (2008)	Macroeconomic stability, microeconomic market efficiency, social development, and good governance	Fiscal deficit as % of GDP
Briguglio (2016)	Macroeconomic stability; market flexibility adjusted for financial prudence; and political, social and environmental governance.	Government debt as % of GDP
Briguglio & Kisanga (2004)	Macro-economic stability; micro-economic market efficiency; good political governance; and social development	Fiscal deficit as % of GDP
Bruneckiene et al., (2018)	Insight capacity, regional governance, knowledge and innovation, learning capacity, networking capacity, and regional infrastructure	General government gross debt compared to regional GDP
Constantinescu (2023)	Economic complexity, foreign trade vulnerabilities and dependence; energy dependence; economic openness; logistics and infrastructure; economic stability and development; innovation and IT; human capital; governance effectiveness; military.	Fiscal balance to GDP ratio; Government debt as percentage of GDP; Tax revenue, percentage of GDP
FM Global, (2025)	Economic, risk quality, and supply chain	None
Hafele et al. (2023)	Economic independence, education and skills, financial resilience, governance, production capacity, and social progress and cohesion	Refinancing cost of public debt. Government expenditure on health, education and social protection
Hallegatte (2014)	Economic resilience as a combination of macroeconomic and microeconomic resilience	None
Lee et al. (2022)	16 indicators in three dimensions (government, enterprises and the public)	National government debt as % of GDP
Röhn et al. (2015)	Financial sector imbalances; non-financial sector imbalances; asset market imbalances; public sector imbalances; external sector imbalances; international spillovers, contagion and global risks	See table 3
Spratt & Bernini (2010)	Combination of vulnerability and resilience factors	Public external debt/export

		Short-term external debt stock/foreign currency official reserves
Tsiotas (2022)	3D index, capturing engineering, ecological, and evolutionary aspects of economic resilience	Tax revenue as % of GDP

The point is to see how fiscal resilience is entering these general indexes of economic resilience. As Table 2 shows there is a large variety in how this is being done. Most popular indices for public finance are the budget balance (4 times used) and public debt (5 times used) expressed in % of GDP. Tax revenue as a % of GDP is used two times. The indicators 'refinancing cost of public debt, 'government expenditure on health, education and social protection', 'public external debt on exports and 'short-term external debt stock on foreign currency official reserves' all figure once among the indexes. In two indexes no reference to public finance is made.

Special attention has to be devoted to the indicator developed by Röhn et al. (2015). It is made up of 6 components, one of them being 'public sector imbalances' (table 3). This seems to be the exception to the rule that fiscal indicators are only sparsely used in economic resilience indicators. The general budget balance and debt indicators are present in the list, next to 12 additional indicators.

Table 3: Indicators of public sector imbalances

Indicator	Description	Data Source	Available?
Basic fiscal solvency			
Primary budget balance	Cyclically adjusted (or underlying) government primary budget deficit in per cent of potential GDP.	OECD	Yes
General government budget balance *	In per cent of GDP	OECD	Yes
General government debt *	Gross government debt in per cent of GDP	OECD	Yes
(r-g) *	Real 10-year sovereign bond yield-potential GDP growth rate differential.	OECD	Yes
Long-term fiscal solvency			
Future public spending on pensions	Projections of future public expenditure on pensions in per cent of GDP.	OECD	Yes
Future public spending on health and long-term care	Projections of future health and long-term care costs in per cent of GDP.	OECD	Yes
Projected old-age support ratio	Projections of number of people in working age (20-64) relative to number of people in retirement age (65+).	OECD	Yes
Government debt composition			
Gross financing needs	Public budget deficit + short-term debt by original maturity + long-term debt with payment due in one year or less, in per cent of GDP.	OECD, World Bank	Yes
Short-term debt	Short-term gross general government debt in per cent of gross general government debt.	World Bank	Yes
Weighted average maturity of general government debt			No
Debt denominated in foreign currency	In per cent of gross general government debt.	World Bank	Yes
Debt held by non-residents	External gross general government debt in per cent of gross general government debt.	World Bank	Yes
Short-term external government debt	In per cent of gross general government debt.	World Bank	Yes
Fiscal risks or uncertainties			
Government contingent liabilities	Guarantees and liabilities recorded off-balance sheet of government; in per cent of GDP.	Eurostat	Yes

* denotes indicators that are included in the OECD *Economic Outlook* (Table A1).

Source: Röhn et al. (2015)

The indicators are spread over four categories:

- Basic fiscal solvency
- Long term fiscal solvency
- Government debt composition
- Fiscal risks or uncertainties

The common feature of the indicators used is that they go into more detail than the simple government deficit and debt indicators and take into consideration important aspects of the deficit (e.g. primary balance), of spending (e.g. future public spending on pensions and health) and of debt (e.g. the various aspects of the composition of debt). In doing so the OECD approach takes into account a large amount of information that is absent in the previously discussed indicators. As it stands however and as will be shown in the next section there is a better alternative that takes into account more and broader factors related to public finance that are important for economic resilience.

3. The quality of public finance as an alternative approach to fiscal resilience

3.1. The concept of quality of public finance

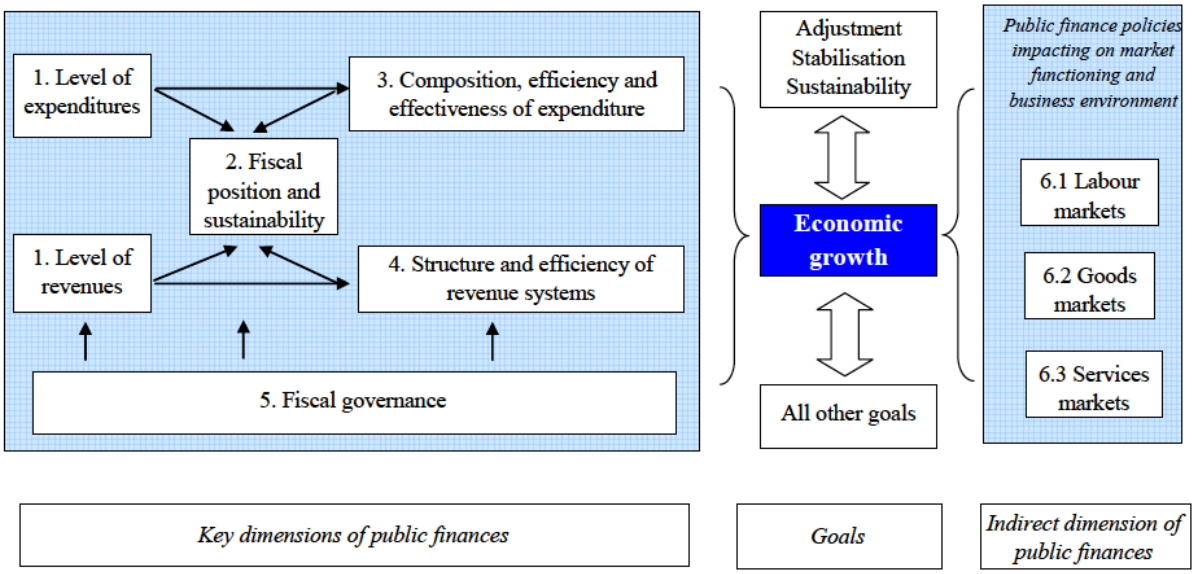
The previous section revealed that fiscal resilience or public finance resilience is not adequately treated in economic resilience indicators, bar one exception with Röhn et al. (2015). The point is not that it is not already known which factors are important for fiscal resilience, but the point is that the term 'resilience' is not used to pin them down. A better alternative for grasping the intricacies of fiscal resilience is offered by the approach of the "quality of public finance" (QPF). Introduced during the 2008-2009 financial and euro crisis, it takes a holistic stand and focuses on how public finances should be structured to optimally contribute to sustainable growth, long-term challenges and resilience to economic shocks (see i.a. Deroose & Kastrop 2008, Thöne 2022, Kargol & Wasiluk 2018, Rodriguez-Vives 2019). According to Barrios & Schaechter (2008) QPF "comprises policies that not only ensure sound budgetary positions and long-term sustainability but also those that raise the production potential and facilitate the economy to adjust to shocks. To achieve these outcomes, public resources need to be used in an efficient and effective way. At the same time, governments should operate expenditure and revenue policies in a way that creates incentives for an efficient functioning of labour, goods and services markets." In other words, this definition of QPF describes what is needed in the domain of public finance to ensure economic resilience.

QPF combines various, long-studied, public finance elements into a conceptual framework, focusing on all aspects of public finance instead of the selective approach that we saw earlier. These elements of public finance are

- the size of government
- fiscal deficits and sustainability
- the composition and efficiency of expenditure
- the structure and efficiency of revenue systems
- fiscal governance
- the effect on markets

Mostly these components are being studied within public finance in their own right but they display interlocking features that are decisive for the overall quality of public finance, and so also for the resilience of public finances and economic resilience in general. The interlocking features of the six channels to growth are illustrated in graph 1.

Graph 1: The quality of public finance: a multi-dimension framework



Source: Barrios & Schaechter 2008

The level of spending is in itself an important element, but also has an impact on the composition and moreover on the efficiency and effectiveness of spending. Taken together they influence the fiscal position and the sustainability of public finances. The same is true for the income side of public finance. The level has an impact but also the composition and the efficiency of revenue systems, while at the same time the revenue level influence structure and efficiency of taxes. Overall the issue of how the fiscal governance, i.e. in terms of fiscal rules that are being used and in terms of the independence of institutions that are involved in economic forecasting, is performing, impacts on all the previous factors.

The above factors can be seen as directly impacting economic growth, but fiscal policy also indirectly influences goods, services and labor markets. The functioning of these markets then has effects on economic growth. Although economic growth and resilience are two distinct concepts it should be clear that the public finance factors influencing economic growth are similar to the public finance factors influencing resilience.

3.2. When are public finances resilient?

After sketching the theoretical framework of QPF we next consider what could be a good quantitative translation for each of the six components of QPF, with a view of how these quantifications could be inserted into economic and fiscal resilience indexes as to assess whether a country is economically and fiscally resilient.

3.2.1. The size of government

The size of government is a topic that has been widely studied in public finance. Facchini (2014) reports almost 500 publications on the topic with 20 odd independent variables explaining the size and growth of public spending, the most known being Wagner's law, Baumol's disease and the displacement effect of Peacock & Wiseman. Gradually the debate shifted from explaining the size of government to determining the optimal size of government.

The growth-maximizing size of the government is approached in the literature via an inverted U-curve (the so-called Armey curve, after its inventor Dick Armey (1995)). In a non-existent government sector, where anarchy prevails, economic growth is at a low level. As the government sector increases and the government supports growth with productive expenditure, economic growth also increases. This productive expenditure initially includes expenditure that must ensure the protection of citizens and their property rights and, at a later stage, also expenditure and investments in education and transport routes. From a certain level, additional government growth means less productive and, in the long run, even counterproductive expenditure. As a result, growth decreases. The peak of the curve then indicates the optimal size of the government.

The results of the empirical studies that have been conducted on this optimal relationship vary greatly. They arrive at an optimal size of the government sector between approximately 20% and 40% of GDP. Tanzi & Schuknecht (2000) put it at 30 to 35 % of GDP (see also Schuknecht, 2020). This optimal size can also differ from country to country (cf. Chobanov & Mladenova 2009). Put besides these optimal size figures, the OECD average of general government expenditures was at 46.3 % of GDP in 2021 (OECD 2023). Without losing sight of the bigger picture this is not a positive figure from the viewpoint of resilience.

3.2.2. Sustainable public finances

Sustainable public finances are a minimal condition to have a resilient economy. Fiscal sustainability is a domain that has been actively researched by the main international economic organizations like the IMF, the World Bank, and the OECD. A well-established approach is offered by the European Commission, developed in the framework of the European Stability and Growth Pact.

The EU methodology uses three time perspectives, the short, middle and long term sustainability of public finance. The short-term indicator S0 'is a composite indicator that combines fiscal, financial and competitiveness variables to identify potential risks of fiscal stress in the coming year' (European Commission 2025). It is based on a set of 25 indicators that have proven to be good predictors of short fiscal stress and takes into account both fiscal data (gross financing needs, (change in) gross debt, cyclically adjusted balance, etc.) and macroeconomic data (yield curve, current account balance, net international investment position, GDP per capita in PPP, etc.).

The medium-term analysis is based on debt sustainability analysis (DSA). 'First, the DSA includes the impact of ageing-related costs. Second, it considers both favourable and adverse scenarios in addition to the baseline. Third, it accounts for uncertainty by simulating a wide range of 10 000 possible shocks. Last but not least it takes into

account the plausibility of projected debt paths and the feasibility of fiscal consolidation measures, if needed.' (European Commission 2025).

The long-term approach to assess the sustainability of public finances is based on the two indicators S1 and S2:

- 'the S2 indicator measures the fiscal effort required to stabilise government debt in the long term. Because it relies on the infinite version of the government intertemporal budget constraint the S2 is the leading indicator for the long-term risk assessment (see Annex A5).
- the S1 indicator measures the fiscal effort required to bring the government debt-to-GDP ratio to 60% by 2070, thus applying a finite version of the budget constraint and a specific debt target. It complements the signal provided by S2, accounting for high debt levels.' (European Commission 2025).

In its latest review the European Commission finds low short-term risk, except for Romania and Slovakia. Medium-term risks are high in 11 member states and medium in another 9 countries, while long-term risks are high in 4 and medium in 14 EU member states (European Commission 2025).

For resilience measurement purposes the assessment results from the European Commission can problemless be incorporated in existing resilience indicators.

3.2.3. Composition, effectivity and efficiency of government spending

During the last decades academic attention is shifting from explaining the size of government to the questions of how effective and efficient expenditure is (Afonso et al. 2005). The link with resilience should be clear. A society that produces the right kind of collective goods will be resilient enough to overcome external shocks and threats. Relevant questions here are whether expenditures produce the expected results and could these results perhaps be achieved with less effort? Thus, the questions to be answered here are:

– are the right objectives being pursued?

– are the objectives being achieved?

– are the objectives being achieved with a minimum of resources?

Assuming that the democratic process is functioning properly, it can be assumed that the level and distribution of expenditure also reflect the preferences of the population. The analysis can then focus on the questions of effectiveness and efficiency (Afonso et al. 2006, see also Afonso et al. 2020 and Afonso & Kazemi 2006). An efficiently functioning democratic process is nevertheless no certainty. The own preferences of politicians, interest groups and civil servants, corruption and the like can distort the outcomes of the democratic process, as a result of which government resources do not end up where they should. This applies a fortiori in states that are not very democratic or not at all. The problem is clearly illustrated by Göring's statement in the run-up to the Second World War: "Kanonen statt Butter."

There is, however, a consensus among economists that there is a certain core in government expenditure that can be considered essential for growth potential and without which the economy cannot function and grow properly (Afonso et al., 2006), and, can be added, is not resilient. Core expenditure includes: expenditure on administrative services and justice, basic education and health care, basic research, public infrastructure, domestic and foreign security. These expenditure categories stimulate growth and foster resilience. Redistributive expenditure can also contribute to growth if it provides a safety net against all kinds of social risks and thus supports risk-taking and

entrepreneurship. On the other hand, it tends to inhibit growth if it limits the supply of labor. The question then is whether there is a way to operationalize these insights. In recent years, a literature has grown that, mainly on an empirical basis, attempts to provide some clarity in this issue (Afonso et al., 2005, see also Afonso et al. 2020 and Afonso & Kazemi 2006). In a first step, the effectiveness of government expenditure is examined and in two further steps its efficiency. Effective (performant, effective) means that the expenditure actually contributes to the realization of the intended goal. Efficient means that this is done with a minimum of resources. Afonso et al. (2005) developed a methodology to measure effectiveness and efficiency of public spending using constructed output data. The output data for the government in the national accounts cannot be used for this, as these are indirectly approximated by the input data. The output must therefore be quantified in a different way. This is done by constructing indicators for performance. These indicators more or less reflect the core expenditures mentioned above: a well-functioning government administration (measured by figures on corruption, administrative burdens (the so-called red tape), quality of the judicial system and the size of the black economy), a well-educated population (measured by participation in secondary education and educational performance), a healthy population (measured by child mortality and life expectancy) and a good public infrastructure (measured by quality figures for communication and transport infrastructure). Other indicators reflect the three functions of government in the economy identified by Musgrave: redistribution (measured by the income share of the poorest 40% of households), stabilization (measured by the variation in growth rates and inflation rates) and allocation (measured by GDP per capita, GDP growth and unemployment rates).

Using this methodology Afonso et al. (2020) found that for all 36 OECD countries between 2006 and 2017 efficiency gains could be achieved with around less 30-40% government spending on average without changing the overall level of performance (the so-called input efficiency). In terms of output efficiency it was found that outputs could be increased by approximately 16-50% keeping the same spending levels.

In this way measures for effectiveness and efficiency of public spending can be constructed that can be without complications inserted in existing resilience indicators.

3.2.4. Structure and efficiency of the tax system

The objective of a good tax system is, inter alia, that efficiency effects of taxes are bearable and not too distorting. The study of taxation is the oldest part of public finance theory. Already in the 17th century Colbert knew that ‘the art of taxation consists in so plucking the goose as to get the largest amount of feathers with the least amount of hissing’. The quality of a tax system cannot not easily be deducted from the ratio of tax on GDP, which is an quantity indicator that can hide very different kinds of tax compositions with very different impacts on growth and resilience. The conventional wisdom about optimum tax structures for enhancing economic growth is that the focus should lay more on consumption taxes than on direct taxes, especially taxes on labor. However, taxes are not only levied to fund spending with a view of minimalizing the negative effect on growth but are also used to pursue other objectives in the realm of redistribution or impacting economic behavior of citizens (cf. environmental taxes). This involves necessary trade-offs to be made by politicians leading to a particular shape of the tax system (Barrios & Schaechter 2008).

These considerations make it difficult to construct indicators that are meaningful for assessing the quality of the tax system. Valenduc (2008) looks at indicators that cover efficiency and neutrality, income distribution and tax incentives. Regarding efficiency and neutrality Valenduc (2008) discusses the properties of various indicators such as the marginal cost of public funds (not regularly available), the tax/GDP ratio (not relevant), the tax mix (gives some insights), implicit tax rates (preferred indicators). For income distribution the obvious indicator is the difference between Gini-indexes and after before taxes and transfers. The effects of tax incentives are harder to quantify as there is no generally agreed method to quantify tax expenditure. Barrios & Schaechter (2008) adds administrative efficiency to the list of possible indicators.
Conclusion for the quality of the tax system is that, although there is no ideal way of measuring, sufficient statistics are available that can be used to figure in resilience indexes.

3.2.5. Fiscal governance

One of the more important aspects of the QPF is fiscal governance. The theory is that a fiscal governance system that includes fiscal rules, independent fiscal councils and well-developed budgetary procedures and frameworks, is better equipped to counter economic shocks because it public finances are in a better shape than is the case for countries that do not use these instruments. The underlying reason for this is that good fiscal governance has a positive effect on the credibility of fiscal policy. This topic has been extensively researched over the last decades and the usefulness of fiscal rules and independent fiscal councils is well established (see Debrun et al. 2008; Debrun et al. 2009; Kopits & Symansky 1998, Naert 2011). As a result there has been a boom in the creation of fiscal rules and fiscal councils all over the world (see the IMF Data Mapper on the number and type of fiscal rules: https://www.imf.org/external/datamapper/FiscalRules/map/index.html and the IMF's fiscal council dataset https://www.imf.org/en/Data/Fiscal/fiscal-council-dataset).
As a result, sufficient data on fiscal governance are available and can thus easily be used to figurate in fiscal resilience indicators.

3.2.6. Labour, goods and services markets

The last element in the QPF approach is the impact that public finance has on markets. According to Barrios & Schaechter (2008) strong overlaps exist between this dimension and the five other dimensions. Moreover this dimension is of an indirect character as it addresses the short and long-term effect of fiscal policies on the markets for labour, goods and services (Rodriguez-Vives 2019). The quality of public finance is thus impacted indirectly through how performing these markets are in contributing to economic growth and resilience.
Barrios & Schaechter (2008) consider this dimension to apply more particularly to the efficiency and effectiveness of public administrations. They point to the existence of indicators for public administration efficiency, such as the World Bank Doing Business indicator and the World Bank Governance indicator. It should be taken into consideration however that the fields covered by these indicators, such as the ease of starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors,

paying taxes, etc., are already incorporated for the most part in the effectiveness and efficiency indicators for government expenditure (dimension 3).
For these reasons we opt to disregard dimension 6.

3.2.7. QPF and indicators of fiscal resilience

Summing up the foregoing discussions of the dimensions of QPF in table 1 we see that there is sufficient to very good availability of data to be used in the construction of resilience indicators.

Table 4: Summing up the availability of QPF data for resilience indicators

Dimension of QPF	**Availability of data for resilience indicators**
Size of government	+++
Fiscal position and sustainability	+++
Composition, efficiency and effectiveness of expenditure	++
Structure and efficiency of revenue systems	+
Fiscal governance	++

Legend: +++ very good availability, ++ good availability, + sufficient availability

4. Conclusions

In this paper we analyzed the concept of fiscal resilience as a part of economic resilience applied to countries. We found that fiscal resilience is poorly treated in the resilience literature and even more when it comes to quantifying economic resilience into indicators. All indicators, except one, use only one or two quantifiers for fiscal resilience (mostly public deficit and debt on GDP).
At the same time a significant literature exists on the concept of quality of public finance. This concept covers the different dimensions needed for resilient public finances: an adequate size of government, sustainable public finances, an effective and efficient system of spending and taxation, adequate fiscal governance and consideration for the effects of public finance on markets.
This literature can easily be fitted into the fiscal resilience literature and allows a much more accurate quantification of fiscal resilience. Moreover, the data for the direct dimensions of the quality of public finance are available for most developed countries.

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