

# Article

## 1 The composition of public finances in the euro area

In times of stretched public finances and low structural economic growth, a legacy of the recent crisis, it is essential that fiscal policies are designed to be as growth-friendly as possible. A key element in today's policy debate is the composition of public budgets, i.e. the choice of fiscal instruments on the government revenue and expenditure side. This article sheds light on changes in the composition of public finances since the pre-crisis years and assesses their growth-friendliness. It illustrates how vulnerable public finances have led governments to adopt consolidation measures that impinge negatively on long-term growth. The article also suggests redirecting public funds from less productive spending items towards education and infrastructure, while shifting the tax burden away from distortionary taxes, in particular labour taxation, towards less distortionary consumption and property taxes.

### 1 Introduction

**The current environment of low structural growth, high unemployment and high government debt levels has brought attention to the composition of governments' expenditure and revenue.** As a legacy of the recent economic and financial crisis, the euro area has experienced a long period of relatively subdued growth and unemployment levels have remained high. At the same time management of public finances is constrained by high stocks of debt. Euro area government debt, although declining, stands at 90% of GDP, which limits the scope for expansionary policies. Hence, the challenge is how to foster potential growth without compromising fiscal sustainability. Consequently, evidence that the composition of budgets matters for long-term economic growth is of particular relevance in these times of necessary fiscal retrenchment. Shifting expenditure to the most growth-enhancing categories or the tax burden to less distortive taxes can exert positive effects on output growth without burdening public budgets.

**This article assesses the growth-friendliness of the composition of euro area government budgets since the pre-crisis years.** The size of the government sector in the euro area is large by international standards and it has grown further during the financial crisis and the subsequent consolidation period. On average governments in the euro area spend almost 48% of GDP. In its analysis this article focuses on developments in budgetary composition during the boom leading to the financial crisis and the subsequent fiscal consolidation. A backward-looking perspective is helpful to identify changes in the growth-friendliness of budgets and in particular to assess whether recent consolidations have curbed growth prospects by relying too much on cuts in growth-enhancing spending or increases in particularly distortionary taxes.

**The analysis suggests that there is scope for reforms to improve the growth-friendliness of the fiscal composition.** Such reforms are changes to the budget composition that improve the national GDP per capita in the long run, but are budget neutral in the short run. These may constitute reallocation of expenditures from less growth-friendly to more growth-friendly categories, tax shifts from distortionary to less distortionary taxes, or simultaneous changes in expenditure and revenue shares. There have been repeated calls by the European Commission, the Eurogroup, the ECB<sup>28</sup>, the IMF and the OECD to increase the growth-friendliness of fiscal policies.

**The composition of public budgets is also an important element of the wider discussion on the quality of public finances**<sup>29</sup>. This has several dimensions, such as the size of the government, the level and sustainability of fiscal positions, the composition and efficiency of expenditure, the structure and efficiency of revenue systems and fiscal governance.

**This article is structured as follows:** Section 2 discusses the relative growth-friendliness of different expenditure and revenue categories based on a survey of the empirical literature; Section 3 analyses the composition of expenditure by function and the evolution of tax structures by type of tax base since the pre-crisis years; and Section 4 concludes.

## 2 The growth-friendliness of the composition of public finances: what does the literature tell us?

**The empirical literature provides evidence that some expenditure and revenue categories are more relevant for supporting long-term growth than others.**

Based on the review of the literature, it is possible to identify some underlying patterns in the adequacy of different fiscal instruments in terms of their long-term impact on growth.<sup>30</sup>

**Expenditure on education and health is important for long-term growth prospects since it raises the level of human capital, while expenditure on infrastructure raises the level of physical capital.** As shown in a survey article<sup>31</sup>, the recent literature generally finds robust empirical relationships between certain expenditure categories and economic growth. In particular, it finds robust positive long-run effects for productive expenditure categories, such as education and

<sup>28</sup> See, for example, the [Introductory Statement by the President of the ECB following the Governing Council meeting of March 2017](#), which states: “Regarding fiscal policies, all countries should intensify efforts towards achieving a more growth-friendly composition of public finances”.

<sup>29</sup> The European Commission defined the quality of public finances as “a broad concept with many facets” concerning “the level and composition of public expenditure and its financing via revenue and deficits” (see *The Quality of Public Finances – Findings of the Economic Policy Committee Working Group*, European Commission, Brussels, March 2008).

<sup>30</sup> See, for instance, Fournier, J.-M. and Johansson, A., “The effect of the size and the mix of public spending on growth and inequality”, *Economics Department Working Papers*, No 1344, OECD Publishing, Paris, 2016.

<sup>31</sup> Johansson, A., “Public Finance, Economic Growth and Inequality: A Survey of the Evidence”, *OECD Economics Department Working Papers*, No 1346, 2016.

several types of investment. For example, one of these empirical analyses<sup>32</sup> studies the long-run effect of changes in the shares of different expenditure categories on the growth rates of per capita GDP in a panel of OECD countries. It finds a significant positive effect for education spending, as well as spending on transport and communication. Moreover, the study finds some evidence supporting positive effects for housing and health and negative effects for social welfare spending. The main findings are in line with earlier findings<sup>33</sup> showing that shifting expenditure to education spending has a robust effect on growth.

**The empirical evidence relating to the impact of physical public investment on structural growth is mixed.** The estimates from the empirical studies tend to find a positive relationship between public investment and growth, but the results are heterogeneous. A meta-analysis<sup>34</sup> shows that, in most empirical studies, a positive effect of the share of productive government investment on economic growth is found. However, the estimates vary widely and some studies even find a negative relationship between public investment and growth. These conflicting results can be reconciled if one distinguishes productive from unproductive government investment. Government investment can be conducive to economic growth, particularly if it creates public capital that is complementary to private capital or that would otherwise be undersupplied in an economy. But its effect becomes negative if it crowds out private investment. The positive effect is particularly pronounced for investment in infrastructure, such as transport and communication or education.

**There are studies that find a negative relationship between social spending and economic growth<sup>35</sup>, but overall the results are not very robust.** A possible explanation is the distortionary effects of social spending on labour market activity. The magnitude of these effects depends not only on the amount spent, but also and to a large extent on the design of the social programmes.<sup>36</sup> By focussing transfers on those in need and avoiding negative incentives for labour market participation, fiscal costs can be lowered while also reducing the possible growth-inhibiting effects of such policies.

**On the revenue side, taxes on income are found to be more detrimental to growth than taxes on consumption and property.** According to the literature survey, labour taxation is particularly detrimental to growth, as it distorts individuals' labour supply decisions and firms' incentives to hire workers. Corporate income taxes tend to reduce the incentives to invest and can induce capital outflows. By contrast, consumption taxes are considered to be relatively less distortionary as they

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<sup>32</sup> See Gemmell, N., Kneller, R. and Sanz, I., "Does the Composition of Government Expenditure Matter for Long-Run GDP Levels?", *Oxford Bulletin of Economics and Statistics*, Vol. 78, No 4, 2016, pp. 522-547.

<sup>33</sup> See, for example, Acosta-Ormaechea, S. and Morozumi, J., "Can a Government Enhance Long-Run Growth by Changing the Composition of Public Expenditure?", *IMF Working Papers*, No 13/162, 2013.

<sup>34</sup> Bom, P.R.D. and Ligthart, J.E., "What have we learned from three decades of research on the productivity of public capital?", *Journal of Economic Surveys*, Vol. 28, No 5, 2014, pp. 889-916.

<sup>35</sup> See, for example, Afonso, A. and Alegre, J., "Economic growth and budgetary components: A panel assessment for the European Union", *Empirical Economics*, Vol. 41, No 3, 2011, pp. 703-723.

<sup>36</sup> At the same time, social protection spending is the most relevant item for income distribution and for protecting the living standards of the most vulnerable members of society.

do not affect intertemporal consumption decisions (i.e. consumption now and consumption in the future are taxed equally). Finally, capital taxes on immobile capital, such as property taxes, are assumed to have low distortionary effects.<sup>37</sup> Recent empirical analyses<sup>38</sup> find that increases in the taxation of personal income and corporate profits have a negative effect on long-term growth, while raising tax rates on consumption does not significantly affect the growth rate.

**It is likely that the progressivity of labour taxes has an ambiguous effect on long-term growth.** At the upper end of the income distribution, high effective marginal income tax rates reduce incentives to pursue more highly productive (and thus more highly rewarded) activities. At the lower end of the income distribution, high tax rates may discourage low-skilled workers and second earners from participating in the labour market. These groups can be assumed to be particularly responsive to cuts in labour tax rates. Some recent empirical papers confirm this notion, showing that labour tax reforms reducing the burden for low-income earners have a particularly positive effect on employment and, eventually, economic growth.<sup>39</sup>

### 3 Evolution of the composition of public finances in the euro area

**This section is structured as follows:** Section 3.1 sets the overall scene by providing an overview of the cyclically adjusted primary balances, revenues and expenditures during the period under observation. The disaggregated composition of the various expenditure and revenue instruments underlying the overall changes is particularly important when assessing the growth-friendliness of the changes. Consequently, Sections 3.2 and 3.3 look at developments in various expenditure and revenue categories<sup>40</sup> respectively.

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<sup>37</sup> Property taxes are considered to be the most growth-friendly tax type, see the paper by Roeger, W. and in't Veld, J., "Fiscal stimulus and exit strategies in the EU: A model-based analysis", *European Economy – Economic Papers*, No 426, 2010. In their model, a tax on housing property is introduced in such a way that a tax increase affects housing investment negatively. However, it does not directly distort the provision of the inputs to production and the consumption decision of the households. Moreover, by making investment in productive capital relatively more attractive than investment in housing, it leads to a higher productive capital stock and more production.

<sup>38</sup> Gemmell, N., Kneller, R. and Sanz, I., "The Timing and Persistence of Fiscal Policy Impacts on Growth: Evidence from OECD Countries", *Economic Journal*, Vol. 121 No 550, 2011, pp. 33-58; Arnold, J., Brys, B., Heady, C., Johansson, A., Schwellnuss, C. and Vartia, L., "Tax policy for economic recovery and growth", *Economic Journal*, Vol. 121, No 550, 2011, pp. 59-80.

<sup>39</sup> See for example Zidar, O.M., "Tax Cuts For Whom? Heterogeneous Effects of Income Tax Changes on Growth and Employment", *NBER Working Papers*, No 21035, 2015 and Lehmann, E., Lucifora, C., Moriconi, S. and Van der Linden, B., "Beyond the labour income tax wedge: the unemployment-reducing effect of tax progressivity", *International Tax and Public Finance*, Vol. 23 No 3, 2016, pp. 454-489.

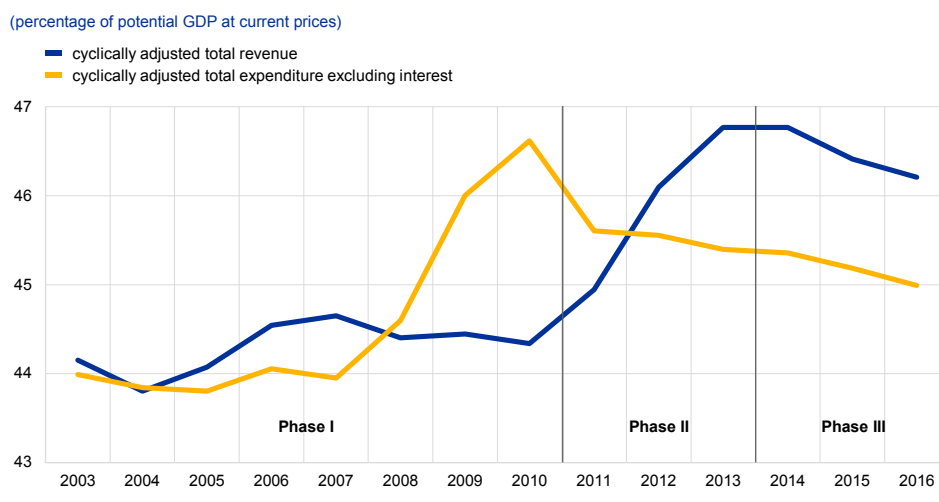
<sup>40</sup> Data are only available up to 2015.

### 3.1 Overall trends

**Expenditure and revenue-to-GDP ratios have shown some volatility since the pre-crisis years, but have increased overall.** Chart 1 illustrates the trends in the cyclically adjusted primary expenditure and revenue ratios at the euro area level during the period 2003-16. The expenditure share increased sharply with the start of the financial crisis in 2008, when many countries reacted with expansionary fiscal policies. After the peak of the financial crisis, expenditure shares declined, but stayed above the pre-crisis level. By contrast, revenue shares stayed relatively constant until 2010, but climbed significantly in the years afterwards, reflecting euro area countries' policies of revenue-based fiscal consolidation in view of surging deficits and debt levels.

#### Chart 1

Cyclically adjusted primary expenditure and revenue ratios of the euro area aggregate



Sources: The European Commission Spring 2017 Forecast (AMECO database) and the Eurostat database.

**In more detail, the period 2003-16 can be divided into three distinctive periods of budgetary composition.** Based on Chart 2, these developments can be summarised as follows:

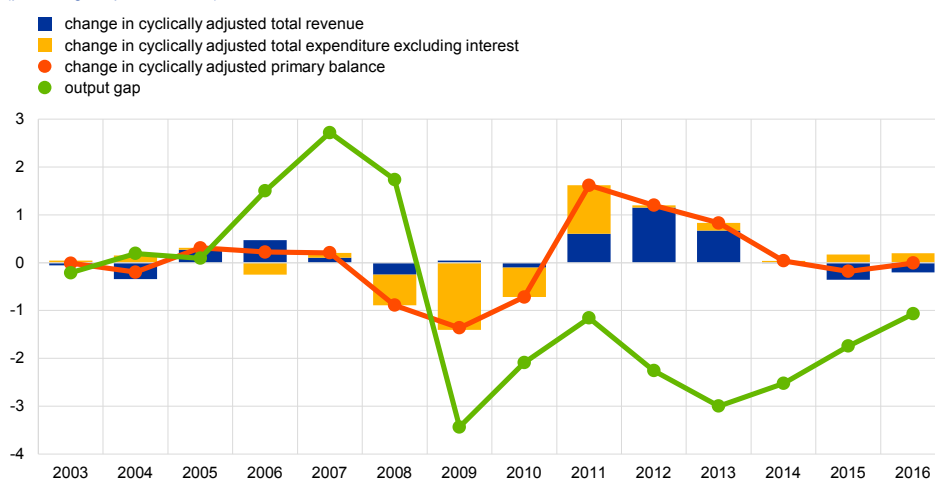
- *The first period covers the years leading up to and including the start of the financial crisis (2003-10).* After the years 2003-05, which can be characterised as “normal” times with on average closed output gaps for the euro area aggregate, significant positive output gaps were recorded over the period 2006-08, which were then followed by the financial crisis. The euro area cyclically adjusted revenue ratio remained stable over 2003-10, indicating that overall governments were not actively pursuing discretionary changes. The sharp GDP deterioration in 2008-09 was accompanied by a temporary fiscal stimulus, which is reflected in the deterioration in the cyclically adjusted primary balances. Governments largely responded with emergency-driven expenditure increases. In 2010 the euro area as a whole recorded the most negative cyclically adjusted primary balance of the period 2003-16.

- The second period was marked by strong consolidation efforts in most euro area countries to reverse the steep deterioration of public finances (2011-13).<sup>41</sup> As a consequence, 2013 was the last year in which the euro area as a whole recorded a significant improvement of the cyclically adjusted primary balance.
- Although consolidation continued in a few countries beyond 2013, most notably those countries with the highest adjustment needs, the subsequent period can be considered as the convergence to the new “normal” (2014-16). Output gaps were still negative but they were closing according to European Commission estimates.<sup>42</sup> For the euro area as a whole the consolidation effort came to a standstill over this period.

## Chart 2

### Output gap and changes in the cyclically adjusted primary balance of the euro area aggregate

(percentage of potential GDP)



Sources: The European Commission Spring 2017 Forecast (AMECO database) and the Eurostat database.

Notes: The output gap is the gap between actual and potential gross domestic product at 2010 reference levels (expressed as a percentage of potential gross domestic product at constant prices).

A negative (positive) change in the cyclically adjusted primary balance indicates a deepening (reduction) of fiscal imbalance. The sign of expenditures was reversed, so a negative (positive) change in the cyclically adjusted primary expenditure ratio indicates an increase (reduction).

**In the run-up to the crisis, most euro area countries failed to take advantage of the favourable economic conditions to build sufficient fiscal buffers.** At the end of 2007, the euro area aggregate cyclically adjusted balance was in significant deficit, amounting to  $-2.2\%$  of GDP, despite the fact that the euro area output level was considerably above its potential.

**The financial crisis and the largely expenditure-based expansionary fiscal stance during 2008-09 led to a sharp deterioration of fiscal positions in most**

<sup>41</sup> For the charts depicting the euro area as a whole the consolidation period is defined as the period from the end of 2010, the year when the highest cyclically adjusted primary deficit was recorded, to the end of 2013. For the charts depicting the various euro area countries the starting year used for the consolidation period varies to account for the fact that different countries started to consolidate in different years (for example the Baltic States embarked on fiscal consolidation as early as 2009).

<sup>42</sup> The European Commission Spring 2017 Forecast.

**euro area countries and the need for a large adjustment in subsequent years.**

The cyclically adjusted primary balance, as a measure of the fiscal stance, deteriorated by 3 percentage points of potential GDP over the period 2008-10 in the euro area. The dominant share of this deterioration can be attributed to increases in cyclically adjusted primary expenditures which recorded an increase of approximately 2.7 percentage points of potential GDP as seen in Charts 1 and 2.

**In most countries a largely revenue-based consolidation process started in 2011 and lasted until 2013.**

However, despite the already large size of the government sector in many euro area countries and the fact that developments during 2008-10 warranted more of an expenditure-based consolidation, revenue increases clearly predominated over expenditure cuts. More specifically, approximately two-thirds of the 3.6 percentage points of potential GDP consolidation during 2011-13 was revenue-based.

**The fiscal stance has been broadly neutral since 2014 as most countries have stopped any further fiscal consolidation.**

This also implies that the expenditure ratio and – even more so – the revenue ratio have remained at a higher level than before the start of the boom-bust cycle, as shown in Chart 1. In certain countries, most notably those countries under economic adjustment programmes, consolidation has continued beyond 2013.

### 3.2 Government expenditures

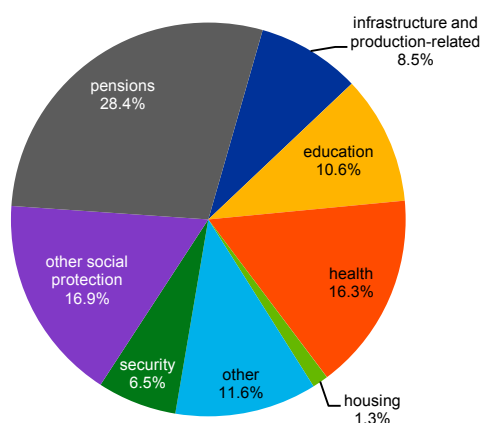
**Expenditures on education and transport infrastructure, which are usually considered as the most growth-friendly, accounted for about one-fifth of total euro area government primary expenditures in 2015.**

In addition, health expenditure, which can also have beneficial growth effects, accounted for nearly one-fifth. Social protection, on the other hand, accounts for over two-fifths of total primary expenditure and is by far the largest budgetary component. Pension payments constitute around 60% of expenditure in this category.

### Chart 3

Share of the functional composition of government primary spending (excluding contributions to the EU budget) in the euro area in 2015

(percentage of total government primary expenditures)



Source: The Eurostat database.

Note: The category "infrastructure and production-related" excludes the capital transfers for the recapitalisation of the financial system.

### Box 1

#### Categorisation of expenditures and revenues

This box explains the reasoning behind the categorisation of the various expenditure and revenue items that are used in the analysis. The general principle is to define categories along the lines of economic rationale rather than purely statistical definitions.

On the **expenditure** side the analysis differentiates between eight categories: 1) infrastructure and production-related spending, 2) education, 3) health, 4) housing, 5) security, 6) pensions, 7) other social protection and 8) other. These categories closely follow the "Classification of the Functions of Government" (COFOG)<sup>43</sup>, however they have been adjusted and re-grouped to better fit the purposes of the analysis. The main adjustments made are the following:

- The category "**infrastructure and production-related**" spending corresponds to the COFOG category "economic affairs". The largest item under this category is government expenditure related to infrastructure, most notably transport, but also the energy sector. The COFOG category also includes a component for capital transfers, a significant part of which is for the purposes of recapitalising the financial sector. Given that the latter are not considered to be persistent costs, the category capital transfers is excluded.
- The category social protection has been broken down into the two sub-categories "**pensions**" and "**other social protection**". The rationale for the breakdown is that pension expenditure, which corresponds to old age and survivors' pensions, is largely determined by past government commitments. An important element of "other social protection" is unemployment expenditure, which is cyclically adjusted for this analysis.

<sup>43</sup> "The Functional Composition of Government Spending in the European Union", *Monthly Bulletin*, ECB, April 2009, pp. 91-99.



- “**Security**” consists of the COFOG categories “defence” and “public order and safety”.
- The category “**other**” comprises the relatively small COFOG categories of “environmental protection”, “recreation, culture and religion” and “general public services”. The latter excludes expenditures related to interest payments and contributions to the EU budget, which are viewed as being non-discretionary.

Data based on the functions of government allow the relevant developments in specific expenditure categories to be identified. By contrast the traditional government expenditure data from national accounts (government finance statistics) do not allow such analysis. They classify expenditures by differentiating between current expenditure (e.g. compensation of employees, intermediate consumption) and capital expenditure (e.g. investment). As shown in Section 2, education spending in particular is considered growth-friendly. But in national accounts this is split between current expenditure (e.g. wages for teachers and professors) and capital spending (e.g. investment in buildings). At the same time, expenditure recorded as investment spending can have very limited long-term growth effects, e.g. in the case of purchases of military equipment.

On the **revenue** side the analysis concentrates on four main categories according to the type of tax base: labour, capital (i.e. taxation on firms), consumption and property. The category of labour taxation mostly consists of taxes on the wage bill as well as payroll taxes and social security contributions paid by employers and employees.<sup>44</sup> Taxation of firms comprises taxes on the income or profits of corporations. Consumption taxes consist of VAT and excise taxes as well as some minor taxes paid by households. Finally, property taxes are the summation of those taxes paid by households related to property and wealth, such as capital taxes as well as taxes on land and other assets. Since the analysis is restricted to tax revenue, other capital (i.e. extraordinary) revenue sources, such as privatisation receipts or receipts emanating from financial sector recapitalisation, are excluded.

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**Developments in expenditure categories show a stark change in behaviour during the period under study.** Before the start of the consolidation, increases in government spending were recorded across almost all categories of expenditure with the largest increases being concentrated in pension and health expenditure, as illustrated in Chart 4 (blue bars). These increases may not be purely discretionary on account of ageing populations. There were also significant increases in the particularly growth-friendly category of infrastructure and production-related expenditure. During the consolidation period (yellow bars) reductions occurred in all categories with the exception of pension expenditure. The consolidation relied significantly on cuts in education and infrastructure expenditure. In the case of the latter, however, the ratio of expenditure as a percentage of potential GDP remained constant overall for the period 2003-15, with the significant reductions during the consolidation period offsetting increases recorded pre-consolidation and post-consolidation. In the case of education, reductions have continued in the post-consolidation period (red bars). By contrast, in the post-consolidation period,

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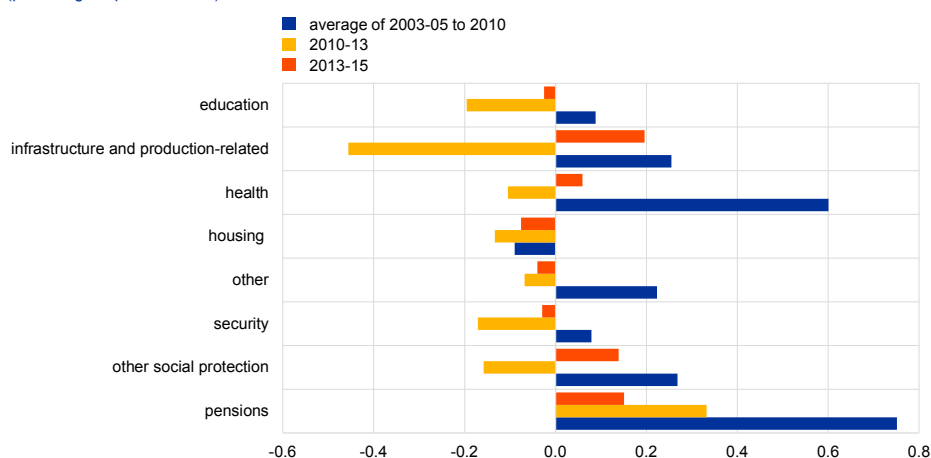
<sup>44</sup> This differentiation of tax revenues is motivated by the approach followed by the European Commission in its publication “Taxation Trends in the European Union: Data for the EU Member States, Iceland and Norway” (2016 edition).

expenditures on pensions have continued increasing, while in the categories health and non-pension social payments increases have largely reversed the cuts of the consolidation period.

#### Chart 4

#### Cumulative changes in the functional composition of the government primary spending of the euro area

(percentage of potential GDP)



Sources: The Eurostat database, the European Commission (AMECO database) and ECB calculations using OECD budgetary elasticities. COFOG sub-components for Spain for 2015 have been obtained from a national source.

Notes: The chart refers to the euro area aggregate excluding Latvia due to the lack of data on COFOG sub-components for the period 2003-06.

Cyclical adjustment of unemployment-related expenditure is based on the OECD elasticity appearing in Price, R., Dang, T. and Guillemette, Y., "New Tax and Expenditure Elasticity Estimates for EU Budget Surveillance", *OECD Economics Department Working Papers*, No 1174, OECD Publishing, Paris, 2014.

The category "infrastructure and production-related" excludes the capital transfers for the recapitalisation of the financial system.

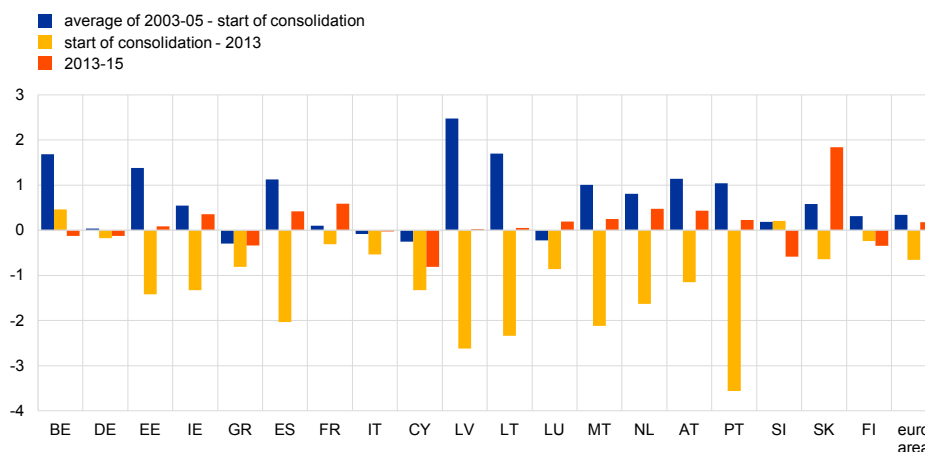
The blue bars represent the changes over the years leading up to and including the start of the financial crisis (2003-10). The average of 2003-05 is taken as the starting point, as this period can be characterised as "normal" times with on average closed output gaps for the euro area aggregate.

**Looking at developments in individual countries, in the period before the consolidation, significant increases in particularly growth-enhancing expenditures (education and infrastructure) were recorded in the majority of the euro area countries.** As illustrated in Chart 5 Greece, Luxembourg, Italy and Cyprus are the only countries that registered reductions in the aggregate of expenditures on education and infrastructure even before the crisis.

**Chart 5**

Cumulative changes in “education” and “infrastructure and production-related” expenditures for euro area countries

(percentage of potential GDP)



Sources: The Eurostat database and the European Commission (AMECO database). COFOG sub-components for Spain for 2015 have been obtained from a national source.

Note: The “start of consolidation” is country-specific to indicate the fact that different countries started their consolidation at different times. The starting year is defined as the year in which the largest deficit/lowest surplus in the cyclically adjusted primary balance was recorded. The start of the consolidation is thus set: at the end of 2008 for EE, LV, LT and MT; at the end of 2009 for BE, GR, ES and AT; at the end of 2010 for DE, IE, FR, IT, LU, NL, PT, SK and FI; and at the end of 2011 for CY and SI. The start of consolidation for the euro area 19 is defined as the end of 2010, the year in which the highest deficit in the cyclically adjusted primary balance was recorded.

**During the consolidation period, expenditure on education and infrastructure investment suffered the largest reductions in most countries.** Expenditure reductions were registered in all euro area countries except Belgium and Slovenia. The reductions were particularly large in the countries with the strongest adjustment needs. Ireland, Greece, Portugal and Cyprus registered reductions up to 2013, while the reductions have continued beyond 2013 in Greece and Cyprus.

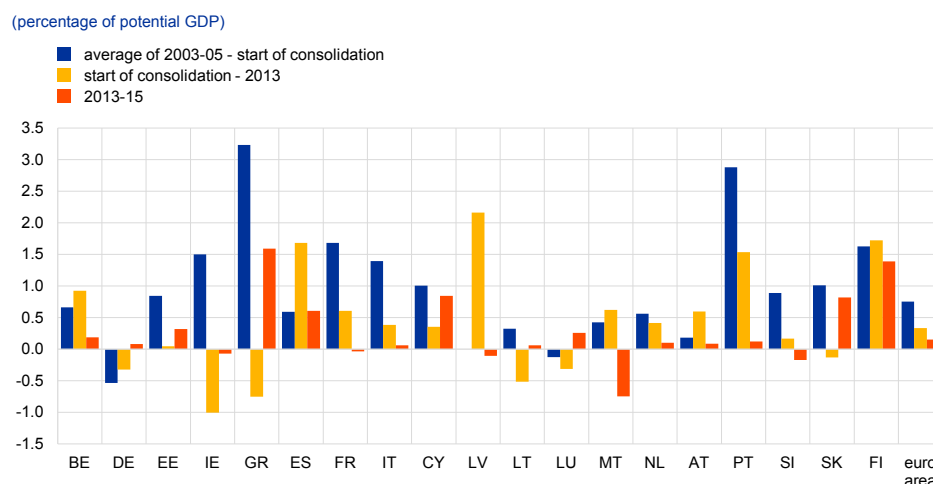
**Expenditure on infrastructure and education registered increases in the years 2014-15 in many countries, thus partly reversing the reductions in the consolidation period.** As illustrated in Chart 5, since 2013 expenditures that are particularly growth-enhancing have recovered overall, but in 2015 they were still below pre-consolidation period levels. Increases were recorded in over half of the euro area countries. Germany, despite the absence of pressing consolidation needs, has, however, slightly reduced the ratio of expenditures on education and infrastructure as a percentage of potential GDP. The increases observed in other countries are largely in the category of infrastructure expenditure. In the case of education, the drop in the expenditure as a percentage of potential GDP even continued in 2014-15 in the majority of the euro area countries. The decline, however, does not necessarily translate fully into reduced expenditure per student as there is a declining population share of the young generation.

**It is also relevant to consider the efficiency of the growth-enhancing expenditures in terms of outcomes.** It is remarkable that some of the countries with the biggest cuts in expenditures on education and infrastructure after the financial crisis were also those with the biggest increases during the boom period that preceded it. Consequently, the adjustments after 2009 also to some extent

mirror unsustainable developments before the onset of the crisis in which some expenditure was not well targeted and had low efficiency.

**Expenditure on pensions is the only category to register increases in most countries throughout 2003-15, including during the consolidation period.** As shown in Chart 6, increases were particularly strong in Greece and Portugal before the onset of the consolidation, while Germany and Luxembourg were the only countries which recorded decreases. During the consolidation episodes, increases continued in the majority of countries, while significant reductions occurred in some of the programme countries. However, these reductions were smaller than the increases in the years before. Pension expenditures continued increasing in the majority of euro area countries after 2013, also reflecting a further rise in the share of older people in the population. This shows that the pressure from an ageing society will continue to limit governments' room for manoeuvre in the coming years as further increases in the share of elderly people are projected.

**Chart 6**  
Cumulative changes in old age and survivors' pension expenditure for euro area countries



Sources: The Eurostat database and the European Commission (AMECO database). COFOG sub-components for Spain for 2015 have been obtained from a national source.  
Notes: No COFOG data on pensions are available for Latvia for the period 2003-06. Consequently the euro area aggregate refers to the euro area 18 excluding Latvia.  
The "start of consolidation" is country-specific to indicate the fact that different countries started their consolidation at different times. The starting year is defined as the year in which the largest deficit/lowest surplus in the cyclically adjusted primary balance was recorded. The start of the consolidation is thus set: at the end of 2008 for EE, LV, LT and MT; at the end of 2009 for BE, GR, ES and AT; at the end of 2010 for DE, IE, FR, IT, LU, NL, PT, SK and FI; and at the end of 2011 for CY and SI. The start of consolidation for the euro area 18 is defined as the end of 2010, the year in which the highest deficit in the cyclically adjusted primary balance was recorded.

**Overall, expenditure in the most growth-friendly categories was reduced over the consolidation years, but pension expenditure increased steadily over the entire period.** This finding is particularly relevant taking into account that pension expenditure amounts to more than a quarter of government expenditure in the euro area, while expenditures in the growth-friendly categories of education and transport represent less than a fifth.

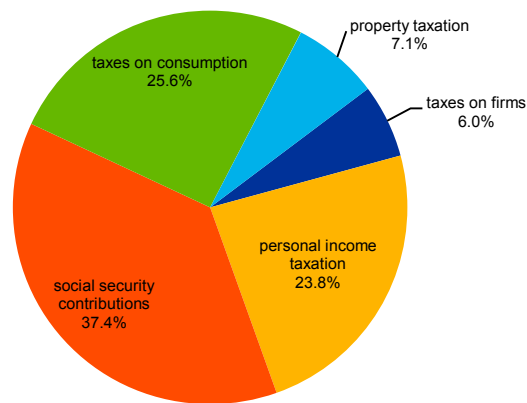
### 3.3 Government revenues

Developments on the revenue side can be assessed across four broad categories of tax revenue, namely property taxation, taxes on consumption, labour taxation and taxation on firms. Chart 7 illustrates the shares for these broad tax revenue categories for the euro area as whole. Labour taxation, which is the summation of personal income taxation and social security contributions, accounted for over 60% of taxation revenue, while taxes on firms only amounted to 6%. The categories of property and consumption taxation that have been shown to be less distortionary accounted for close to a third of taxation revenue.

**Chart 7**

Shares of the various categories of euro area tax revenue in 2015

(percentage of tax revenue)



Sources: The Eurostat database, the European Commission (AMECO database) and ECB calculations using OECD budgetary elasticities.

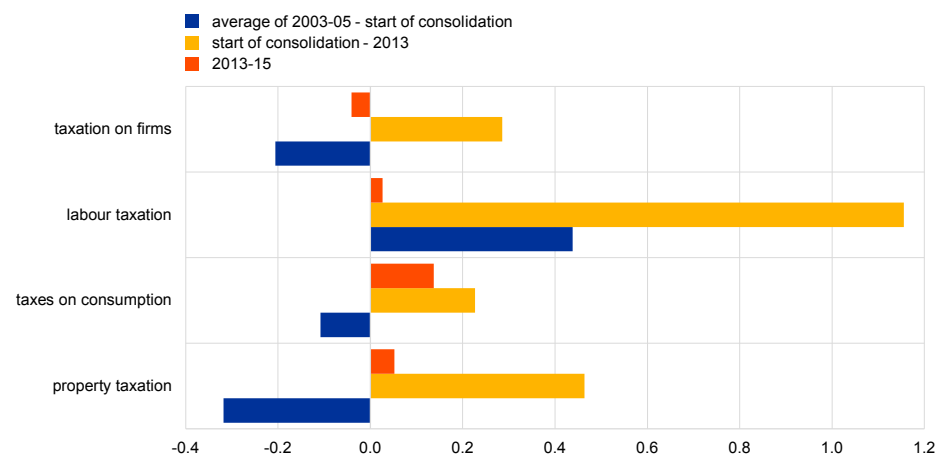
Note: The category labour taxation corresponds to the aggregation of personal income taxation and social security contributions.

**Before the consolidation period, increases in labour taxation were offset by reductions in the other tax categories.** As illustrated in Chart 8, it is remarkable that taxation on firms, consumption and property were decreasing on average during the period 2003-10. One notable exception was Germany, where the revenue share from labour taxation decreased substantially and the revenue share from consumption taxes increased.

## Chart 8

### Changes in cyclically adjusted categories of revenue for the euro area aggregate

(percentage of potential GDP)



Sources: The Eurostat database, the European Commission (AMECO database) and ECB calculations using OECD budgetary elasticities.

Note: Cyclical adjustment of the various revenue categories is based on the OECD elasticities appearing in Price, R., Dang, T. and Guillemette, Y., "New Tax and Expenditure Elasticity Estimates for EU Budget Surveillance", *OECD Economics Department Working Papers*, No 1174, OECD Publishing, Paris, 2014.

**During the consolidation period governments relied significantly on more distortionary taxes, most notably labour taxation, for consolidation.** As shown in Chart 8, the increases were mostly concentrated on labour taxation. In particular considerable increases were recorded in the countries that had high consolidation needs, such as Greece, Portugal and France. The increases in revenues from corporate taxation observed during the consolidation period reversed to a certain extent the lower reliance on these revenues in the period leading up to it.

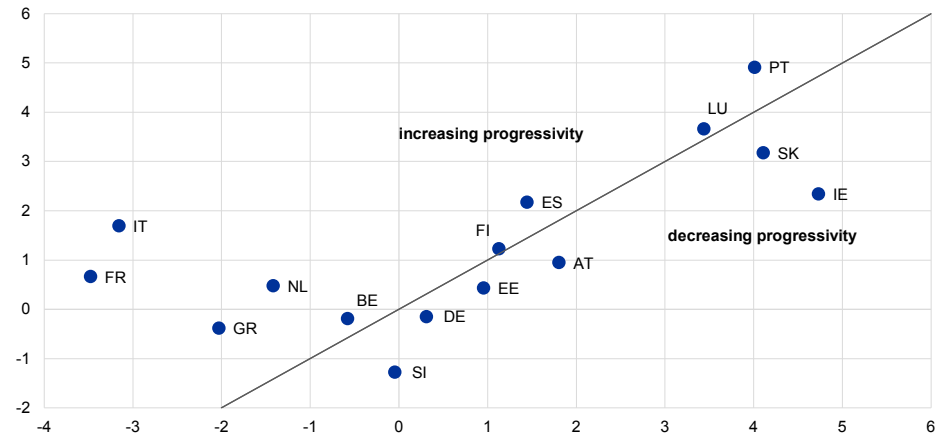
**Since 2013 revenue shares have shifted towards the less distortionary taxation categories.** Reliance on property and consumption taxation has continued to increase, while taxation on firms has recorded a small decrease.

**Both the relative share of labour taxation and the degree of tax progression are relevant for growth.** As shown in Chart 9, many euro area countries resorted to hikes in labour taxes when the need for fiscal consolidation was particularly pressing. Chart 9 shows the changes in the tax wedge on labour (i.e. the ratio of personal income taxes and social security contributions to the corresponding total labour cost for the employer) for single earners receiving 67% and 167% of the mean national income, respectively. The graph demonstrates that most countries in the sample increased the tax burden on high-income earners, while four of them (most notably France and Italy) reduced the burden on low-income earners.

### Chart 9

#### Changes in the average tax wedge on labour (beginning of consolidation until 2015)

(in percentage points, x-axis: for a single earner at 67% of average earnings; y-axis: at 167% of average earnings)



Source: *Taxing Wages 2017*, OECD publishing, Paris, 2017.  
Note: The line indicates the 45 degree line.

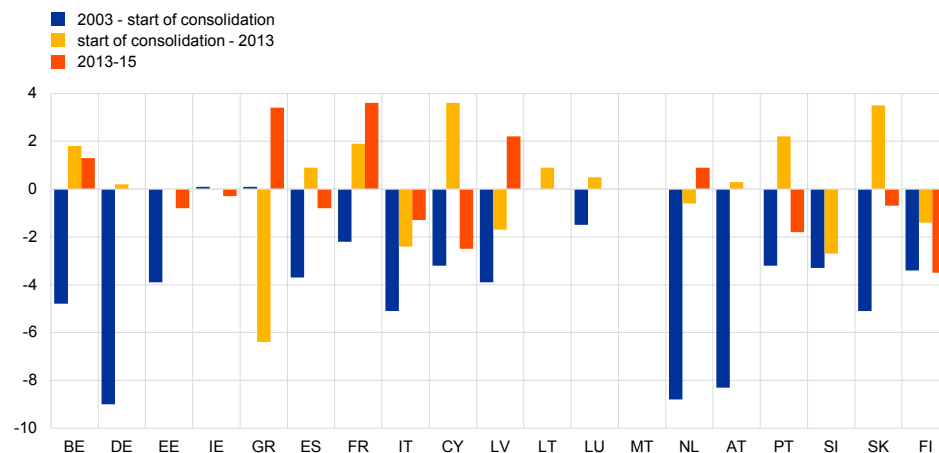
**Corporate income tax rates were not increased significantly, either during the consolidation period or afterwards.** Chart 10 shows the effective average tax rate (EATR)<sup>45</sup>, which represents the effective tax burden on profitable investment. It takes into account the current tax code of each country, in particular concerning statutory tax rates and the definition of the tax base. In the first period, we see a general trend towards reducing the tax burden on firms, possibly also reflecting intensifying tax competition. During the consolidation period and after 2015, only a few countries resorted to increases in corporate taxes to generate additional revenues. Overall, the effective tax burden for firms is now lower in most countries than it was before the boom.

<sup>45</sup> EATR are based on calculations by the Centre for European Economic Research (ZEW), 2016.

## Chart 10

### Changes in the EATR on corporate income

(in percentage points)



Sources: Spengel, C., Schmidt, F., Heckemeyer, J. H., Nicolay, K., Bartholmeß, A., Bräutigam, R., Braun, J., Dutt, V., Evers, M. T., Harendt, C., Klar, O., Nusser, H., Olbert, M., Pfeiffer, O., Steinbrenner, D., Streif, F. and Todtenhaupt, M., *Effective Tax Levels using the Devereux/Griffith Methodology, Project for the EU Commission TAXUD/2013/CC/120 Final Report*, ZEW, Mannheim, 2016.

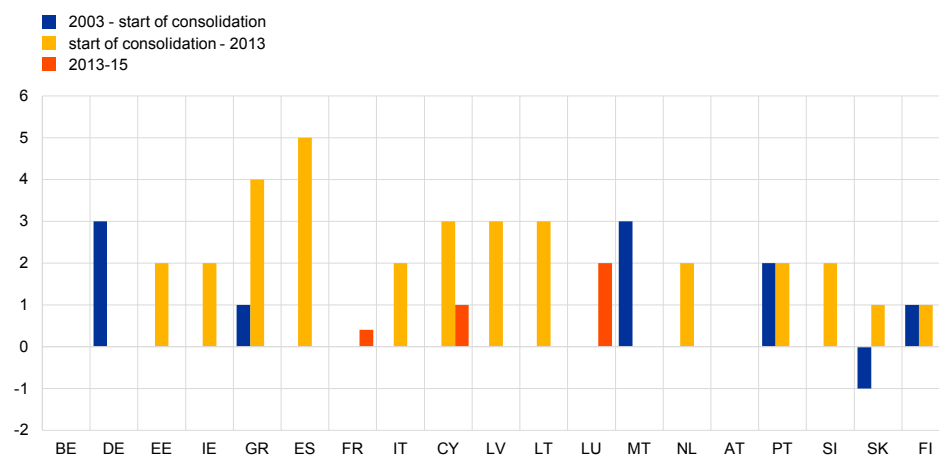
### For consumption taxes there is a pattern of increasing VAT rates.

Chart 11 shows the changes in the standard rates of VAT, which are a good proxy for the tax burden on consumption given that VAT is the predominant source of revenue from indirect taxation. Almost all countries increased the tax burden on consumption. Rates were increased particularly strongly in the consolidation period (especially in countries undergoing adjustment programmes), but some countries also increased their VAT rates after the adjustment. Increases in consumption taxes also took place in many euro area countries in the form of a broadening of tax bases, as goods were shifted from reduced to standard rates, and in the form of higher excise tax rates.

## Chart 11

### Changes in the standard rate of VAT

(in percentage points)



Source: *VAT rates applied in the Member States of the European Union: Situation at 1 January 2017*, European Commission, Taxud.c.1, 2017.

Note: Empty columns indicate that there was no change in the standard rate of VAT in the jurisdiction and period concerned.



**Overall, while taxation in the most distortionary categories (e.g. labour taxation) increased over the consolidation period, since 2013 governments have relied more on less distortionary taxation.** This finding is particularly relevant taking into account that labour taxation is the largest component of tax revenues. The European Commission<sup>46</sup> developed a horizontal indicator-based assessment methodology to help identify the need and scope for shifting the tax burden from labour to other revenue categories that are less detrimental to growth. The analysis using data for the period 2011-13 demonstrates that around one-third of the EU Member States show a need and scope for growth-enhancing shifts of taxation from labour to other tax bases.

## 4 Summary and policy implications

**Changes in euro area public finances over recent years illustrate the risks that fiscal vulnerabilities cast on the growth-friendliness of public revenues and expenditures.** Overall, the composition of budgets has become less growth-friendly over time during the 2003-15 period analysed, mainly due to the policy response to the crisis (see Chart 12). During the pre-consolidation period (2003-10) expenditure increased across the board, with the largest peaks concentrated in pensions and health spending, which are considered to be less growth-friendly. In the consolidation period (2011-13), there was significant reliance on the more distortionary taxes for increasing revenues, most notably labour taxation, while expenditure cuts centred on the growth-friendly categories of education and infrastructure investment.<sup>47</sup> However, it is encouraging to observe some tendencies towards improving the growth-friendliness of budgetary composition since 2013, with a tax shift towards less distortionary taxation and a partial recovery in certain growth-friendly expenditures.

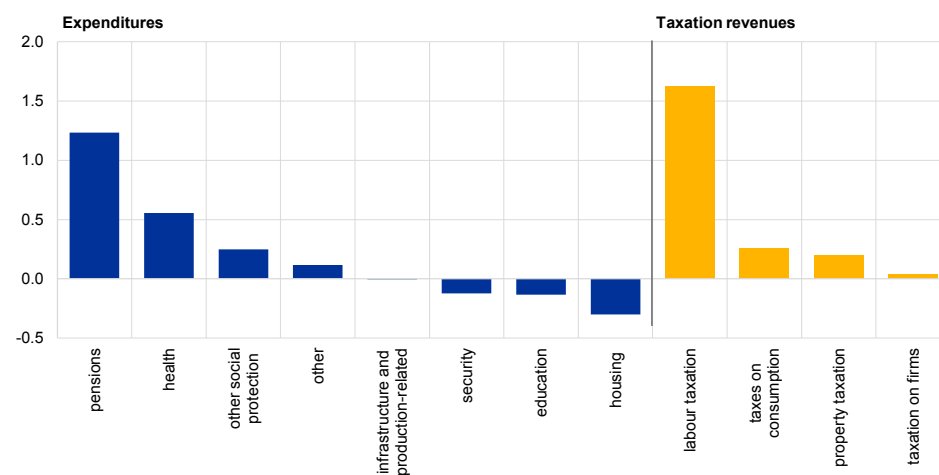
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<sup>46</sup> Wöhlbier, F., Astarita, C. and Mourre, G., "Growth-Friendly Tax Structures: An Indicator-Based Approach", *German Economic Review*, forthcoming.

<sup>47</sup> See also "Taxing times", *IMF Fiscal Monitor*, October 2013.

**Chart 12****Cumulative changes in expenditure and tax categories of the euro area**

(average 2003-05 to 2015, percentage of potential GDP)



Sources: The Eurostat database, the European Commission (AMECO database) and ECB calculations using OECD budgetary elasticities. COFOG sub-components for Spain for 2015 have been obtained from a national source.

Notes: For the expenditure categories the chart refers to the euro area aggregate excluding Latvia due to the lack of data on COFOG sub-components for the period 2003-06.

Cyclical adjustment is based on the OECD elasticity appearing in Price, R., Dang, T. and Guillemette, Y., "New Tax and Expenditure Elasticity Estimates for EU Budget Surveillance", *OECD Economics Department Working Papers*, No 1174, OECD Publishing, Paris, 2014.

The category "infrastructure and production-related" excludes the capital transfers for the recapitalisation of the financial system.

**Looking ahead, there is now a need to improve the composition of public budgets in line with the long-term growth objective.** In particular, it should be possible to lower the tax burden in a budget neutral way. The revenue share of labour taxation has increased significantly during the consolidation period and cutting it should be quite beneficial for growth. Greater reliance could be placed on the less distortionary tax bases of consumption and property: shifting towards taxation of property can also be equity-friendly. Moreover, the most growth-friendly reforms to personal income taxes are those which reduce the burden of low-income earners and second earners, and the resulting higher labour participation of these two groups contributes to lower inequality in labour income. According to OECD data, in 2016 the average tax wedge for low-income earners amounted to 37.6% and was substantially higher than the OECD average (32.3%). On the expenditure side, particular care should be devoted to redirecting more resources towards the areas of health, education or infrastructure, as such spending has been shown to have positive long-term effects on growth, while cutting less productive spending. The long-term economic growth effect coincides with a reduction in the share of those who are at risk of being unemployed or precariously employed.

**Country-specific factors have to be considered when designing policies for a more growth-friendly budgetary composition.** The trends identified at the euro area level are heterogeneous across countries. All other things being equal, for a country which has a very high public expenditure share it should be relatively more worthwhile to cut expenditures and thus create fiscal space for reducing distortive taxes. By contrast, for a country with a small public sector it may be more appropriate to increase tax revenues from non-distortionary sources if there is a need to strengthen productive expenditure. To determine the growth-friendliness of

public finances it is also important to look at microeconomic data and efficiency studies at country level. A weak tax administration induces evasion activities that are inefficient and leads to an unfair tax competition between informal firms and formally registered firms (IMF Fiscal Monitor, 2017). More efficient tax collection can also create fiscal room for reductions in distortionary tax rates. On the expenditure side, the efficiency of public spending is crucial to maximise the economic effect of spending using the available resources. In this regard, studies show a great heterogeneity of expenditure efficiency across euro area countries.