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The quality of public finances and economic growth

Salvador Barrios and Andrea Schaechter

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The quality of public finances and economic growth

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Abstract:

Improving the quality of public finances (QPF) has become a new focus for European policy makers. This focus is largely a response to preparing the European economies for the dual challenge of ageing populations and increased exposure to global competition. Better QPF can help tackle both challenges: either directly through fiscal consolidation, pension and expenditure reforms or indirectly by creating conditions in support of long-term growth as expenditure and revenue systems become more efficient and less distortionary. At the EU level, the Stability and Growth Pact and the Lisbon Strategy for Growth and Jobs provide, in principle, the appropriate tools for fostering such policies, but in practice both instruments have not yet focused much on QPF which is a common component of both tools. This is partly because a broad-based conceptual framework on what makes up QPF has been missing. This paper attempts to close this gap by developing a multi-dimensional approach on QPF. The framework aims at bringing together the many different pieces of QPF that have so far mostly been studied in isolation. The paper summarises empirical findings on the links between QPF and growth, reviews how EU Member States fare in those aspects and analyses some links between QPF and growth based on a growth-accounting approach, using discriminant analysis.

Key words: Public finances, fiscal policy, public spending, fiscal governance, expenditure efficiency, revenue systems, growth accounting

JEL classification: E62, H11, H50, H52, H60, H61

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Executive summary

How can fiscal policy support sustained long-run economic growth, while at the same time ensuring the commonly accepted goal of sustainable fiscal positions? This question has emerged in recent years as a new focal point for EU policy makers and is often captured under the heading of 'improving the quality of public finances' (QPF). QPF can be viewed as encompassing all arrangements and operations of fiscal policy that support macroeconomic goals, in particular long-term economic growth. Thus, in contrast to past discussions on the short-term impact of fiscal policy on aggregate demand, QPF focuses on fiscal policy's role for raising the long-run growth potential. This shift largely reflects the need to prepare Europe's economies for a dual challenge: their ageing populations, which will put additional demands on public finances and globalisation which raises international competition, increases factor mobility and potentially heightens exposure to external shocks.

The important role that fiscal policy should play in this respect has already been recognised in the EU's economic and fiscal governance framework. In particular, the Lisbon Strategy for Growth and Jobs stresses the intertwining between fiscal policies and structural reforms and suggests several fiscal policy avenues to support growth, including a stronger focus on growth-enhancing public spending categories and tax structures as well as mechanisms for greater effectiveness. At the same time, the revised Stability and Growth Pact (SGP) underlines the importance of several dimensions of QPF for an effective implementation of the EU's fiscal surveillance framework.

Much analysis on the individual links between fiscal policy and economic growth has been carried out in the past, but a systematic and comprehensive approach that can serve as a basis for improved fiscal surveillance has been missing. This paper attempts to close this gap by providing a multi-dimensional framework of QPF which sets out six key channels through which fiscal policy impacts economic growth. Even though the links between the different dimensions of QPF and growth, on the one hand, and between various QPF dimensions themselves, on the other hand, are very complex and not yet always fully understood, a number of empirical regularities have emerged. Keeping some caveats in mind, such as potential simultaneity of economic growth and QPF and time lags between the implementation of policies and their effects, the key findings can be summarised as follows.

The *size of governments* tends to matter for economic growth, especially if large public sectors are combined with short-comings in other dimensions of QPF. It is clear that the size of the public sector reflects past and current political choices that go beyond the macroeconomic goal of sustained economic growth. In particular, income distribution and social cohesion considerations also play a role, and some countries have been quite successful in achieving both objectives simultaneously. However, on average, empirical studies find that when governments become too large they tend to hamper long-run growth as they often go hand in hand with higher tax burdens and inefficient public administrations. Thus, overall there is a need to consider many factors simultaneously, such as other policy objectives and the types, financing and efficiency of expenditures, in an assessment of the costs and benefits of large governments.

Sound and sustainable fiscal positions are preconditions for growth over the medium and long run. The EU's fiscal framework draws on this link which is also confirmed by our empirical work. The estimates substantiate earlier findings of a negative relation between public debt and growth, but the issue of endogeneity of debt and deficits to growth conditions should not be overlooked. When looking in more detail at the channels through which fiscal policies influence economic growth by using a growth-accounting approach, the

evidence tends to suggest that in countries with poor fiscal performance, private investment is less of a driver of growth. This indicates a possible crowding-out effect.

While both the size of the public sector and the debt/deficit can impair growth, an important conditioning factor is the *composition and efficiency of public expenditure*. Both theoretical and empirical research indicates that growth can be supported when public expenditure is oriented towards investment. This can be particularly relevant for investment in human capital (through education and health spending), technical progress (R&D spending) and public infrastructure. However, evidence also suggests that the link between the amount of spending in these areas and economic growth is not automatic, but depends largely on the ability to achieve the envisaged outcomes (e.g. higher education attainment, more private investment in R&D) and overcoming existing market failures without creating new distortions. Thus, high efficiency and effectiveness of public spending are key to maximising the potential of government outlays and creating fiscal space for other demands (e.g. from ageing populations).

Moreover, the *structure and efficiency of revenue systems* can be a factor for long-run growth. Since the tax structure affects labour supply and demand, incentives for investment, risk taking and human capital formation, it can hamper growth potential by creating various distortions. In addition to lowering the overall tax burden, which would have to go hand in hand with expenditure reforms, adapting tax structures in a revenue-neutral manner is a further important policy option. Such efficiency-enhancing tax reforms should also make tax systems more transparent and link them better to benefit systems.

Good *fiscal governance* can facilitate structural reforms and is beneficial for all dimensions of public finances. Fiscal governance represents the institutional side of fiscal policy as it comprises the set of rules and procedures that determine how public budgets are prepared, executed and monitored. The importance of fiscal governance has been confirmed in empirical studies, including studies conducted by the European Commission, which have found that EU Member States with strong fiscal rules, medium-term budgetary frameworks and independent budgetary institutions, have exhibited stronger budgetary positions and have been more successful in fiscal consolidations.

Non-budgetary items also form part of QPF, although in an indirect way, since *public finance policies can impact the functioning of markets and the business environment*. Well-functioning product, services and factor markets and low administrative burdens are usually conducive to a higher growth potential. Our preliminary empirical work suggests that total factor productivity and the skilled labour contribution to GDP growth are the greatest beneficiaries of economies with lower regulatory burdens. These two growth components, in turn, have played a prominent role for growth over the past two decades.

Overall identifying the links between QPF and growth and their interactions is a complex task, but the many aspects of QPF also offer policy makers a broad set of policy options. For example, a rather large public sector can remain compatible with strong growth prospects but only if at the same time budgetary positions and debt levels are sustainable, public administrations work efficiently, and spending and revenue systems do not create too large distortions on products and factors markets. Achieving this can be supported by strong fiscal institutions. Moreover, preliminary empirical findings indicate that QPF dimensions impact the various sources of GDP growth differently and therefore call for different growth strategies and country-specific measures.

1. Introduction

Improving the quality of public finances (QPF) has emerged as a new focus for European policy makers. In particular, QPF has entered as a new aspect into the revised Stability and Growth Pact from 2005 and the Lisbon Strategy for Growth and Jobs. The latter assigns public finances to support the goals of stronger, lasting economic growth and more and better jobs in an environment of more closely integrated markets and greater global competition⁽²⁾. A linchpin of this strategy remains ensuring sound fiscal positions and safeguarding the long-term sustainability of public finances in light of the adverse demographic developments that most European countries are facing. But sound budgets are no longer enough. They need to be accompanied by new ways of economising on the delivery of public services and, at the same time, creating conditions supportive of long-term growth, competitiveness and a better resilience of economies to shocks⁽³⁾.

In support of the new policy priorities, a host of analytical and empirical work on QPF has already been carried out. In the European Union, the Economic Policy Committee (EPC) – Working Group on QPF, which was formed in 2004, served as a key exchange on cross-country experiences. At the same time, the European Commission conducted its own analytical work in a number of QPF areas, in part to support the EPC Working Group. Both focused predominantly on the link between the composition of public expenditure and growth (e.g. European Commission 2003, 2004), the role of fiscal governance (e.g. European Commission 2006a, 2007a, Curristine et al. 2007, Joumard et al. 2004) and most recently expenditure efficiency (e.g. Afonso et al. 2003, 2006, Afonso and St. Aubyn 2006a,b, Mandl et al. 2008). In the literature, one can also find a large set of theoretical and empirical analysis in all of the above and additional areas (e.g. taxation and growth).

However, a conceptual framework that captures the various dimensions of QPF and their impacts on growth, and which could serve as a basis for upgrading EU fiscal surveillance, has remained a key gap. This paper attempts to fill this gap by developing a multi-dimensional approach on QPF. The framework aims at bringing together the many different pieces of QPF that have so far mostly been studied in isolation. Specifically, it reviews the findings of earlier studies on issues such as the size of the public sector, composition and efficiency of expenditure, the structure of tax systems, fiscal institutions and sustainability and reviews how EU Member States fare in those aspects (Section 2). Moreover, it attempts to lay out the possible links of QPF to growth from a supply-side approach of growth accounting, using discriminant analysis, provides some preliminary findings and identifies avenues for future work (Section 3).

⁽²⁾ See Integrated Guideline No. 3 of the Lisbon Strategy for Growth and Jobs (2005): "To promote a growth- and employment-orientated and efficient allocation of resources, Member States should, without prejudice to guidelines on economic stability and sustainability, re-direct the composition of public expenditure towards growth-enhancing categories in line with the Lisbon strategy, adapt tax structures to strengthen growth potential, ensure that mechanisms are in place to assess the relationship between public spending and the achievement of policy objectives, and ensure the overall coherence of reform packages." For more information on the Lisbon strategy see the Commission's Web site http://ec.europa.eu/growthandjobs/index_en.htm.

⁽³⁾ The ECOFIN council has set out the need to improve the quality of public finances in several statements (e.g., May 2008, October 2007, June 2007, January 2006).

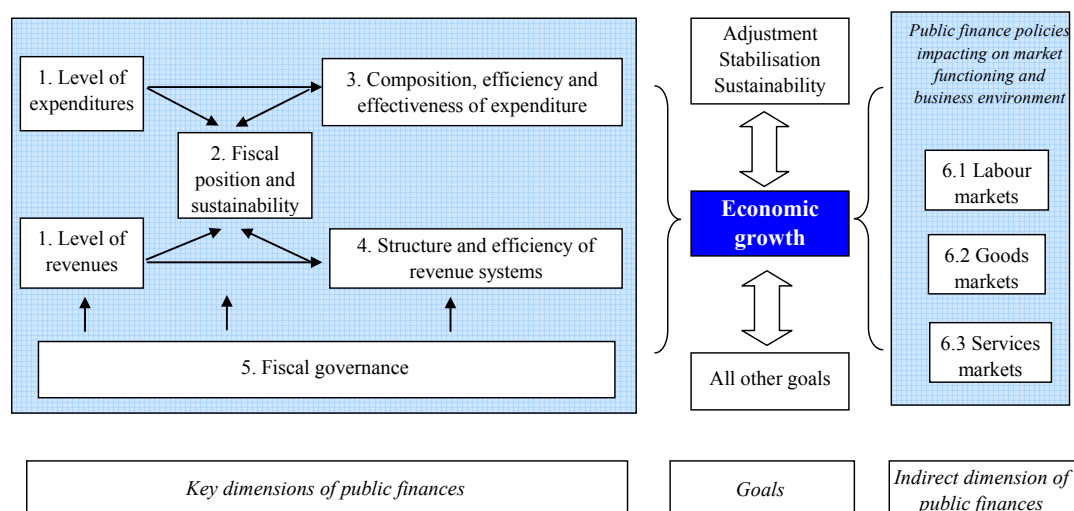
2. The multiple dimensions of quality of public finances

2.1. DEFINING THE QUALITY OF PUBLIC FINANCES

Quality of public finances (QPF) is a concept with many dimensions. It can be viewed as encompassing all arrangements and operations of fiscal policy that support the macroeconomic goals of fiscal policy, in particular long-term economic growth. Thus, 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.

The different dimensions of quality of public finances in a growth-oriented framework are summarised in Graph 1. It indicates that the impact on growth can run through six channels⁽⁴⁾: (i) the size of the government, (ii) the level and sustainability of fiscal positions, (iii) the composition and efficiency of expenditure and (iv) the structure and efficiency of revenue systems. At the same time, the set-up of fiscal rules, institutions and procedures ((v) fiscal governance) can affect all of the above four dimensions. Moreover, there are many ways in which public finances can impact the functioning of markets and the overall business environment, which can therefore be viewed to be a sixth, though indirect, dimension of QPF.

Graph 1: The quality of public finances: a multi-dimensional framework



Conceptualising QPF as a multi-dimensional framework is needed to reflect the complex relationships to growth. A one-dimensional approach, for example focusing solely on the level of expenditure items that raise productivity, would overlook that such spending may be financed through a higher and distortionary tax burden. A multi-dimensional perspective

⁽⁴⁾ While not using the label 'quality of public finances', for example the European Central Bank (2001) employs a similar classification on the links between fiscal policies and economic growth.

thus helps overcoming this 'omitted variables problem'. It also highlights that achieving some of the QPF aspects can reinforce others. For example, greater efficiency in spending can facilitate ensuring fiscal sustainability, either directly by creating additional fiscal space or indirectly through higher growth if efficiency it is also translated into lowering the overall tax burden. Similarly, a less distortive revenue structure can impact growth and thereby contribute to achieving sustainability. However, assessing these interlinkages empirically is extremely difficult due to data availability, an incomplete understanding of the transmission mechanisms and reversed causality. Thus, a simplification of some dimensions is called for ⁽⁵⁾.

Even though the conceptual framework here explicitly uses economic growth as the ultimate benchmark to assess QPF, it should not be overlooked that large parts of fiscal policies have other objectives. In particular social spending, which accounts for about 55% of public spending in the EU, has primarily redistribution, insurance and consumption-smoothing motives. Similarly, many revenue policies, such as a progressive income tax, are geared toward redistribution of income or the allocation of resources toward specific sectors. This framework does not aim to capture how well public finances perform in achieving those other objectives. Nevertheless, it allows to capture some of these aspects indirectly. For example, an efficient use of social expenditure geared toward better social cohesion will help avoid an unnecessary tax burden on the economy or crowding out of investment-related public spending and thereby indirectly also serve the growth objective.

2.2. THE SIZE OF GOVERNMENT

2.2.1. Why do governments differ in size?

Economic theory provides two main strands of arguments why the size of public sectors can be expected to differ over time and across countries ⁽⁶⁾. The first line of arguments builds on Wagner's Law, according to which the government's share in GDP increases more than proportionally in GDP. As nations get wealthier, the demand for public goods expands while at the same time the ability to raise revenues rises. Examples for the driving forces behind a greater demand for public goods are a greater urbanisation of countries or ageing of populations. A supply-side explanation has been added known as 'Baumol's disease'. It argues that the government share rises because public sector wages increase more strongly than public sector productivity while the demand for public services is relatively price-inelastic ⁽⁷⁾.

The second strand of arguments is of a political economy nature. To get re-elected, fiscal policy, in particular expenditure policy, tends to be time inconsistent and biased toward higher deficits and bigger public sectors. This tendency is stronger, the larger the number of parties forming the government, the higher the frequency of elections and in case of proportional rather than majority-based election systems (e.g. Persson and Tabellini, 1999, 2002). Another political economy argument bases the size of governments on rent-seeking agents who support larger public sectors with the objective of benefiting from a redistribution of income (see Shleifer and Vishny, 1998).

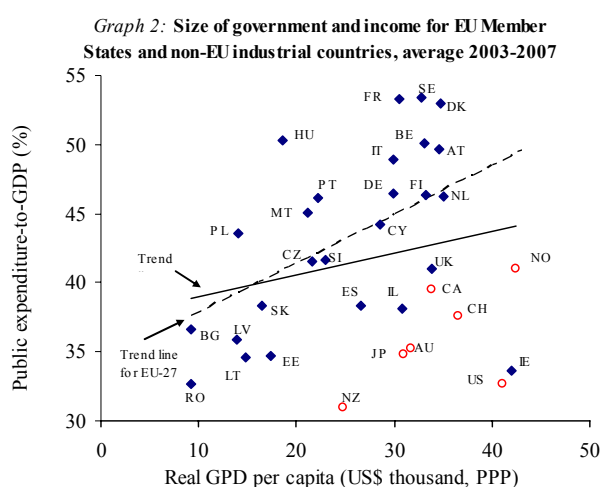
⁽⁵⁾ A good starting point to structure the channels through which public finances affect growth is a neoclassical production function framework (see Section 3). Output growth is herein determined by changes in the stocks and utilisation of capital and labour and total factor productivity. The six dimensions of QPF can have a direct or indirect bearing on each of the components of the production function (see for example Gerson (1998) for a similar approach).

⁽⁶⁾ See for example Holsey and Borchering (1997) and Peacock and Scott (2000) for an overview of the literature.

⁽⁷⁾ Baumol's (1967) distinguished more generally the productivity growth in services and manufacturing but his model has then been transferred to public services.

Aside from these arguments, the size of the public sector ultimately reflects political choices. How much of public goods to provide (e.g. public infrastructure, environmental protection, defence, law and order) and how to address market failures and externalities depends on country-specific circumstances that are partly a reflection of policies (e.g. competition regulations) and objectives (e.g. income distribution) and partly exogenous (e.g. geopolitical situation or socio-cultural features). A classical case are different social models with those providing more generous insurance also contributing to a more equitable income distribution but at the price of a higher tax burden on the economy. But even when a choice is made to provide a public service, such as education, it does not necessarily mean that it has to be 'produced' by the public sector itself but it could be merely financed with public funds (e.g. education grants) and offered by private service providers.

A simple graphical inspection of recent data for the EU Member States and a few non-EU comparators reveals only a weak link between the size of the public sector and income. Graph 2 indicates that, while varying widely, the expenditure-to-GDP ratio is only weakly correlated with per capita GDP when assessing the averages of the past five years for the EU Member States and seven non-EU industrial countries⁽⁸⁾. The correlation is somewhat stronger when the non-EU comparators are excluded from the sample, since they exhibit an above average income but a below average size of government.



Developments over time substantiate the diversity across countries⁽⁹⁾. Only six of the 24 countries considered (excluding the transition-country recently acceded Member States) exhibit an upward trend while most follow a hump-shape curve with a peak in the first half of the 1990s. Expenditure reforms, fiscal consolidations and the benefits of euro-area membership (with lower inflation and interest rates) have since brought down somewhat the expenditure-to-GDP ratios in 17 of the 24 countries considered here. But nevertheless, the public sectors continued to be bigger in 2003-07 than in 1980-84 in more than half of the economies

Table 1: Changes in the expenditure-to-GDP ratio between 1980-1985 and 2003-2007

Change Level (2003-2007)	Increase		Decrease	
	More than 5% of GDP	Less than 5% of GDP	More than 5% of GDP	Less than 5% of GDP
Below 35% of GDP		JP	IE	NZ, US
Between 35 and 45 % of GDP	CY, IL	AU, AT, LU, NO, ES, CH	CA, SE	UK
Above 45% of GDP	PT	FI, FR, IT, MT	BE, NL	DK, DE

Source: IMF International Financial Statistics.

⁽⁸⁾ The non-EU countries included as comparators are Australia, Canada, Japan, New Zealand, Norway, Switzerland and the United States. Since not all of those countries are included in the Eurostat (Ameco) database going back to 1980, the data shown in charts including non-EU comparators have been taken from the IMF *International Financial Statistics*. The expenditure-to-GDP ratios are on average about one percentage point lower than the corresponding figures from the Eurostat (Ameco) database.

⁽⁹⁾ For a detailed study on how public expenditure has evolved in industrial countries over the past century see Tanzi and Schuknecht (2000).

(Table 1). At the same time, public sectors in old EU Member States have remained significantly larger than those in the non-EU comparators, with the differences in size fluctuating between 8½ and 12% of GDP since 1980.

Econometric studies confirm the mixed evidence on Wagner's Law. They tend to find a positive relation between the public expenditure-to-GDP ratio and per capita income only for some countries and certain time periods (Table 2) ⁽¹⁰⁾. Typically when low and high-income countries are included in a panel analysis, a significant link is established. However, for OECD countries the empirical backing for Wagner's Law is weak, particularly since the 1970s (e.g. Arpaia and Turrini, 2008).

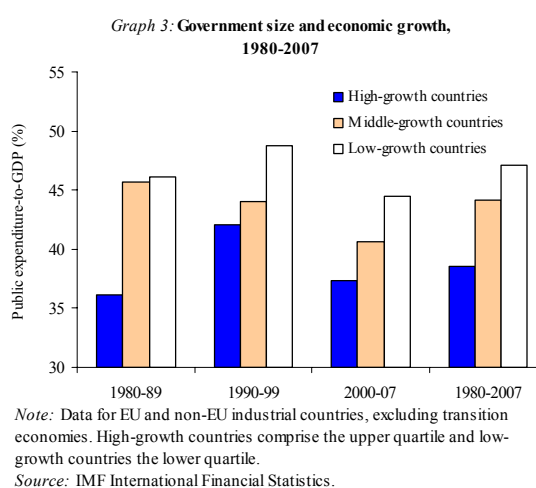
Table 2:

Empirical evidence for Wagner's Law: a summary of findings			
Authors	Country coverage	Sample period	Confirmation of Wagner's Law?
Arpaia and Turrini (2008)	EU-15 countries	1970-2003	Only for countries with below median income and fast ageing populations
Akitoby et al. (2004)	51 developing countries	1970-2002	Yes
Wahab (2004)	24 OECD countries	1950-2000	No
Martinez-Mongay (2002)	18 OECD countries	1960-1999	Yes
Kolluri et al. (2000)	G7	1960-1993	Yes
Bohl (1996)	G7 countries	1952-1995	Only for Canada and the UK.
Payne and Ewing (1996)	22 industrial and developing countries	1950-1994	Only for 6 of the 22 countries

2.2.2 What are the implications for economic growth?

The theoretical literature argues that the long-term link between the size of government and economic growth is hump-shaped. When the government sector is very small, long-term growth could be increased by raising productivity of capital and labour through the provision of public goods. The marginal increase is positive but decreasing with the size of the public sector and becomes negative when the distortion that additional taxes create turn the productivity gains for the economy around. Where the turning point lies, remains a key question and depends on structural factors, such as the development stage of the economy, the composition of expenditure and tax structures chosen to fund public spending.

For many non-transition countries in- and outside the EU, larger public sectors have been associated with below average real GDP growth rates. Graph 3 depicts this bottom-line by grouping non-transition economies in the EU and the seven non-EU comparators by growth and size of the public sector, while not accounting for any other factors. During 1980-2007, high-growth countries (i.e. the upper quartile of the sample) had significantly smaller governments than those that grew less rapidly. Countries with the lowest real GDP growth rates (i.e. the lowest quartile) were also those with the highest expenditure-to-GDP ratios. This finding is robust for the three decades since 1980 as well as the entire sample period.



⁽¹⁰⁾ Some of the earlier empirical work, which tended to support Wagner's Law, was later found to have been biased since the variables were non-stationary.

Most empirical studies that explicitly consider also other variables than just the public sector size confirm an association of larger governments with significantly lower real GDP growth rates ⁽¹¹⁾⁽¹²⁾. Out of the nine studies surveyed in Table 3 for industrial countries (all prepared relatively recently between 1997 and 2008), eight find a significantly negative relation to growth. This is in line also with earlier papers. Nevertheless, the empirical studies are not without problems. In particular, the question of causality is an issue since higher growth can facilitate reducing the government sector. Moreover, the cross-country evidence overlooks that some individual countries have succeeded in maintaining rather high growth rates despite relatively large public sectors since they also fared strongly on other dimensions of QPF (e.g. fiscal positions and sustainability, efficiency of spending and fiscal governance).

Table 3:

Empirical findings on the link between government size and growth: a survey of recent studies

Authors	Country coverage	Sample period	Effect on growth	Measure for size of public	Other explanatory variables	Estimation method
Afonso and Furceri (2008)	28 OECD and EU countries	1990-2004	Significantly negative	Public revenues, public expenditure	Initial GDP per capita, investment share, initial human capital, population growth rate, openness, output volatility, expenditure volatility, several time dummies	Panel regression fixed effects
European Commission (2006c)	OECD countries	1975-2000	Significantly negative	Public consumption	Initial GDP per capita, share of indirect taxation, openness, R&D share, investment share, Fraser index of economic freedom	Panel regression fixed effects
Garcia-Escribano and Mehrez (2004)	18 OECD countries	1970-2001	Significantly negative	Public revenues, public consumption	Initial GDP per capita, budget balance, direct taxes, other revenues, social benefits, subsidies, labour force growth	Panel regression, random effects technique, IV method
Romero de Avila and Strauch (2003)	EU-15	1960-2001	Significantly negative	Public expenditure	Other control variables only used in estimations that also split public spending by economic function	Panel regression
Dar and Khalkhali (2002)	19 OECD countries	1971-1999	Significantly negative	Public expenditure	Growth rates of real gross fixed capital formation, real exports, labour	Swamy-Mehta random coefficients approach
Bassanini, Scarpetta and Henning (2001)	21 OECD countries	1971-1988	Significantly negative	Public revenues	Lagged real GDP, physical capital accumulation, human capital stock, population growth, ratio of direct to indirect taxes, trade openness	Panel regression
Heitger (2001)	21 OECD countries	1960-2000	Significantly negative	Public expenditure	Total investment, growth of labour force, secondary enrolment rate, GDP relative to the U.S.	GLS
Foelster and Henrekson (1999)	23 OECD countries	1970-1995	Significantly negative	Public revenues, public expenditure	Initial GDP, demographic variables	Panel regression, weighted least squares, 2SLS for first differences
Agell, Lindh and Ohlsson (1997)	23 OECD countries	1970-1990	Significantly negative	Public revenues, public expenditure	Initial GDP, demographic variables	Cross-section OLS

Notes: IV = Instrumental variables method; 2SLS = two-stage least squares method. The results by Bassanini et al. (2001) are also presented in OECD (2000).

In addition to the link to long-term growth, the size of government also matters for the automatic stabilisation properties of fiscal policy. For instance, in case a negative demand shocks occurs and nominal spending is left unchanged, the expenditure-to-GDP ratio rises providing a positive counterbalancing effect to the shock. Consequently, many studies have pointed to a trade-off between the stabilisation benefits of larger governments and the negative implications for long-term growth (e.g. Martinez-Mongay and Sekkat 2003, Brunila et al. 2003). However, under certain circumstances this trade-off can largely be resolved. Buti et al. (2003) present a model in which taxation not only affects aggregate demand but also aggregate supply (higher taxation steepens the supply curve and the underlying Phillips-curve, i.e. it deteriorates the inflation-unemployment trade-off). In such a setting, a larger

⁽¹¹⁾ However, in a seminal paper Easterly and Robelo (1993) using a cross-section data set for the period 1970-1988 for 100 developing and industrial countries find that the link between fiscal variables (other than public investment in transportation and communication) and budget deficits is statistically fragile. For example, the authors find a significant negative relation between the expenditure-to-GDP ratio and real per capita GDP growth in their base regression but when they add other explanatory variables (monetisation and trade openness of the economy) the effect is no longer significant.

⁽¹²⁾ Bjørnskov et al. (2007) make an attempt to link government size and life satisfaction, which could be viewed as a measure for welfare. In a study for 74 countries the authors find that life satisfaction decreases with higher government consumption. However, this negative link decreases with higher overall government effectiveness.

government sector helps stabilise output in case of demand shocks but would destabilise output in case of supply shocks, if the government size exceeds a certain threshold. The authors find that the maximum stabilising size of government is lower for small open economies. Their models suggest a threshold of about 35% of GDP for small open economies and somewhat higher or about 40% of GDP for large open economies. Thus, Buti et al. suggest that reducing the government size with the aim to eliminate distortions and encourage long-run growth, is not necessarily detrimental for the functioning of automatic stabilisers. The multi-dimensional framework of QPF presented here argues in the same vein. Larger public sectors do not necessarily have to impinge on the growth potential if distortions are kept low enough through, for example, efficient expenditure and flexible markets.

2.3. FISCAL DEFICITS AND SUSTAINABILITY

Sound fiscal positions, over the medium and long term, are a precondition for macroeconomic stability and sustainable economic growth. The EU fiscal framework is built on this premise with the added perspective that irresponsible fiscal policies would interfere with centralised monetary policy-making and spill over to other members of the monetary union and create costs for them⁽¹³⁾.

The main transmission channels from large deficits and high debt to growth can be summarised as follows⁽¹⁴⁾. In all channels, public debt impinges on savings and investment decisions. First, large public debt may raise the real interest rate and thereby crowd out private investment. Second, if economic agents view the current fiscal policy to be unsustainable, they would increase their savings to protect against future tax increases. Similarly, investment may be discouraged if future returns are expected to be taxed at higher rate. This could in part also lead to capital flight. The same applies in case of great fluctuations in fiscal policies complicate long-term decision-making by private agents. And third, ill-designed consolidation efforts to reduce deficits and debt, for example through cuts in public investment, may negatively impact long-run growth. A similar effect can be expected from distortionary attempts to reduce the interest costs of public debt, for example through special tax concessions for public debt holders.

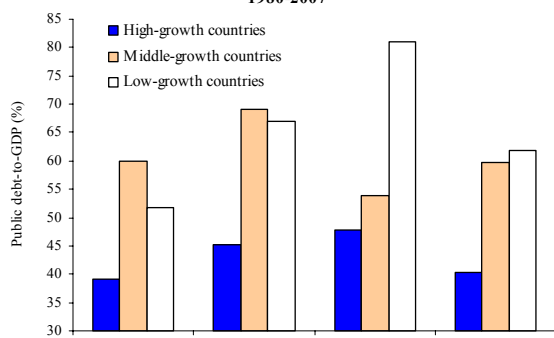
Empirical evidence broadly supports the negative link between fiscal deficits and public debt and growth. In many growth regressions, for industrial and/or developing countries, these fiscal performance variables have been identified as negative contributors to growth (e.g. Tanzi and Chalk, 2002, Pattillo et al., 2004, Easterly and Rebelo 1993). But one needs to caution against the problem of reversed causality (i.e. higher economic growth also helping to bring down the debt-to-GDP ratio). This problem is also inherent when illustrating the simple bi-variate relation of public debt and growth in Graph 4. The data for EU Member States and the non-EU comparators illustrate that high-growth countries had significantly lower public debt-to-GDP ratios than those that grew below average⁽¹⁵⁾. Moreover, high-debt EU Member States were also those with rather large public sectors (Graph 5).

⁽¹³⁾ For an overview of the motivation and functioning of the EU fiscal framework see for example European Commission (2008a) and contributions in Brunila et al. (2003).

⁽¹⁴⁾ Tanzi and Chalk (2002) distinguish six channels for the links between high public debt and growth in the EU. The presentation here, while broadly following their arguments, condenses them to three.

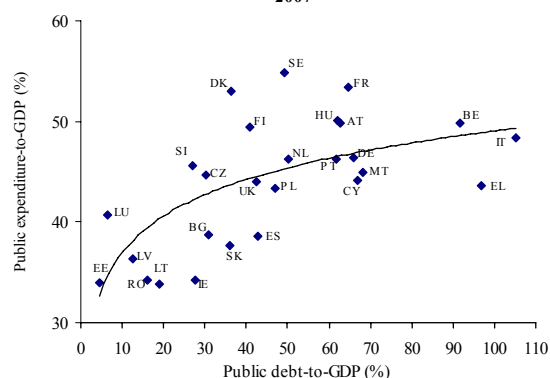
⁽¹⁵⁾ The findings illustrated in Graph 4 remain broadly unchanged if one excludes Luxembourg (which has a very low debt level) and the new Member States Cyprus and Malta from the sample.

Graph 4: Level of debt size and economic growth, 1980-2007



Note: Data for EU and non-EU industrial countries, excluding transition economies. High-growth countries comprise the upper quartile and low-growth countries the lower quartile.
Sources: Commission services and IMF International Financial Statistics.

Graph 5: Level of public debt and size of governments, 2003-2007



Note: Data are averages for 2003-07 for EU Member States and non-EU industrial countries.
Sources: Commission services and IMF International Financial Statistics.

Going forward, some EU Member States are in a precarious situation. They are at high risk that their public finances become unsustainable given their current debt levels and fiscal positions and in view of projected costs from pension and long-term care systems (see European Commission, 2006b). This could consequently also have negative implications for their long-term growth prospects, in particular in view of already large, and potentially rising, public sectors.

There is also some evidence that fiscal policy variability is associated with lower growth. In particular, Fatas and Mihov (2003) find that for a set of 91 countries higher volatility of discretionary government spending significantly increased output variability which in turn lowered growth⁽¹⁶⁾. The latter link is however not significant for OECD countries. In a recent study, Afonso and Furceri (2008) show that not only discretionary changes in expenditure matter but also cyclical ones. They find that in EU countries a higher volatility of the cyclical component of public expenditure has worsened the growth performance⁽¹⁷⁾.

2.4. THE COMPOSITION AND EFFICIENCY OF EXPENDITURE

In recent years, European policy makers have stressed that shifting expenditure toward 'growth-enhancing' areas and becoming more efficient in the use of public resources are key avenues for supporting growth. The Lisbon Strategy for Growth and Jobs, specifically Integrated Guideline No. 3 (see Section 1), makes explicit reference to both objectives. In particular, the role of expenditure composition has been studied in great detail and country experiences have been analysed to draw policy lessons⁽¹⁸⁾. Given this wealth of earlier work, only a brief summary is provided below, with a focus on efficiency of expenditure, which has moved to the centre of attention more recently.

⁽¹⁶⁾ A problem in such studies is the potential reversed causality between output volatility and expenditure volatility. Fatas and Mihov (2003) attempt to account for this by measuring discretionary government spending variability as the variance of the residuals derived from a regression which explains real government spending in terms of real GDP, various control variables and deterministic components such as time trends.

⁽¹⁷⁾ For a wide sample of industrial and developing countries from 1960-2005, Herrera (2007) finds a positive relation between fiscal policy volatility (measured as the variation coefficient of public expenditure growth) and real GDP volatility. He associates the latter with lower growth. A caveat of the broad sample is that it also includes crisis countries.

⁽¹⁸⁾ See for example European Commission (2003, 2004) and the papers in Deroose and Kastrop (2008).

2.4.1. Composition of expenditure

While theory offers a framework to identify 'growth-enhancing' types of expenditure, in practice this assessment is difficult to make. In theory, public expenditure that provides public goods and addresses market failures and externalities can be growth enhancing. In practice, this could apply to, for example, creating public infrastructure, giving liquidity-constrained households and small and medium-size enterprises access to credit to invest in human and physical capital or creating a social safety net where the market fails to provide for it. All these types of expenditure can raise labour and capital productivity. More generally, public investment is associated with a higher marginal productivity than public consumption. However, these examples also highlight that the underlying identification problems of expenditure as 'productive' is intrinsically linked to the existence of public goods, the type of market failure and externality and the ability of public spending to resolve it without creating greater distortions (Gerson, 1998).

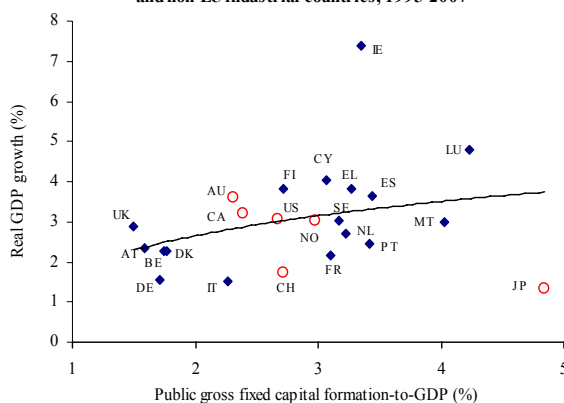
Against the backdrop of such methodological difficulties, empirical studies have nevertheless identified certain types of expenditure that have been associated with higher growth. Government expenditure has thereby either been broken down by economic or functional classifications (or, in some cases, a combination of the two).

Using the economic classification, the results for public investment have been mixed. Gerson (1998), who reviews some of the empirical studies, reports that a positive link between total public investment and growth is only found in some cases. More recent studies are also inconclusive. For example, Romero de Avila and Strauch (2003) estimate public investment to have a positive effect on growth in the EU, while Afonso and Furceri (2008) do not find public investment to be significant in explaining growth in the EU and OECD. By contrast, public transfers and consumption are typically estimated to negatively impact growth. There are two possible explanations for these findings. First, the share of public investment in the EU is rather small at about 3% of GDP which limits its potential impact on long-run growth. On the other hand, public consumption is large at 21%. Thus, empirical studies which include both variables in growth regressions may pick up the negative impact of the size of governments rather than the composition of public spending. And second, it appears that well-targeted public expenditure, rather than overall public investment, is growth enhancing. This follows from studies that combine the economic with the functional classification, and show that investment in certain areas, in particular transportation and communication, appears to be more systematically matched with higher growth (see Gerson, 1998).

Graph 6 shows data for the EU and the non-EU comparators for 1995-2007 indicating a weak positive bi-variate correlation between overall public investment and growth – however, without taking any other factors into account.

Using a functional classification, the types of public expenditure that have been found to raise growth vary strongly with the data sample. Some studies find only education, R&D and public infrastructure spending to be growth enhancing, others also include spending on health, public order and

Graph 6: Public investment and economic growth in the EU17 and non-EU industrial countries, 1995-2007

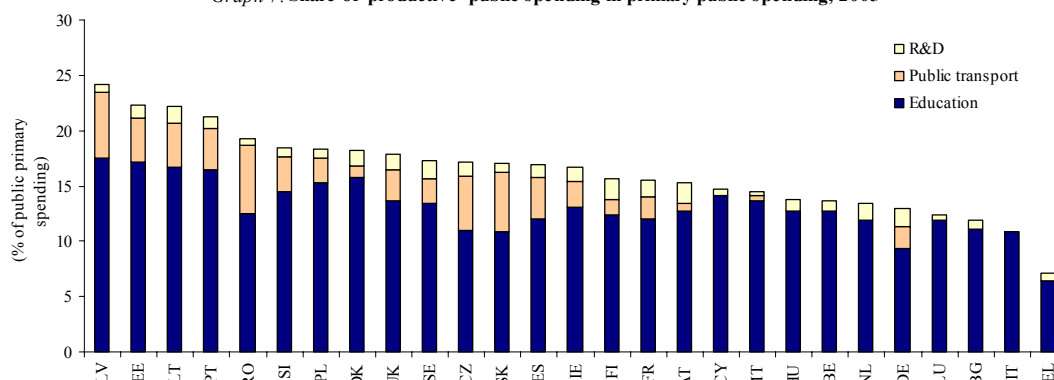


Note: EU-17 comprise the EU-15 and Cyprus and Malta. Data are averages for 1995-2007, excluding New Zealand.

Source: Commission services.

safety, and environment protection (European Commission, 2003, 2004). For illustrative purposes, we use a tight definition in Graph 7 (R&D, public transportation and education spending). In that case, the share in total public primary spending ranges from less than 13% in Germany (of those countries with complete data) to more than 24% in Latvia (if a wider definition is used, it can be up to 45 % of total public outlays, see European Commission, 2004). It is striking that particularly most transition economies are allocating a rather high share of public resources to these productive purposes, which may partly reflect their catching-up needs and the support from the cohesion policy programmes.

Graph 7: Share of 'productive' public spending in primary public spending, 2005



Note: 2005 or latest date available. For BE, BG, CY, EL, HU, IT, LU no data is available on public transportation spending and for IT also no data on R&D spending.
Sources: Commission services, Eurostat and OECD.

Overall, empirical evidence seems to support the hypothesis that certain types of public expenditure can foster while others may deter economic growth. The latter tends to be particularly the case when spending is not well targeted and its financing creates negative externalities (through high debt levels or distortionary taxes). Thus, a reallocation of public resources alone cannot be a sufficient strategy to improve the QPF but it needs to be supplemented by a more efficient use of public resources, which would also allow lowering the size of the public sector and create fiscal space for new demands.

2.4.2. Efficiency and effectiveness of expenditure

Assessing the efficiency and effectiveness of public spending is a focal point when analysing the QPF as it establishes the link between the input of public resources and the output (efficiency) and outcomes (effectiveness) that they create. Empirically, however, this analysis faces many challenges.

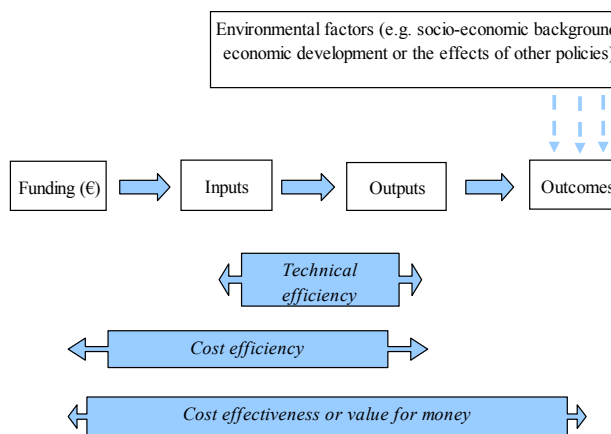
Approaches to measuring expenditure efficiency ⁽¹⁹⁾

The key challenges comprise data requirements and weaknesses with statistical estimation methods. The different types of data needed to calculate efficiency of expenditure categories are summarised in Graph 8. The amount of public *funds* used for the various policy objectives (e.g. education, health or R&D spending) needs to be identified. While these data may be available to individual governments, they are often not publicly accessible and comparable across countries. The publication of the COFOG data by the EU-27 has been a major step forward in that respect but the breakdown into ten functional groups has still not

⁽¹⁹⁾ See also European Commission (2008a) on how to capture public sector efficiency and productivity in national accounts.

proved to be sufficient for more detailed analysis⁽²⁰⁾. Due to these data shortcomings, but also to neglect differences in factor prices, studies often focus on 'technical' *inputs* instead (e.g. the number of teachers, doctors, nurses and researchers). Similarly, decisions need to be made on choosing relevant *output* variables, such as educational attainment, number of cured patients or life expectancy. And finally, these outputs should be closely linked with the ultimate policy objectives or *outcomes*, such as a higher labour productivity, higher quality of life or faster technical progress⁽²¹⁾. In the 'production process' the outputs and outcomes are also affected by *environmental factors* (e.g. parents' educational attainment impact that of their children and dietary habits affect health policy outcomes), which may or may not be within the realm of policy makers. And lastly, the choice of statistical methods to estimate efficiency matters. Non-parametric and parametric methods can be distinguished differing by the assumptions about the shape of the efficiency frontier and the treatment of environmental variables (see Box 1). Both methods measure (in)efficiency as the distance to a production possibility (efficiency) frontier.

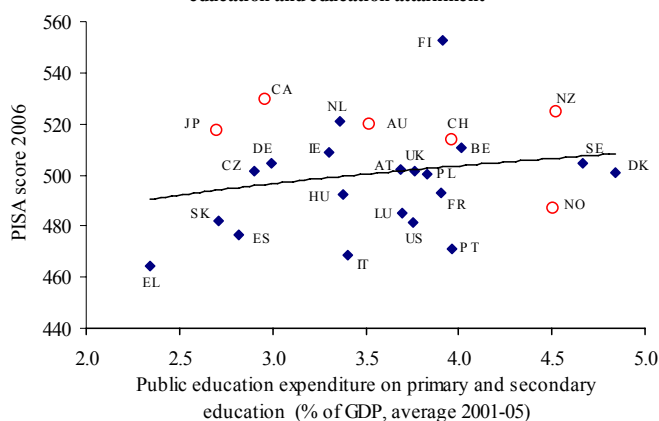
Graph 8: The concepts of efficiency and effectiveness



Education spending

Given the role that education attainment can play to enhance growth, it is important to understand whether public resources on education are used in an efficient way⁽²²⁾. Just raising the level of public education spending does not seem to be enough, even though it is typically found to be growth-enhancing, since the empirical link between education spending and student performance is rather weak (see for an overview Verhoeven et al., 2007 Greenwald et al. 1996, Hanushek and Kimko, 2000, and Hanushek, 2002). This is also reflected in Graph 9 where no correlation can be detected between the amount of public expenditure on primary and

Graph 9: Public expenditure on primary and secondary education and education attainment



Note: Expenditure data for AT, CA and NZ are from OECD for 2000-2004.
Source: OECD PISA study 2007 and Eurostat.

⁽²⁰⁾ For example, COFOG-I does not include data on R&D or public infrastructure spending. However going forward, this information would be part of COFOG-II.

⁽²¹⁾ Since outcomes are particularly hard to determine, empirical studies often focus on efficiency rather than effectiveness measures. Thus, in the rest of this section, we will only use the term efficiency, but it should be clear that higher effectiveness is the ultimate objective.

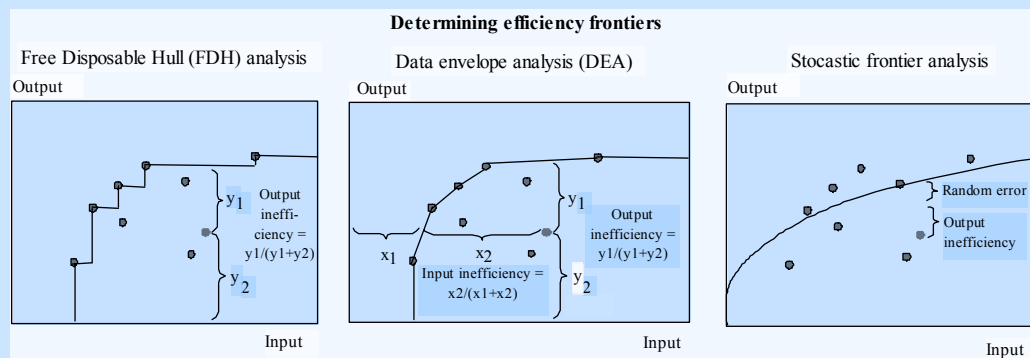
⁽²²⁾ See Hanushek and Woessmann (2007) and Abu-Ghaida (2007) on the link between education skills and growth.

Box 1: Approaches to estimate efficiency

The decision of using non-parametric or parametric approaches in empirical studies on expenditure efficiency, is strongly linked to the underlying data set. For cross-country comparisons at a macroeconomic level, non-parametric approaches have been particularly popular (e.g., Afonso and St. Aubyn 2006a, 2006b, Hauner 2007, Sutherland et al. 2007, Verhoeven et al. 2007). For micro-level data (e.g. school level) or cross-section data, also parametric approaches have been used (e.g., Pereira and Moreira 2007, Sutherland et al. 2007 and Kempkes and Pohl 2007). Both approaches have different features which are briefly reviewed below. Common to both methods are the problems of identifying appropriate indicators (as described in the text) and determining the appropriate lag structures to capture that policy measures may impact outputs and outcomes with a considerable delay. In practice, period averages are frequently used which also solves the problem of cyclicity.

Non-parametric approaches

They construct an envelope around the observed combinations of inputs and outputs. The Free Disposable Hull (FDH) approach does this in a step-wise way; the Data Envelope Approach (DEA)⁽¹⁾ in a continuous way, which assumes convexity (see graph below). FDH and DEA use linear programming methods to estimate the frontier allowing for multiple inputs and outputs. Thereby, each country's efficiency is calculated relative to that of its peers. Efficiency is measured as the distance between a country point and the efficiency frontier, defined as a linear combination of best practice observations⁽²⁾. Efficient countries have scores of one, inefficient ones have scores between zero and less than one. For example, an input efficiency score of 0.6 would indicate that the same output could be produced with only 60% of the inputs. By definition, the countries (or other decision-making units) with the lowest input and the highest output are efficient.



Non-parametric approaches have several caveats⁽³⁾. First, estimates are very sensitive to measurement error, outliers and sample size. Since each observation can determine a segment of the efficiency frontier, outliers will affect the efficiency score for all its peers. In the same vein, when a relevant observation which represents best practices has been omitted from the sample, it may lead to an overall overestimation of efficiency. Second, the number of inputs and outputs that can be used is limited. A too great number would result in the programming exercise delivering too many efficient linear combinations, possibly resulting in all countries being efficient. And third, DEA analysis does not take into account environmental factors. For example, education outcomes are also a function of income or parent attainment. To account for this, DEA scores are in a second step regressed on a set of explanatory variables, most of which can be influenced by policy makers only over the long run. This is typically done through censored regression techniques (Tobit) or bootstrap methods. The efficiency scores are then corrected for the impact of exogenous factors. For example, the efficiency score of a country with an above average income and parent attainment would be revised downwards.

Box 1: (continued)

Parametric approaches

They estimate a stochastic efficiency frontier assuming a specific functional form (e.g., a Cobb-Douglas type function). When compared to the DEA, the frontier will be fit through the cloud of data points rather than enveloping it (see graph above). Using further assumptions, the residual is then decomposed into two components: a random error term and an inefficiency term. While parametric approaches rely on strong assumptions and require a large number of observations, they also have several advantages. They explicitly deal with statistical noise and incorporate environmental variables directly in the efficiency estimates. Moreover, they allow in principle standard statistical testing.

⁽¹⁾ The DEA originates on work by Debreu (1951), Koopmans (1951) and Farrell (1957) and was extended by Charnes et al. (1978) and Faere et al. (1994).

⁽²⁾ For an analytical description of the linear programming problem see for e.g Afonso et al. (2006) or Hauner (2007).

⁽³⁾ Drawbacks of non-parametric and parametric approaches are summarised for example in Sutherland et al. (2007) and Cincera et al. (2008). The former also offer options on how to overcome some of the caveats.

secondary education (during 2000-2004) and education attainment as measured by the latest PISA scores for EU and OECD countries (²³). Thus, a more efficient use of public resources on education has become a key objective of policy makers, in particular with the aim to raise educational attainment rather than to economise on education spending.

Efficiency estimates show large room for improvements in most countries. Focusing on output efficiency, a recent OECD study (Sutherland et al., 2007) for over 6.000 schools finds that the median school in the OECD could improve learning outcomes by 22% by using the same amount of resources (in the case of the study these comprise teacher-student-ratio, and computer availability) (²⁴). Afonso and St. Aubyn (2006a), using country-level data, find somewhat smaller margins for improvement of on average 13%. Both studies are correcting their estimates for environmental factors (²⁵). The efficiency estimates and country rankings are rather sensitive to the estimation method, the definition of the input and output variables (²⁶) and the countries included in the study. Nevertheless, across various studies a pattern emerges which is summarised in Table 4. Ireland, Finland and Japan are consistently in the most efficient group of countries largely because they achieve far above average PISA scores. On the other hand, Portugal and

Table 4:

Estimates for education spending efficiency

Most efficient quartile	Middle two quartiles	Least efficient quartile
FI, IE, JP, PL, PT, SK	BE, CZ, ES, FR, IT, HU, NL, SE, UK, AU, CA, NZ, DE, DK, EL, LU, NO, US CH	

Notes: The classification is based on estimates of technical and cost efficiency, which are corrected for environmental variables, in Afonso and St. Aubyn (2006a), Sutherland et al. (2007) and Verhoeven et al. (2007). The quartiles are determined by the average rank across a number of specifications in these three papers.

⁽²³⁾ The Programme for International Student Assessment (PISA) is an internationally standardised assessment in the domains of reading, mathematical and scientific literacy.

⁽²⁴⁾ When these estimates of technical efficiency are translated into cost efficiency estimates, the room for improvement shrinks to 5%. This is largely due to the use of country-level rather than school-level data for the cost efficiency estimates and the lower number of observations and degree of variation.

⁽²⁵⁾ Cross-country studies for industrial economies that use an FDH or DEA approach without such correction include Clements (2002), Herrera (2007), Herrera and Pang (2005), Mattina (2007), Mattina and Gunnarsson (2007) and Kuhry et al. (2004).

⁽²⁶⁾ Afonso and St. Aubyn (2006a) use the teacher-student ratio and hours taught per year as input, the average PISA scores as output, and per capita GDP and parent attainment as environmental variables.

Slovakia are considered to be relatively efficient despite their below average PISA scores because their use of technical resources has been rather economical⁽²⁷⁾. Poland combines both aspects: a slightly above average PISA score with below average use of resources.

Analysing ways to achieve these efficiency gains lies beyond the scope of this paper, but the role of institutional factors should be mentioned. The OECD has created institutional indicators of the primary and secondary education sectors based on a questionnaire to its Member States (see Gonand et al., 2007). They include (i) the ability to prioritise and allocate resources, (ii) the type of management at the local level (outcome-focused, managerial autonomy) and (iii) service provision through benchmarking and user choice. For four of the countries (FI, JP, PT, SK) that have been identified above to be among the most efficient these indicators are available. Three of them (FI, JP, PT) are, according to the self-reported information, exceptionally strong in matching public education resources to specific needs. The other institutional strengths and weaknesses differ however. Outcome-focused management and managerial autonomy is particularly strong Slovakia, and benchmarking and user choice in Portugal.

Health spending

A second focus of empirical studies on public spending efficiency has been the health sector. The link to growth is twofold. First, fiscally sustainable health care systems avoid that additional pressures are created on public budgets that would expand the overall government size and/or crowd out other spending. And second, a healthier population can impact positively on labour input and productivity. At the same time, health care systems, by providing insurance against the risk of illness, allow to smooth consumption and help prevent poverty. Public health expenditure in the EU exceeds education expenditure and averaged 6.5% of GDP in 2005, ranging from 3.0% in Cyprus to 7.1% in the United Kingdom.

However, capturing efficiency of health spending is very difficult. Empirical work has proceeded in the same vein as for estimates on education spending efficiency (see summary findings of two studies in Table 5)⁽²⁸⁾. But while the PISA scores have been broadly accepted as useful outcome indicators, there is less consensus on health outcomes.

Variables typically include life expectancy or infant mortality, but it has been argued that better indicators would be quality-adjusted life years or number of avoidable deaths (which are available only for few countries)⁽²⁹⁾. The World Health Organization's (WHO) work in this regard, where countries were ranked according to the efficiency of their health care

Table 5:

Estimates for health spending efficiency

Most efficient quartile	Middle two quartiles	Least efficient quartile
CZ, ES, PO, PT	DE, DK, FI, FR, IT, JP, LU, HU, SE, UK	AU, CA, CH, US

Notes: The classification is based on estimates of technical and cost efficiency, corrected for environmental variables, in Afonso and St. Aubyn (2006b) and Verhoeven et al. (2007). The quartiles are determined by the average rank in both studies. Countries are only included if covered by both studies.

⁽²⁷⁾ It should be noted that the econometric studies use technical (e.g. student-teacher ratios) rather than monetary input variables. Moreover, it should be recalled that the countries with the highest output and the lowest input are automatically considered to be efficient when using non-parametric techniques.

⁽²⁸⁾ Cross-country studies for industrial economies that use an FDH or DEA approach without such correction include Herrera and Pang (2005), Lugaesi et al. (2007), Rätty and Luoma (2005), Mattina (2007), Mattina and Gunnarsson (2007) and Pommer et al. (2004).

⁽²⁹⁾ Ways to advance the analysis on health care sector efficiency are discussed in Häkkinen and Joumard (2007). They offer three options: system level analysis, disease level analysis and sub-sector level analysis (e.g., ambulatory care and pharmaceuticals). To assess the link between the QPF and growth, the first option seems preferable but it faces the problems discussed in the text.

systems, based on stochastic frontier estimates, has not been updated since it was met in 2000 with strong criticism.

Efficiency of public spending for other functions

Research on efficiency of other areas of public spending has been scarce. A recent study on the efficiency of public R&D spending (Cincera et al. 2008) conducts parametric and non-parametric (corrected for exogenous factors) estimations using private expenditure on R&D as an output variable, arguing that the public R&D spending is effective if it spurs private R&D. The authors find that non-EU industrial countries (Australia, Canada, Japan, New Zealand, Singapore, Switzerland and the US) outperform the EU⁽³⁰⁾. Using the COFOG classification, Eugène (2007) estimates the efficiency of public spending on public order and safety and the provision of general public services. He finds Austria, Denmark and Finland to be most efficient for the former and Denmark, Finland and the United Kingdom to be most efficient for the latter. However, these results can only be indicative since the estimates have not been corrected for exogenous factors. And finally, studies have attempted to measure the efficiency of social spending not from the economic growth perspective but linked to the objectives of poverty reduction, income redistribution and insurance provision. Work includes those by Afonso et al. (2008) and the European Commission (2008c). While the former paper finds the Nordic countries among the most efficient using a DEA approach, the latter work suggests a broader wider use of indicators.

2.5. STRUCTURE AND EFFICIENCY OF REVENUE SYSTEMS

The link between taxation and growth is very complex. While theory and empirical studies provide some broad lessons on which tax structures are typically associated with higher growth, the devil is in the detail⁽³¹⁾. For example, the ability of certain tax structures to enhance growth depends on the specific economic structures (e.g. the labour participation rate and share of shadow economy), institutional features (e.g. efficiency of tax administrations) and the interaction between specific taxes, tax expenditures and benefit systems. Thus, reforming tax systems with a view to supporting growth needs to take these country-specific circumstances carefully into account. Moreover, there is a complex link between the overall tax burden and economic activity, which depends on the type and efficiency of public expenditure that is being financed through public revenues.

An assessment is further complicated by trade-offs between the growth and other objectives. Tax systems' primary objective is to raise the necessary funds for public goods and services while at the same time reallocating income (e.g. through a progressive income tax), addressing externalities (e.g. through environmental taxes) or aiming to support a specific allocation of resources (e.g. as part of housing or industrial policy). Thus, a discussion of growth-enhancing tax structures has to either take these objectives as given or point to potential trade-offs and assess options to optimise them.

Focusing only on the growth objective, the literature on revenue structures offers a broad set of findings, but they remain nevertheless debated⁽³²⁾. In particular the choice of indicators is critical. For example, it is often difficult to find comparable marginal effective tax rates

⁽³⁰⁾ See also Mandl et al. (2008) for an overview on issues when assessing R&D spending efficiency.

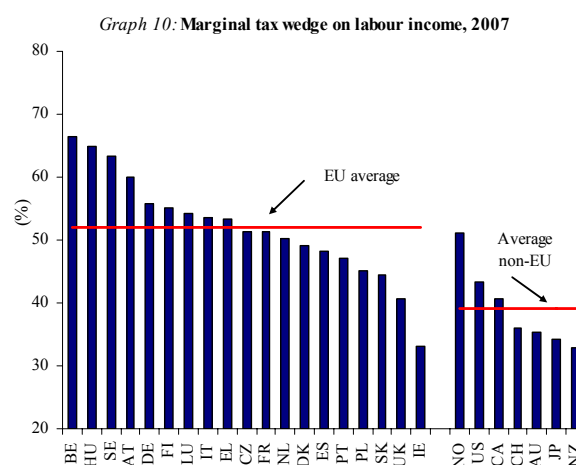
⁽³¹⁾ Clearly, this brief section here can only provide a rather simplified summary of a few key issues on the relationship between revenue structures and revenue system efficiency and growth.

⁽³²⁾ The ongoing OECD's project on 'Tax and economic growth' is analysing in detail the links between tax policies and growth and aims to identify tax policy priorities related to growth. A mapping of the different types of taxes and drivers of growth can be found in Heady (2007).

across time and countries, and results seem to vary with the development stage of economies ⁽³³⁾. Nevertheless, a main set of issues can be summarised as follows.

A shift from labour to consumption taxation can enhance growth. Indirect taxation has a wider tax base than labour taxation as it also taxes accumulated wealth and profit incomes. Thus, it is less distortive for labour markets. A revenue-neutral shift could reduce the tax rate on labour with positive implications for labour supply and demand. This hypothesis finds support in growth regressions and model simulations which identify a positive link between tax shift and growth (European Commission, 2008a, 2006c, 2007a, Gray et al., 2007, Garcia-Escribano and Mehrez, 2004, Bleaney et al., 2000).

A commonly used indicator to measure disincentives from labour taxation is the tax wedge. It captures the difference between what workers receive and what firms pay. A higher marginal tax wedge may discourage labour. In the EU, ⁽³⁴⁾ this labour tax wedge is significantly higher than in non-EU comparator countries (Graph 10). In particular countries with large public sectors tend to tax labour income highly, which could be problematic for growth. However, in five EU Member States (Ireland, France, Germany, Hungary, the Netherlands) tax reforms have helped to lower the marginal tax wedge by more than 5 percentage points between 2000 and 2007. Only in Greece has it surged (by more than 9 percentage points) in parallel to the expansion of its public sector.



Note: Tax wedge is defined as marginal personal income tax and social security contribution rates on gross labour income for an average income earner. No data are available for BG, CY, EE, LT, LV, MT, RO, SI. Averages are unweighted.
Source: OECD, Taxing wages 2007/2008: 2008 Edition.

But the size and duration of growth effects from a tax shift from labour to consumption taxation vary strongly with structural factors. A recent simulation by the European Commission (2008a) for the euro area highlights a tax shift of 1% of GDP could increase employment by 0.25% and real GDP by about 0.2% in the long run. Most positive effects arise in the first three years and depend strongly on how much the increase in indirect taxation results in higher consumer prices and a real reduction of transfer payments and wages. Moreover, institutional factors, such as wage-bargaining setups and minimum wages interact with tax policy in many ways and will affect the outcome of tax shifting policies (European Commission, 2006c, Valenduc, 2007).

Across EU Member States, the revenue structure varies strongly and only a slight shift toward indirect taxation has emerged ⁽³⁵⁾. The reliance on direct taxation and social security contributions in total public revenues ranges from less than 50% in Bulgaria to 72% in Belgium. On average, countries with larger public sectors tend to raise more resources

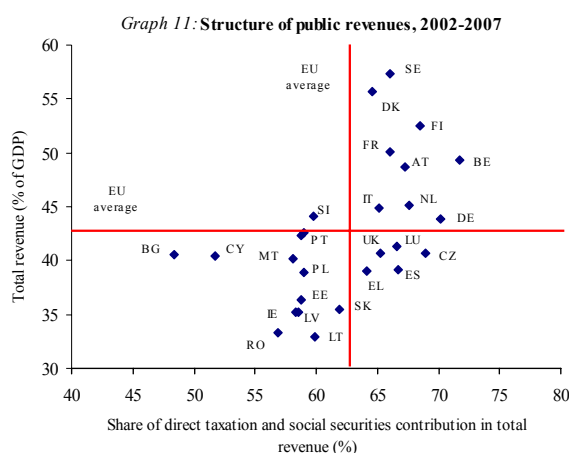
⁽³³⁾ For example, Lee and Gordon (2005) find for a sample of OECD and developing countries that a higher corporate tax rates reduces growth. However, when including a dummy for OECD countries the coefficient drops to nearly zero. See for example Valenduc (2008) for a discussion on indicators to assess the quality of revenue systems.

⁽³⁴⁾ However, these numbers do not include most transition-economy recently acceded Member States who have, on average, a tax wedge below that of the old Member States.

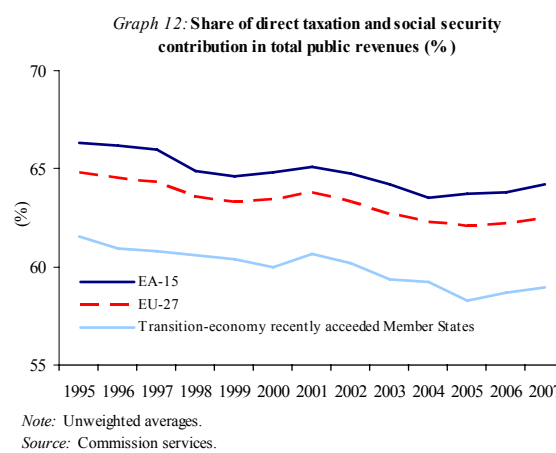
⁽³⁵⁾ For more details on the revenue trends in the EU see Part IV of this report. See also Carone et al. (2007), Eurostat (2007) and OECD (2007c).

through these two channels (Graph 11). At the same time, revenue system structures have been fairly stable over time with changes reflecting largely cyclical fluctuations (Graph 12).

In addition to the share of direct and indirect taxes, also the composition of direct taxes themselves matters for growth. Higher rates of income tax are found to be less detrimental to growth than higher corporate tax rates and social security contributions by employers (see for example, OECD 2007a,b, European Commission 2006c, Widmalm, 2001, Padovano and Galli, 2001, 2002). This results from a rather low elasticity of primary labour supply to tax changes. However, secondary income earners (i.e. additional members of a household that enter the labour market or adjust their hours worked) are found to be much more responsive. Thus, the overall effect depends on the degree of labour market participation and the setup of benefits systems. That growth is more strongly linked to corporate tax rates and employers' contributions has been attributed to the direct impact on costs and competitiveness. However, it should be noted that there is typically a clear trade-off, at least in the short run, between the economic growth and equity objectives as regards the choice on the structure of direct taxation.



Note: Unweighted averages for 2002-2007.
Source: Commission services.



Note: Unweighted averages.
Source: Commission services.

Moreover, many other specific revenue system features need to be considered. For example, human capital formation could be negatively impacted by the progressivity of income taxation as it reduces the return on education (see OECD 2007b). At the same time however, it ensures a more even income distribution. Savings and investment decisions are affected by the taxation of capital income, profits and wealth, including the concrete design choices such as deductibility or special treatments. For example, R&D expenditure and FDI are responsive to tax incentives.

And lastly, the administrative efficiency, simplicity, transparency and stability of revenue systems can support growth⁽³⁶⁾. An efficient tax administration allows keeping the administrative burden on taxpayers and the public sector low⁽³⁷⁾. Together with a simple and transparent tax code it can also ensure high tax compliance. Thus, an improvement in administrative efficiency could either translate into additional revenues or in a reduction of

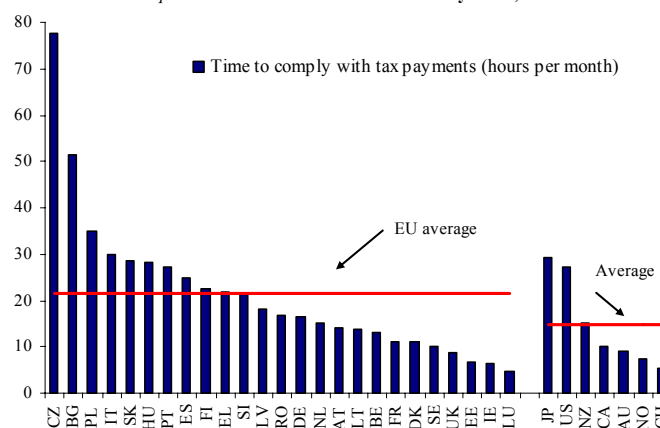
⁽³⁶⁾ See for example Heady (2007).

⁽³⁷⁾ Ratios of administrative costs to revenue collections have been collected by the OECD (2007d) but they are not well suited for cross-country comparisons given the range of factors that impact on them (e.g. differences in tax rates and structures and collection of social security contributions).

tax rates⁽³⁸⁾. At the same time, transparent and stable tax systems facilitate long-term savings and investment decisions, which may stimulate growth.

In the EU much remains to be done to reduce administrative burdens and compliance costs. For instance, indicators on the time needed to comply with tax payments show large differences across countries reflecting also the different complexities of tax systems (see Graph 13). Countries with rather simple tax systems, including those with flat taxes (Estonia, Latvia, Lithuania, Romania)⁽³⁹⁾ fair rather well, while others impose a much higher time burden for complying with tax payments on enterprises.

Graph 13: Administrative burden of tax systems, 2007



Note: Time to prepare, file and pay (or withhold) corporate income tax, value added or sales tax and labour taxes, including payroll taxes and social contributions based on a case study company. No data available for CY and MT. Averages are unweighted.
Source: World Bank and Price Waterhouse Coopers (2008).

2.6. FISCAL GOVERNANCE

Fiscal governance is a key building block to ensuring high quality of public finances⁽⁴⁰⁾. It has been widely recognised that sound fiscal governance (including fiscal rules, fiscal institutions, budgetary procedures and medium-term frameworks) can address the deficit bias, the common pool problem associated with specific spending items financed out of the general budget and contribute to fiscal sustainability⁽⁴¹⁾. This is achieved by providing constraints on or disincentives for time-inconsistent behaviour of policy makers.

The EU's fiscal framework accounts for this experience. In addition to the supra-national deficit and debt rules of the Stability and Growth Pact (SGP), the Council Report of March 2005 on the SGP reform explicitly recognised the important role that national fiscal rules and institutions can play in achieving sound budgetary positions. It called on Member States to "ensure that national procedures in the budgetary areas enable them to meet their obligations." Most recently (9 October 2007), the ECOFIN Council confirmed this view and also acknowledged that national rules-based multi-annual fiscal frameworks could help to adhere to medium-term budgetary plans.

But budgetary outcomes and fiscal sustainability are not the only dimensions impacted by fiscal governance. Budgetary procedures, in particular, a greater focus on outputs and outcomes rather than inputs (e.g. performance-based budgeting) can help to improve the

⁽³⁸⁾ Institutional and organisational arrangements for tax administrations vary across countries but the 'taxpayer segment model' where services and enforcement functions are organised around segments of taxpayers (e.g. large, small/medium business, employees) rather than functions (e.g. registration, accounting, collection, audit) has become more popular (see OECD 2007d).

⁽³⁹⁾ Surprisingly, despite the major tax reform in Slovakia in 2004, including the introduction of a flat tax, the 'time to comply' indicator is still very high.

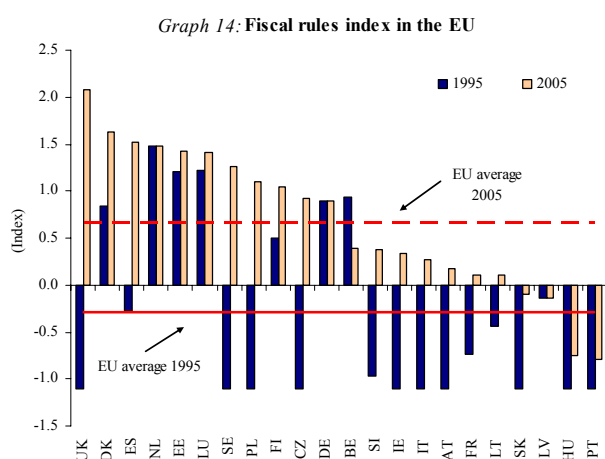
⁽⁴⁰⁾ Fiscal governance is understood here as comprising all rules, regulations and procedures that impact on how the budgets and its components are being prepared, approved, carried out and monitored. The terms fiscal governance and fiscal frameworks are used interchangeably in this section.

⁽⁴¹⁾ See e.g. European Commission (2006a and 2007a), von Hagen and Harden (1994), Poterba and von Hagen (1999), Strauch and von Hagen (2000) and Hallerberg (2004).

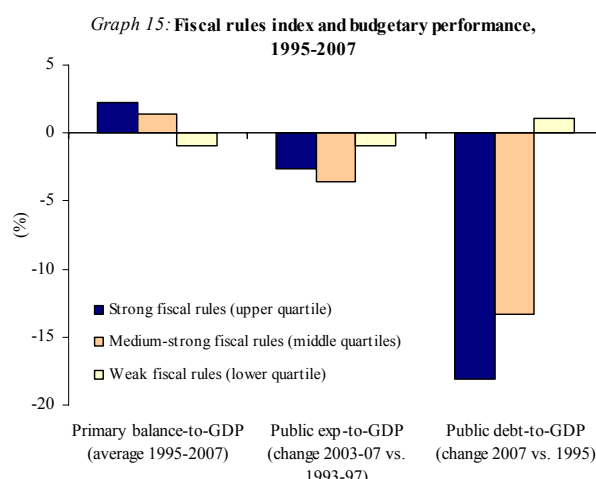
efficiency of public expenditure. At the same time, by determining a rule for overall expenditure, they would allow to better focus policy discussions on spending priorities.

The different aspects of fiscal governance, their links to QPF and EU performance are briefly discussed below.

National numerical rules have become increasingly important across the EU and underpinned progress in fiscal consolidation. Work by the European Commission (2006a) showed that since 1990 more and more Member States have adopted fiscal rules, extended the rules' coverage or strengthened the rules specific features⁽⁴²⁾. Graph 14 summarises this development over the past ten years based on an index that captures five features of fiscal rules: the statutory base, the nature of body in charge of monitoring and enforcing the rule, enforcement mechanisms and media visibility of the rule⁽⁴³⁾. In all but one Member State the strength and coverage has improved unless it had already been very strong in the mid-1990s.



Note: The index measures the coverage and strength of national numerical fiscal rules taking into account five criteria. It is standardised to have a mean of zero and standard deviation of one over the whole sample period. No data are available for BG, CY, IE, MT and RO. EU averages are unweighted.
Source: Commission services.



Note: Based on the Commission's fiscal rules index. Strong-rule countries comprise those in the upper quartile of the index, medium-strong-rule countries are in the middle two quartiles and weak-rule countries are in the lower quartile.
Source: Commission services.

Moreover, the European Commission (2006a) showed that stronger fiscal rules were linked to better budgetary performance. At the same time, rules that focused on the expenditure side were associated with lower primary expenditure-to-GDP ratios. This impact of fiscal rules is also visualised in Graph 15. Countries with a high average fiscal rules index fared significantly better as regards budgetary positions and reduction in expenditure-to-GDP and debt ratios than those with the weakest fiscal rules.

The link between numerical fiscal rule and stabilisation of output is however less clear cut. It has frequently been argued that rules-based frameworks could prevent flexible discretionary fiscal policy responses in times of shocks (see e.g. Anderson and Minarik, 2006). But in practice, fiscal policy has often moved with the cycle, with pro-cyclicality in industrial countries having been mostly a phenomenon of good economic times⁽⁴⁴⁾. While there are no econometric studies yet on the link between cyclical policy and numerical fiscal

⁽⁴²⁾ See also Moulin and Wierds (2006) and Ayuso et al. (2007). For an example on how fiscal rules are operated in Sweden see Fischer (2005).

⁽⁴³⁾ These five elements closely follow the one identified by Kopits and Symansky (1998) to promote budgetary discipline.

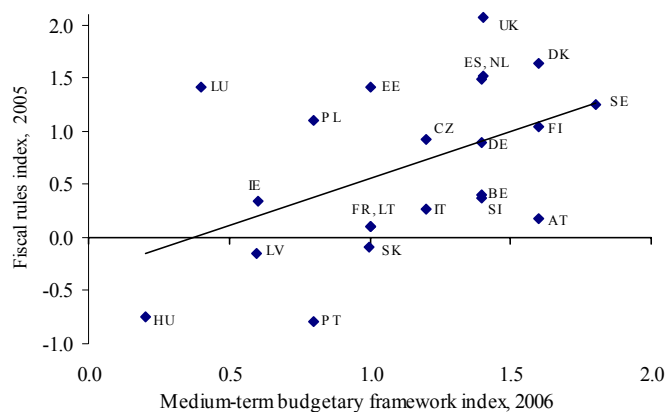
⁽⁴⁴⁾ See for example Balassone and Kumar (2007), Manasse (2006), Alesina and Tabellini (2005).

rules, country experiences point to certain types of fiscal rules and specific design features being potentially helpful in limiting pro-cyclicality. In particular, expenditure rules (especially when nominal expenditure is capped), revenue rules (which define the use of windfall revenues) and budget balance rules (specified in cyclically adjusted terms or applicable over a whole business cycle) are supportive. Desirable design-features of fiscal rules include good coordination among the various levels of government, multi-annual horizons, strong political commitment and strong monitoring and enforcement mechanisms, for example through an independent institution.

Another success factor for reducing the deficit bias is a multi-annual orientation of fiscal policy. A longer term horizon can either be enshrined in numerical fiscal rules or, more generally, in medium-term budgetary frameworks (MTBF). They make budget plans more transparent, which should facilitate medium-term decision making by private agents and, at the same time, lower the likelihood of political expenditure cycles. Moreover, MTBFs allow shifting the focus during the medium-term horizon away from the expenditure envelope as a whole toward the allocation of resources between and within Ministries. For most EU

Member States, the stability and convergence programmes (SCP) are not the only MTBFs but they are typically supplemented by specific national setups (see European Commission, 2007a for a detailed review). Using the European Commission index on the quality of MTBFs (Graph 16) one finds a similar dispersion as for the fiscal rules index. But not all countries with strong fiscal rules necessarily also have a strong medium-orientation even though there is positive correlation across both aspects of fiscal governance.

Graph 16: Quality of medium-term budgetary frameworks and fiscal rules



Note: Excludes BG, CY, EL and RO. MBTF index is calculated based on five criteria and ranges from zero to two (see European Commission 2007a for more details). On the fiscal rules index, see Graph 14.

Source: Commission services.

Independent fiscal agencies are a third institutional mechanism to improve budgetary performance and foster medium-term orientation. Experience shows that governments often tend to be overly optimistic in the macroeconomic assumptions that underpin their budgets (see Jonung and Larch, 2004, Mühleisen et al., 2005, Strauch et al., 2004). For that reason, the forecasting function could be delegated to independent fiscal agencies ('fiscal councils') which at the same time could monitor and assess fiscal performance⁽⁴⁵⁾. In practice, the

⁽⁴⁵⁾ The literature also makes a case that fiscal policy implementation could be delegated to independent institutions, similar to monetary policy (Debrun et al. 2007) but in practice there is not much support for this proposal given that fiscal policy reflects political choices and social preferences.

forecasting record of these institutions has been free of the bias that policy makers frequently exhibit (Jonung and Larch, 2006). In the EU, many Member States have independent fiscal institutions that serve as advisors and monitor fiscal performance. In most cases, national central banks also play this role. But only two Member States (Belgium and the Netherlands) rely on independent fiscal institutions to provide the macro forecasts for the budget and medium-term budgetary plans (Table 6).

While the above aspects of fiscal frameworks are mostly geared toward more fiscal discipline, specific setups of budgetary procedures can also contribute to greater spending efficiency⁽⁴⁶⁾. In particular, a greater results-orientation can create stronger incentives for raising public sector performance. The concept of performance-based budgeting has therefore gained popularity in and outside the EU. When fully implemented it would relate budgetary appropriations to performance, but only some countries, and just for few sectors (mainly education and tertiary education) go that far given many practical problems (see Box 2 for an overview on the various concepts and their use in EU Member States). Given these difficulties it seems that performance-based budgeting, while being a supportive instrument, can in itself not be a panacea for assuring good fiscal performance or high public spending efficiency.

Table 6:
Key features of independent fiscal agencies in the EU, 2005

Preparation of macro forecasts for budget	Preparation of non-binding macro forecasts
BE, NL	AT, DE, DK, FR, IT, SE, UK
Monitoring of budget performance	No independent fiscal agency
BE, DE, DK, EE, ES, FR, HU, IT, NL, PT, SE	CY, CZ, IE, LV, LT, LU, MT, PO, SL, SK

Note: National fiscal agencies are defined as independent bodies, other than the central bank, government or parliament, that prepare macroeconomic forecasts for the budget, monitor fiscal performance and/or advise the government on fiscal policy matters. The table does not include information for BG and RO. In the NL, macro forecasts by the Netherlands Bureau of Economic Policy Analysis (CPB) are not legally binding but in practice the CPB provides the macro forecasts for the budget. In the UK, the government also frequently follows the National Audit Office's (NAO) macro assumptions for the budget.

Source: Based on European Commission (2006a).

2.7. MARKET EFFICIENCY AND BUSINESS ENVIRONMENT

Public finances, through budgetary and non-budgetary items, can also impact the functioning of markets and the business environment. While this can therefore be viewed as another dimension of QPF, there are very strong overlaps with the above-mentioned dimensions and public policy in general. Moreover, since assessing the links between structural reforms and growth would go far beyond the scope of this paper and is better dealt with under the Lisbon Strategy for Growth and Jobs⁽⁴⁷⁾ only the key channels from public finances to growth are summarised below.

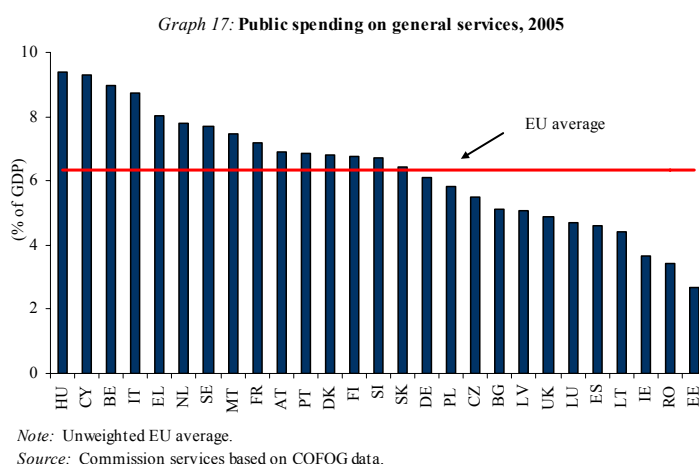
In addition to the structure of tax and benefit systems and the provision of a public infrastructure, the efficiency of public administrations can be a factor for growth. The first two aspects have already been discussed in Sections 2.4 and 2.5⁽⁴⁸⁾. The role of public expenditure efficiency was also highlighted with the examples of educational and health spending but an additional point can be made about the efficiency and effectiveness of public administrations. Spending on general administrations in the EU is not negligible at 6.5% of

⁽⁴⁶⁾ The discussion of fiscal governance elements here cannot be comprehensive. Other elements of importance, mostly to overall budgetary performance include budgetary transparency, top-down budgeting techniques and centralisation of the budget process and during execution (see Blöndal 2003).

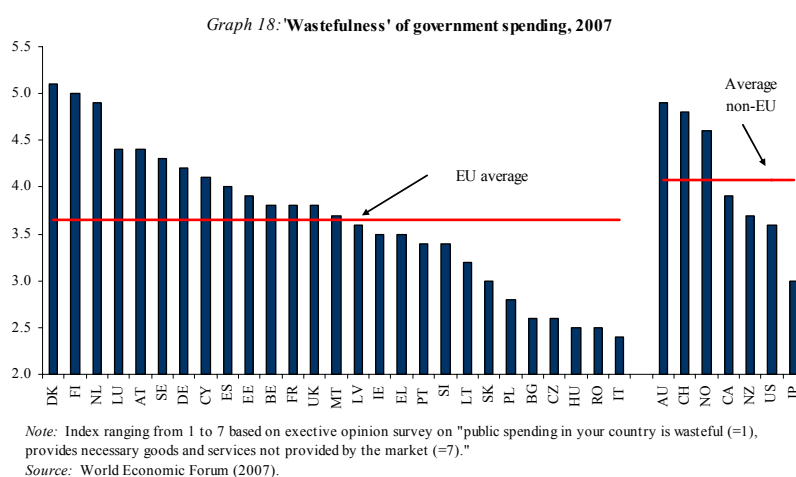
⁽⁴⁷⁾ See the European Commission's (2007b) progress report on the Lisbon Strategy for Growth and Jobs. For OECD countries, OECD (2008) contains an assessment of reforms as part of the 'Going for Growth' initiative.

⁽⁴⁸⁾ In addition to the key aspects of revenue systems discussed earlier, the interlinkages with benefit systems also need to be considered. In particular, the flexicurity concept, which involves labour market flexibility, unemployment benefits, active labour market policies and training and life-long learning is an approach to support growth and employment.

GDP (or 14 % of total public spending), varying from 2.7% of GDP in Estonia to 9.4% of GDP in Hungary (Graph 17). A number of countries have therefore embarked on public administration reforms (for an overview see European Commission, 2008d). They often involve establishing a closer link between the use of resources and results (Box 2), changing management practices and relying more on information technologies (e-government) with the aim to raise public sector productivity and citizens' satisfaction.



In a number of EU Member States the room of improvement in public administration efficiency is large. This results from a range of indicators, of which only three are described below. First, the World Bank Doing Business indicator can be viewed as a proxy for the quality of business regulation and the effectiveness of its enforcement. The index includes aspects directly affected by public administrations such as ease of dealing with licenses, opening and closing businesses, enforcing contracts, registering property, paying taxes, trading across borders⁽⁴⁹⁾. Five EU Member States (Denmark, Estonia, Finland, Sweden and the United Kingdom) rank in the top 10% of the world (178 countries). Second, the World Bank Governance Indicator captures four public administration areas, namely government effectiveness, regulatory quality, rule of law (both including enforcement) and control of corruption. In terms of government effectiveness, which has been assessed based on surveys among business executives, experts and citizens, the EU comes out somewhat below the non-EU comparators, largely because shortcomings are seen for many of the recently acceded Member States as well as Greece and Italy. And finally, the World Economic Forum's index on the 'wastefulness' of government spending, based on survey among managers, comes to a very similar result (Graph 18).



⁽⁴⁹⁾ Other elements of the indicators, which are only indirectly linked to QPF are protecting investors, trading across borders, employing workers and getting credit.

Box 2: Performance-based budgeting - a summary of EU Member States experiences 1/

Performance-based budgeting (PBB) aims to increase the quality of public finances by strengthening the link between the allocation of budget resources and their outputs and outcomes. This is achieved by shifting budgeting and management away from input control towards a greater focus on results. The literature does not offer a single definition of PBB, but following the OECD (2007e) one can distinguish three levels, depending on the strength of the link between performance and funding: (i) presentational, (ii) performance-informed (PI) budgeting and (iii) direct/formula performance budgeting (see also Bouckaert and Halligan, 2006).

Country experiences show that implementing a performance-based approach to budgeting, which is often part of larger public administration reform efforts, can be cumbersome. Problems include overcoming the often stiff resistance against organisational changes, the timely availability of performance data and, more generally, the measurability of performance (e.g. Currstine, 2005) as well as difficulties in avoiding to create distorted incentives (e.g. an over-emphasis on objectives that can be easily quantified (Smith, 1995)). This explains why just a few countries have established pure PBB and typically only for a few selected areas (mostly health and higher education). Instead, most countries apply some form of 'performance-informed budgeting' where decision-makers take performance data into consideration but no automatic link to budget allocations exists.

The comparison on how EU Member States use PI below is based on the 2007 updated OECD/World Bank *Budget Practices and Procedures Database*. While the database shows how the countries institutionalise their approach, it can provide only a rough indication to which extent a culture of performance is embedded in national organisations. The main results are summarised in Graphs 1-4.

PI is used in all 20 EU Member States included in the database except Belgium and the Czech Republic (Graph 1). Member States use a mix of evaluation reports, performance measures, performance targets and/or benchmarking to assess the government's non-financial performance but only few use all of them. In particular, benchmarking is not yet very wide spread. Most countries use a combination of output and outcome measures as performance measures and/or targets, reflecting, on the one hand, the difficulty to identify measurable outcomes in all sectors and, on the other hand, the attempt to avoid that using output indicators alone could shift the attention away from the actual desired policy outcomes. These practices are in line with the guidelines developed by the OECD (2007f) on *Designing and developing budget systems that use performance information*.

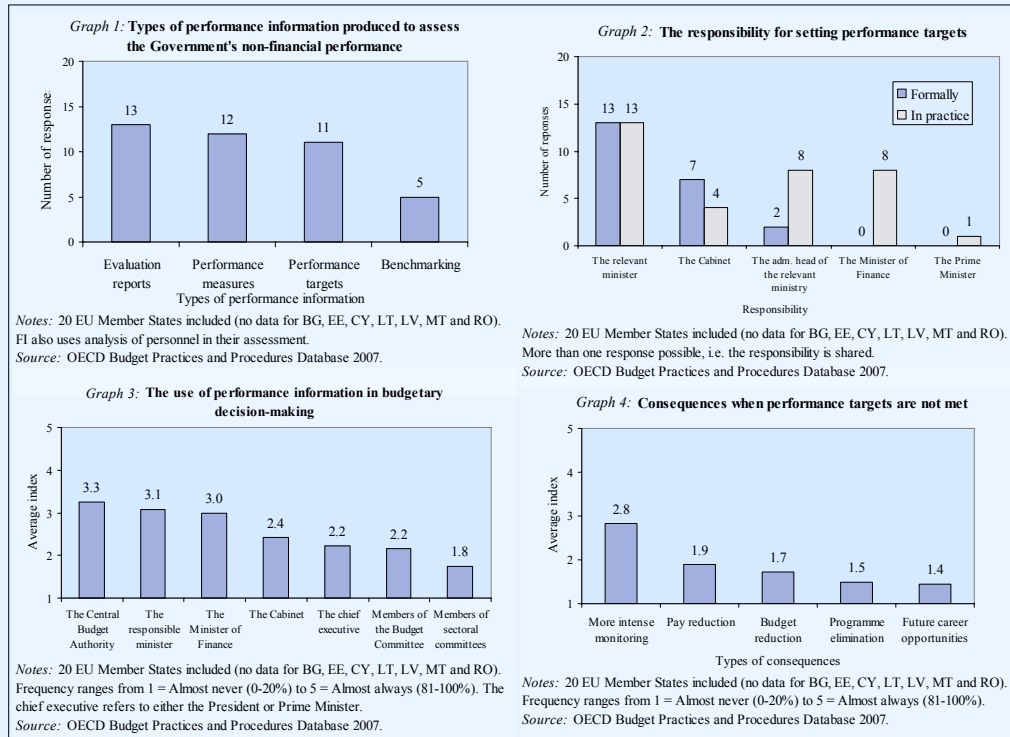
The formal responsibility of setting performance targets is given either to the relevant minister or the Cabinet as a whole in most Member States (Graph 2). Only Austria and Denmark make the administrative head of the relevant ministry formally responsible for the target setting, even though in practice this is the case in many other Member States as well. In several countries, the Minister of Finance is involved in setting performance targets informally, either alone or in cooperation with the relevant minister. In the United Kingdom, the Prime Minister and the Chancellor of the Exchequer share the responsibility of setting targets in practice. In most countries the relevant minister is responsible for achieving the targets, with the exception of the Prime Minister in Poland and the Director General in Denmark. In Finland both the relevant minister and the head of the agency are responsible for achieving the target, as the ministry and the agency are partners in a performance agreement.

The authorities that most frequently use PI are the Central Budget Authority, the Minister of Finance or the responsible minister (Graph 3). They take advantage of the available PI during the budgetary decision-making process. Within the national parliaments the use of PI is less frequent, with only Finland and France and, to a lesser degree, Slovakia and Sweden regularly taking PI into account in the budget and sectoral committees.

1/ This box was prepared by Stig Malmedal.

Box 2 continued:

When asked on how much of the budget is linked to performance targets, EU countries display vary diverse practices. Some include performance targets for all expenditures (FR, SK, SE), while others use no performance target in the budget documentation at all (AT, DK, LU, PL, SI). The differences are just as big when it comes to performance goals (e.g. FI and NL have goals covering all expenditure items, together with SK and SE).



The review on consequences, penalties or costs incurred when missing performance targets confirms the loose link between PI and funding (Graph 4). In general, across the 20 Member States considered on that matter, a budget reduction would rarely happen (in around one quarter of the cases a missed target leads to budget cuts). Other forms for disciplinary mechanisms, like pay reduction or consequences for future career opportunities for the responsible person(s) and elimination of the program, are also rarely being applied. Closer scrutiny in form of more intense monitoring is the most common consequence, used in close to 50% of the instances where targets are missed.

Given the difficulty of linking performance measures directly to budget appropriation, the use of more comprehensive evaluation mechanisms are key when assessing programmes or sectors. Evaluation reports may even be a tool to determine the linkages between activities or programmes and outcomes (OECD, 2005). Throughout the EU Member States, the line ministries conduct or authorise most types of evaluations. The involvement of the legislature in initiating evaluations is rarer and limited to a few countries (LU, NL, PL, FI, EL and FR).

To sum up, EU Member States differ greatly in their use of PI, even though many countries have initiated reforms over the last years (OECD, 2007e). This partly reflects different country-specific needs, as highlighted by the OECD Guidelines, but also different degrees of progress in tackling the practical problems of PBB. Countries which have institutionalised PBB to the strongest degree in the EU include NL, FI, FR, SK and DK, but even in these countries the actual approach is rather that of 'performance-informed budgeting' than direct performance budgeting.

3. The quality of public finances and growth: bringing the dimensions together

After having identified the many dimensions of QPF, the next step needed is to analyse their linkages to growth in a more comprehensive setting. This section, after a means comparison, investigates the links between QPF and growth by identifying growth components through a growth-accounting approach and relating them to the different dimensions of QPF by using a discriminant analysis. Based on these preliminary empirical findings avenues for future empirical research are indicated.

3.1. QUALITY OF PUBLIC FINANCES AND LONG-RUN GROWTH

3.1.1. Does the quality of public finances matter for long-run growth?

As a starting point and to summarise the findings from Section 2, a simple means comparison can help point to those aspects of QPF that seem to matter for long-term growth. Table 7 provides the average values of indicators representing the different dimensions of QPF as described in Section 2 for two different groups of countries: the high GDP-per-capita growth countries and the low GDP-per-capita growth countries, where the mean growth rate of the overall sample represents the reference value. The periods covered are 1980-1989 and 1990-2005; besides the EU15 countries a number of non-EU industrialised countries are also included (Australia, Canada, Iceland, Japan, Korea, New Zealand, Norway, Switzerland and the United States). The table does not consider the dimension efficiency of expenditure described in Section 2.4 as only very short time series are available for the corresponding variables. Given the large structural changes in transition economies and the limited data availability, indicators for the EU27, i.e. EU15 + recently acceded Member States (RAMS) are reported in Columns (5) and (6) only for the period 1990-2005. All variables in Table 7 are expressed in weighted average terms, using the value of the GDP per capita in purchasing power standard (PPS) terms as weights. Differences in mean values across country groups that are statistically significant are reported in bold ⁽⁵⁰⁾.

Table 7 shows marked differences in countries' growth performance and QPF. These figures suggest that high-growth countries have tended to display lower public expenditure as percentage of GDP, lower public debt, lower public deficit and variability of public deficit, a lower (higher) weight of (indirect) direct taxation, a lower labour tax wedge and more flexible markets. This evidence tends to support existing findings in the growth and macroeconomic policy literature as discussed in Section 2.

The difference between high and low-growth countries concerning government debt is not the one expected, however, for the period 1980-1990. This can mostly be attributed to Italy, Ireland, the UK and Japan, which experienced relatively high growth rates during this period while displaying relatively high debt levels. During the period 1990-2005, however, this situation was reversed and countries with relatively high growth rates of GDP per capita tended to have relatively low public debt.

The widening difference in growth performances between high and low-growth countries was also accompanied by a growing divergence in QPF since the early the 1990s. During the

⁽⁵⁰⁾ The statistical significance level has been calculated performing a Wald-test with the significance level set to 5%, where the null hypothesis is that the difference between mean values is equal to zero. Table 7 was also constructed using unweighted averages, which yielded very similar results.

1980s, only the indicators concerning public consumption, public investment and labour market regulation were significantly different between the two groups. During 1990-2005, however, all indicators of QPF also displayed significant differences as growth divergences widened.

Table 7:

Growth and the quality of public finances: selected indicators for the EU and OECD countries

	All countries, 1980-1989		All countries, 1990-2005		EU27 countries, 1990-2005	
	low growth	high growth	low growth	high growth	low growth	high growth
Average GDP per capita growth rate	2.3%	3.3%	1.6%	3.3%	1.6%	3.0%
1. The size of the government						
Government expenditure	41.0%	40.1%	40.8%	37.8%	48.6%	42.1%
2. Fiscal deficit and sustainability						
Size of deficit	-3.8%	-3.9%	-3.1%	-0.1%	-3.2%	-3.0%
Variability of deficit	-1.1%	-1.0%	-1.1%	-0.4%	-1.5%	-0.9%
Public debt	50.6%	63.2%	73.8%	57.3%	65.0%	49.8%
3. Composition of expenditure						
Consumption	27.9%	25.7%	26.8%	21.4%	26.5%	23.5%
Investment	2.7%	3.9%	2.9%	3.7%	2.4%	3.5%
4. Structure of revenues						
Tax wedge on labour	35.5%	32.1%	34.7%	29.6%	44.8%	39.6%
Indirect taxes	9.7%	9.4%	10.0%	11.9%	13.1%	12.2%
Direct taxes	12.7%	12.5%	12.9%	10.2%	12.9%	10.1%
5. Fiscal governance						
Overall fiscal rules index					0.0	0.0
Expenditure fiscal rules index					0.1	-0.1
6. Business environment (Fraser index)						
Regulation	5.5	5.5	6.1	6.4	5.6	5.6
Credit regulation	7.3	7.4	7.7	8.0	7.7	8.4
Labour market regulation	4.3	5.3	5.1	5.4	5.0	5.6
Business regulation			6.3	6.8	6.4	7.0

Notes: Weighted (GDP in purchasing power standard) average reported. All variables are measured as percentage of GDP except the tax wedge, fiscal governance variables and the business environment variables. The tax wedge percentage includes employers' social security contributions. Business environment variables reflect structural rigidities in labour and capital markets and business environment and are taken from the Fraser database, a high value of the Fraser index indicating a high flexibility in each of the market considered under item 6. The variability of the deficit is measured by the ratio of the standard deviation of the deficit (or surplus) divided by the average value of the same variable for each country. Non-EU countries includes AU, CA, IS, JP, KO, NO, CH, NZ, US. Figures in bold denote statistically significant differences in variables (weighted) means across country groups

Sources: European Commission (Ameco and Eurostat), OECD and Fraser Institute (available at: <http://www.fraserinstitute.ca/>).

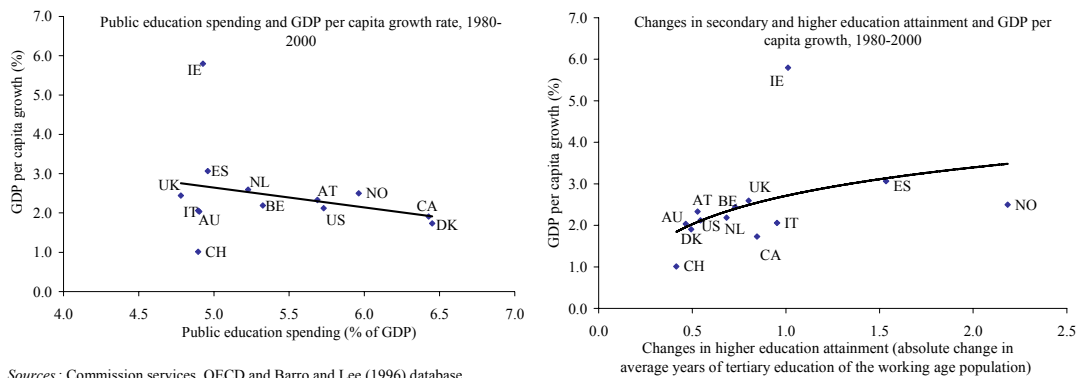
Also among EU Member States, differences in growth and QPF were significant. The last two columns of Table 7 provide the (weighted) mean values of the QPF variables for the low and high-growth country groups in the EU27. In addition to the aforementioned variables, the EU sample also includes two indicators of fiscal governance (as described in Section 2.5), but their mean values do not appear to be significant between high and low-growth countries. The same applies to the average value of the fiscal deficit which, despite its lower value for the high-growth country groups, remains rather close to the corresponding value for the low-growth country group. Excluding fiscal governance and the government deficit, the high-growth countries displayed better performance in terms of the other dimensions of QPF as for the sample group including EU15 and other non-EU OECD countries.

3.1.2. Public policy spending versus policy outcome: a closer look at health and education

The simultaneity between growth performance and QPF, observed through the simple means comparison, does not necessarily imply a simple one-way causal relationship. There are several issues that need to be considered. First, better growth performance may itself improve QPF as, for instance, high-growth countries have better chances to reduce their debt ratio including a reduction of their expenditure ratios, or may find it easier to improve the quality of their education and health systems. Second, public policies do not necessarily have economic growth as the primary goal as mentioned previously. In particular social spending, such as on education and health, also serves income distribution and social cohesion

purposes. And third, changes in public policies are in most cases implemented only gradually and their influence on economic growth usually takes relatively long time to materialise. For instance, public spending in education or reforms of education systems can enhance the job prospects of future workers only after several cohorts of students have experienced these reforms.

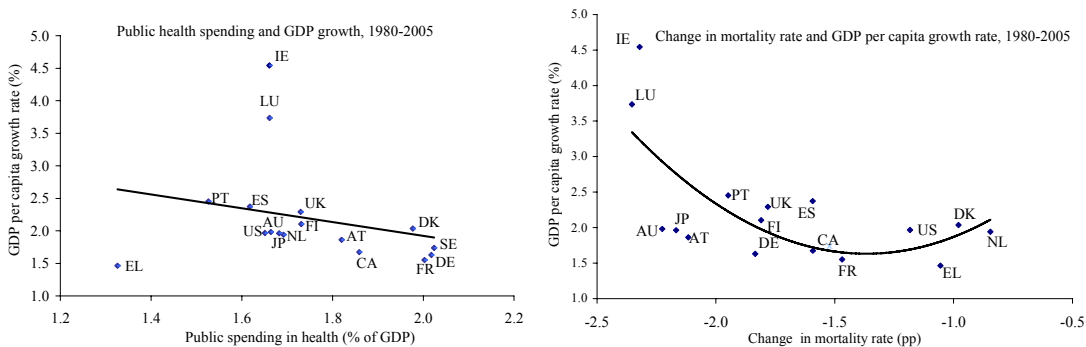
Graph 19: Public education spending, outcomes and GDP growth



Sources : Commission services, OECD and Barro and Lee (1996) database.

Thus, focusing only on the level of public spending in certain 'growth-enhancing' categories rather than the outcomes of these policies will likely miss to capture the true effect of public policies on growth. Graphs 19 and 20 provide an illustration of these points for public spending on education and health. The left panel of Graph 19 plots the average value of public education spending against the average growth performance across a sample of OECD countries during the period 1980-2005. The relationship between the two variables appears counter-intuitive with more public education spending being associated with lower growth. However, when considering the outcome of education spending⁽⁵¹⁾, i.e. changes in educational attainment (right panel of Graph 19) the relationship to growth turns positive (Ireland appears as an outlier given its exceptional growth rate during the period). A similar pattern emerges for public spending on health (Graph 20).

Graph 20: Public spending in health, its outcomes and growth



Sources: Commission services and OECD.

Overall, these results concerning two specific public policies, namely, education and health, tend to highlight the importance of efficiency of public spending. Analysing the link between public finances and growth thus requires considering the outcome of such policies and, more

⁽⁵¹⁾ Educational attainment is measured as average years of higher schooling in the total population during the period 1980-2000T. This variable is taken from the Barro and Lee database, (see Barro and Lee, 1996 and Barro, 2003 for a description; <http://www.cid.harvard.edu/ciddata/ciddata.html>)

specifically, the link between the policies put in place (here spending in public health and education systems) and their respective objectives. Ideally, therefore, a proper understanding of QPF would allow explaining the relationship depicted in Graphs 19 and 20 and in particular the reasons why the same relationship cannot be found when considering the influence of the level of public spending on its desired outcome.

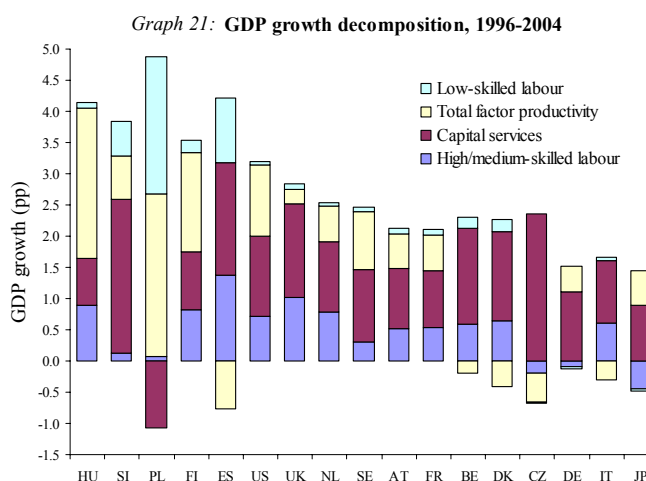
3.2. OPENING THE BLACK-BOX: QUALITY OF PUBLIC FINANCES AND THE COMPONENTS OF ECONOMIC GROWTH

Given the many dimensions and transmission channels of QPF as well as the many other drivers for growth that differ across countries, a promising angle of analysis is a growth-accounting approach. This allows to first identify the sources of growth and then, in turn, try to link each of these growth components with the QPF variables most likely to influence them, which is likely to vary across countries.

3.2.1. The sources of economic growth in EU countries

Economic growth can present different patterns. Existing evidence suggests that in some countries labour skills, innovation and technological progress (via ICT diffusion for instance) were the main factors behind recent GDP growth evolutions (for instance, the Netherlands, Finland, Sweden). In other countries such as Spain, by contrast, increased labour market participation was the dominant factor (see for instance, van Ark and Inklaar, 2005). A way to identify the sources of economic growth is therefore to decompose GDP growth rate into its main components using a growth-accounting approach.

Graph 21 provides the results of a growth decomposition taken from the EU KLEMS database (see Box 3 for more details)⁽⁵²⁾. The components considered in this exercise are: medium and high-skilled labour, which are taken together, low-skilled labour, capital and total factor productivity. The analysis shows that, on average, during the period 1990-2004, the EU countries, Japan and the US differed widely regarding their growth patterns. As evidenced earlier, this period is also characterised by widening growth dispersion across



Note: See Box 3 and Koszerek et al. (2007) for definitions
Sources: Commission services and EU KLEMS database (www.EUKLEMS.net).

countries. For instance, the sources of growth for fast growing, catching-up countries such as Hungary, Slovenia or Poland appear to be very different. In the cases of Hungary and Poland, total factor productivity emerges as the main engine of growth, while in the case of Slovenia, capital services tended to drive most of the recent growth experience. Employment, including both low and high/medium-skilled workers, emerges as an important source of growth in Spain, the Netherlands, Belgium and the US. Overall, the dominant sources of growth appear to be capital services, explaining around half of the GDP growth

⁽⁵²⁾ For data availability reasons, the set of countries considered in the growth-accounting exercise is limited to selected EU countries, Japan and the US. See EU KLEMS (2005) <http://www.euklems.net/> for more details.

during the period considered, while total factor productivity explains a quarter and employment, mainly medium and high-skilled, explains the remaining quarter.

Box 3: Growth-accounting analysis

Growth accounting is an approach that identifies the components of GDP growth from the supply side by using a production function, typically of the Cobb-Douglas type. The contributions of each factor in the production process are calculated based on a set of assumptions, most importantly constant returns to scale and perfect competition. The production inputs include (i) labour (which can be further decomposed into highly-skilled, medium-skilled and low-skilled labour), (ii) capital (which can also be decomposed into ICT and non-ICT capital) and (iii) total factor productivity (TFP) which is the residual term and represents all non-observed elements, mainly technological progress. The Cobb-Douglas production function can be written as follows:

$$Y = AK^{v_K} L^{v_L}$$

Where Y stands for real output of a given country, K is an index of capital services, L is an index of labour services while A stands for all other factors. The standard accounting decomposition of total output growth into the contribution of each input and the multi-factor productivity is:

$$\Delta \ln Y = v_K \Delta \ln K + v_L \Delta \ln L + \Delta \ln A$$

The contributions of capital and labour (which, as indicated above, could be further decomposed) are the product of capital productivity (v_K) and labour productivity (v_L) and the changes in input factors. The last term $\Delta \ln A$ represent the Solow residual or total factor productivity term.

Growth components for twelve old and four recently acceded Member States, the US, Japan and Canada have been calculated as part of the EU KLEMS project. KLEMS stands for 'capital', 'labour', 'energy', 'material' and 'services'. The main aim of the EU KLEMS project is to create a database on measures of economic growth, productivity, employment creation, capital formation and technological change at the industry level for all EU Member States from 1970 onwards. For a description of the project, the methodology, the main findings and the database (see <http://www.euklems.net/> and Koszerek et al., 2007).

3.2.2. The quality of public finances and the sources of economic growth

The question arises whether the differences in sources of growth can be linked to differences in QPF. This issue was considered in Fischer (1993) who suggested that most macroeconomic policy variables would likely influence growth through capital accumulation and productivity changes. Indeed a number of authors have made use of investment functions (rather than GDP growth equations) in order to analyse the influence of public policy on economic outcomes (see for instance Barro, 1991). Others have also considered the role played by tax and public policies, including fiscal policies, on employment changes (see for instance, Gray et al., 2007).

We employ a discriminant analysis as a simple way to address the question on the link between QPF and overall growth as well as the sources of growth (see Box 4 for technical details on discriminant analysis). A discriminant analysis can help characterise the countries' growth performance assuming that no information on growth performance is available ex ante. One can then compare the hypothetical grouping that is obtained by using only the QPF variables with the 'true' one, i.e. the one obtained by using the GDP growth values. Such a comparison between hypothetical and true groupings of countries carried out by calculating canonical correlation coefficients is reported in the last row of Table 8.

Box 4: Canonical discriminant analysis

Discriminant analysis is a statistical method which can be used to describe differences between a number of individuals (e.g. firms, consumers or countries) and to allocate observations to pre-defined groups. In performing such analysis it is possible to say whether the characteristics of these individuals may explain their grouping according to a set of pre-defined criteria. Here, a canonical discriminant analysis is undertaken in order to predict the membership of countries to groups with different growth patterns. The discriminating criteria are indicators gauging the quality of public finances (QPF) of the countries which are used in order to group countries. This grouping is then compared with the one obtained on the basis of their growth performance. The same method is applied by using, alternatively, each growth component rather than the overall growth rate (see Box 3 and Table 8). This method thus gives the possibility to test whether the groups of countries defined according to their growth performance are comparable to the ones obtained when using the QPF variables. This method thus consists in determining statistically whether the characteristics described by the indicators of QPF can systematically be linked to growth performance and the sources of growth.

When considering the sources of growth, countries are classified in three classes: capital intensive growth (IK), TFP-intensive growth (ITFP), skilled-labour intensive growth (ISK). X_i denote the six main characteristics of the quality of public finances described in Section 2, each characteristic being represented by a set of variables. The objective is to use the set of $X_1 \dots X_6$ classes of variables in order to group countries regarding their growth components in the best possible way, i.e., maximizing the between-group variance and minimizing the within-group variance. Assume a linear combination of the X variables such that:

$$Z = a_1X_1 + \dots + a_6X_6$$

countries can be grouped using Z if the mean value changes significantly from country growth groups and the coefficient a_1 - a_6 indicate the weight of each variable in the groups constructed which are, to some extent, equivalent to the coefficients (and their significance) estimated in multiple regression analysis. A F -ratio test can be performed such that the mean square of between and within groups variances is as large as possible. Several linear combinations (or canonical discriminant functions) of the X variables can be envisaged for separating countries (although not all of those may be statistically significant) into groups which ends up being an eigenvalue problem based on within and between-sample matrices of sums of square (see Manly, 1986). Furthermore, the so-called canonical correlation R can be computed to measure the association between the groups formed by the dependent variables (here the growth performance) and the given discriminant function based on the X -variables representing QPF. When R is zero, there is no relation between the groups and the function. When R is large, there is a high correlation between the discriminant functions and the groups such that in this latter case, the discriminant (i.e. PF) variables can be considered as good predictors of the growth performance of the countries considered.

The figures reported in the preceding rows of Table 8 are the canonical loadings representing the weights of each QPF variable used in order to differentiate countries between growth groups. Here the absolute value of the coefficient obtained provides information which, to some extent, can be interpreted as an indication of the significance of an equivalent regression estimate (see Manly, 1986). These groups are defined by their GDP growth in the first column and the GDP growth components in the remaining columns⁽⁵³⁾. According to the results in the first column, for instance, the share of public investment (with a positive sign) and the share of public consumption and the ratio of public debt over GDP (with a negative sign) appear to play a particularly significant role in discriminating between high and low-growth countries. The canonical correlation coefficients reported in the last row of the table provide information on the variance between groups, i.e. the extent to which countries are correctly classified into growth groups following the values of their QPF variables. This coefficient appears to be especially high for the capital component of growth

⁽⁵³⁾ The contribution of low-skilled labour to GDP growth is not considered here as this component was never the most important one for GDP growth during the period and for the countries considered.

suggesting that the QPF indicators allow classifying countries rather accurately according to their effect on capital accumulation.

Table 8:
The sources of growth and the quality of public finances, 1990-2004

Results of discriminant analysis: canonical loadings

	GDP growth	Growth components		
	(1) High vs low GDP growth	(2) High vs low capital contribution to GDP growth	(3) High vs low TFP* contribution to GDP growth	(4) High vs low-skilled labour contribution to GDP growth
Primary budget balance	0.018	0.076	-0.057	0.135
Debt	-0.332	-0.283	-0.075	-0.366
Public consumption	-0.422	-0.234	0.295	-0.233
Public investment	0.561	0.448	0.066	-0.104
Direct tax	-0.325	-0.127	-0.025	0.054
Indirect tax	-0.110	-0.284	0.543	0.040
Tax wedge	-0.293	-0.264	0.188	-0.255
Market flexibility	0.029	0.020	-0.173	0.120
Canonical correlation	0.760	0.910	0.760	0.740

Notes: Results of canonical discriminant analysis. See Box 4 for a description of the methodology used. The definition of variables is the same as for Table 7. Countries covered: AT, BE, CZ, DE, DK, ES, FI, FR, HU, IT, JP, LU, NL, PL, SE, UK, US.

* TFP: total factor productivity

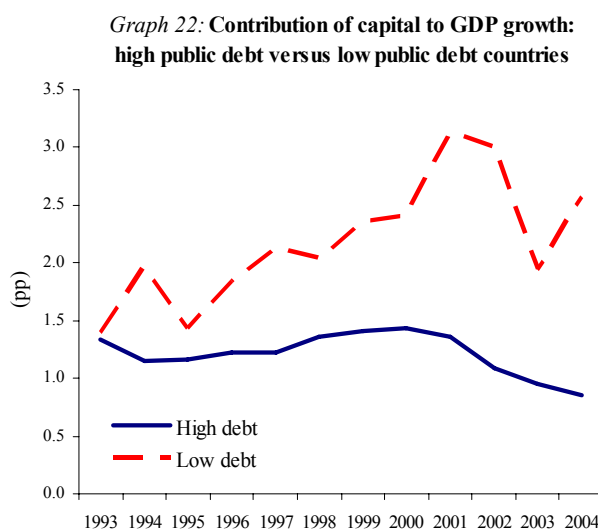
Source: Data on GDP growth and its components based on the EU KLEMS (www.EUKLEMS.net) database and Commission services.

Overall, the signs of the variables in Table 8 correspond to the expectations discussed in Section 2. Countries with high debt, low public deficit, high public consumption, high direct taxes over GDP and a high tax wedge on labour tend to display lower growth performances. Countries with high public investment and flexible markets tend to have higher GDP growth rates.

The results concerning the growth components in columns (2) to (4) provide indications broadly in line with those on overall growth. In particular, the analysis concerning the contribution of capital accumulation to GDP growth suggests a high correlation of this variable with the QPF variables. A noticeable exception concerns the link between TFP and overall market flexibility shown in Column (3). This relationship turns out to be negative meaning that more flexible market economies have also tended to experience a lower contribution of TFP to overall GDP growth. Existing evidence tends to suggest that the relationship between TFP and market flexibility is not clear cut. For instance, Aghion et al. (2006) find that the relationship between innovation, a main driver for TFP growth, and competition follows an inverted-U shaped relationship. In a recent paper also Roeger et al. (2008) show that the effect of lowering mark-ups, which goes along with greater market flexibility (though greater competition and firms' entry) depends on the sector that is being considered. The evidence provided by these authors suggests that a greater flexibility in intermediate-product sectors of activity has a negative impact on TFP while in final-product sectors it has a positive impact. Such result could be explained by the fact that mark-ups cover fixed costs while less regulation could discourage innovation and lower TFP.

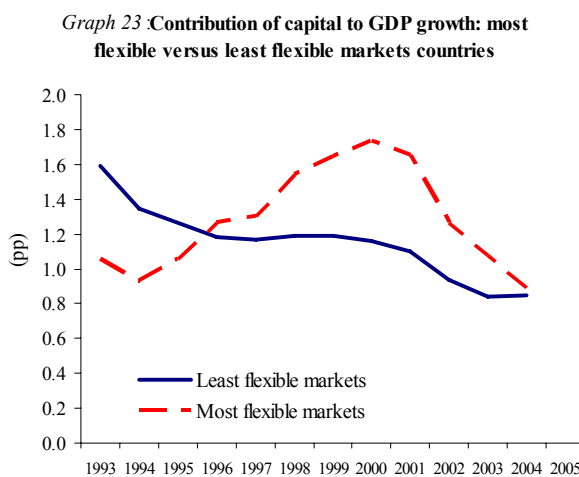
3.2.3. Public finances, policy outcomes and the sources of economic growth

The results of the discriminant analysis suggest that the characteristics of countries with regard to QPF can be used to make inference about their growth performance and also to the sources of growth. The latter appears particularly true for the contribution of capital to growth. Given that capital accumulation was also one the main driver of growth in the sample of countries considered, a closer investigation of the link between QPF and the contribution of capital investment to growth seems particularly relevant. Graph 22 illustrates this by showing the evolution of the contribution of capital to growth during the period 1990-2004 for high and low- debt countries⁽⁵⁴⁾. In general, countries with a low government debt-to-GDP ratio also had a significantly higher contribution of capital to growth, suggesting a crowding-out effect of public debt on private investment. The above result tends to be in line with existing empirical evidence regarding the effect of fiscal policy on growth. For instance, Alesina et al. (2002) show, using a panel of OECD countries, that a reduction of the size of government (measured by total spending and total taxation over GDP) increases the private accumulation of capital.



Sources: Commission services and EU KLEMS (www.EUKLEMS.net).

Graph 23 repeats the same exercise grouping countries according to the degree of flexibility of their markets. The latter is measured by Fraser index already used in Table 8 with a higher value indicating more flexibility⁽⁵⁵⁾. Differences appear to be less pronounced in terms of contribution of capital to GDP growth between the two groups of countries although on average, countries with the most flexible markets also experienced a higher contribution of capital to GDP growth during the whole period. This result indeed corresponds to the one obtained through discriminant analysis is reported in Table 8 suggesting that, in fostering the contribution of capital investment to growth, market flexibility does play a positive albeit relatively minor role.

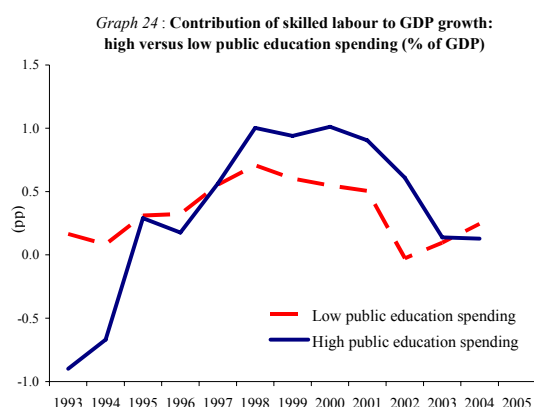


Sources: Commission services and EU KLEMS (www.EUKLEMS.net).

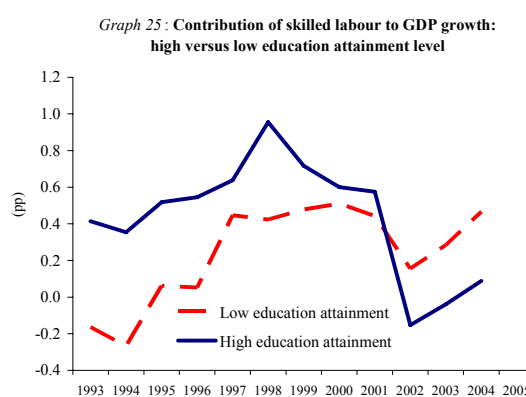
⁽⁵⁴⁾ Annual figures are smoothed using a three-year moving average. The five countries with the lowest debt are grouped together into the low-debt group. The remaining countries are grouped into the high-debt countries.

⁽⁵⁵⁾ The Fraser indicator on market flexibility is used here instead of alternative measures, such as the World Bank Doing Business Indicator, because of the longer time coverage.

Regarding the contribution of skilled labour to growth, the investigation includes both a policy input variable, namely public expenditure on education and a policy outcome variable, namely, the level of education attainment. Graph 24 shows the evolution of the contribution of skilled labour to GDP growth splitting countries according to the level of their public spending in education. No significant differences emerge between the groups of countries. In particular, the negative evolution of the contribution of skilled labour during the early 1990s is due to the experience of countries with high public education spending such as Finland (which suffered a strong recession in the early 1990s) and also, to some extent, Denmark. Overall though, the evolutions for the two groups are relatively similar on average. Graph 25 shows instead the evolution of the contribution of skilled labour to growth in relation to the level of secondary and higher education attainment. The data indicate that countries with better educated workforces also benefited from a larger contribution of skilled labour to growth although at the end of the period this difference has tended to revert somewhat with the economic slowdown at the beginning of the 2000s.

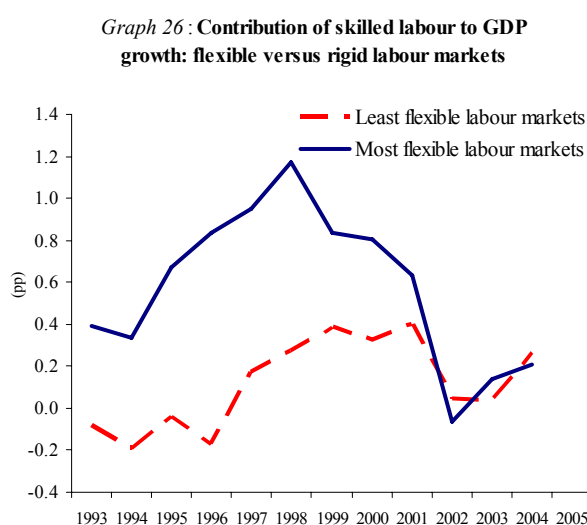


Sources: Commission services and EU KLEMS (www.EUKLEMS.net).



Sources: Commission services and EU KLEMS (www.EUKLEMS.net).

More generally, the outcome of public policy depends crucially on the spending level and their efficiency but also on other factors. In particular, concerning education, the functioning of labour markets is likely to play a conditioning role. Education policies (through high public spending in education) may have little impact on workforce qualification if labour market settings are not the appropriate ones through, for instance, insufficient labour skills' matching or the existence of burdensome labour regulations, in particular concerning (highly educated) young workers. Rigid or badly performing labour markets may hinder education and training policies and, by the same token, deter a higher contribution of skilled labour to economic growth. These conjectures are to some extent supported by Graph 26 which plots the evolution of the contribution of skilled labour to growth, grouping countries according to the degree of flexibility of their labour market (using, as before, the indicators on labour market flexibility of the Fraser

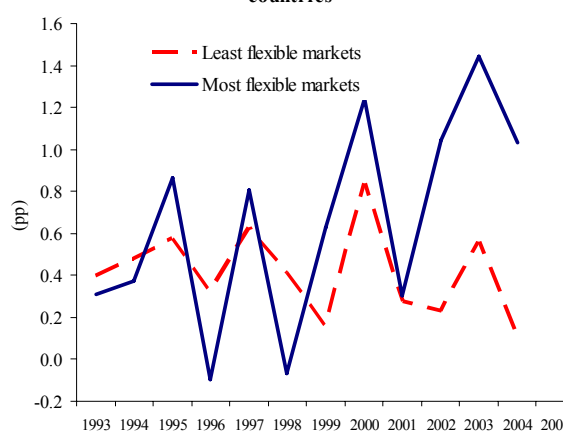


Sources: Commission services and EU KLEMS (www.EUKLEMS.net).

database). The data indicate that countries with a more rigid labour market have also benefited less from the contribution of skilled labour to GDP growth. This result needs to be qualified in light of the existing literature, however. For instance, Agell and Lommerud (1997) suggest that rigid labour markets may give rise to higher incentives for human capital investment. Other authors have suggested instead that rigid markets may prevent that those skills can effectively be used in high-tech/high growth potential production activities due to the higher labour costs (see e.g. Saint-Paul, 2002).

Finally, Graph 27 considers the influence of market rigidities on TFP. Here the evolutions appear to be much more volatile than for the other growth components as mentioned before. This is not surprising given that TFP is in fact a residual of the production function. Despite a higher volatility, the countries with the most flexible markets appear to be the ones benefiting more from TFP changes. This result suggests that the overall negative relationship between market rigidities and TFP found earlier when considering average figures may possibly hide different underlying dynamics given the high volatility of the TFP component.

Graph 27: Contribution of total factor productivity to GDP growth: flexible versus rigid markets countries



Sources: Commission services and EU KLEMS (www.EUKLEMS.net).

More generally, further caution is in order due to the cyclicity of the growth components considered in Graphs 23-27. This is particularly salient in the case of the contribution of TFP but also applies to the other growth components. The issue can be tackled by considering countries' individual series over longer time spans in order to remove the influence of the business cycle which, in some cases, may blur the overall relationship between QPF and growth components.

4. CONCLUSIONS

This paper sets out a multi-dimensional approach to analysing QPF with a view to providing a better basis for policy recommendations and eventually better linking the EU's fiscal governance tools that deal with QPF. The review of the empirical and theoretical literature as well as own empirical analysis can be summarised as follows.

First, sound overall public finances, i.e. strong and sustainable budgetary positions and debt levels remain the linchpin of fiscal policy-making conducive to economic growth. This is, for example, supported by the empirical analysis that shows that high public debt tends to be associated with lower private capital investment reflecting crowding effect of private investment. But good fiscal performance is not enough to support long-run growth. It needs to be accompanied by high quality of public finances in other dimensions.

Second, when public administrations become too large they tend, in general, to hinder economic growth in particular if they are associated with high tax burdens on labour and capital and inefficient use of public resources. Problems are compounded by large deficits

and debt. On the other hand, when governments excel in these other dimensions of QPF, large public sectors can go hand in hand with strong growth performances.

Third, whether certain types of public expenditure (such as public spending on education and health) are growth-enhancing largely depends on their ability to address market failures and provide public goods. For example, the discriminant analysis shows that high education attainment, rather than high education expenditure, tends to foster the contribution of skilled labour to GDP growth. Thus, it is rather the outcomes (such as a public infrastructure or educational attainment) than the level of inputs that matter for growth.

Fourth, in light of rising pressures on public finances and the importance of spending outcomes for growth, a key focus for policy makers should be on raising the efficiency and effectiveness of public spending.

Fifth, revenue structures that limit distortions and disincentives (e.g. indirect taxes on consumption rather than direct taxes on labour and capital) are typically associated with higher growth. However, when deciding on tax structures there are clear trade-offs between the growth and other objectives (such as income distribution and fairness), which need to be fully taken into account.

And finally, achieving results on all of the above fronts of QPF can be facilitated by strong fiscal governance frameworks. They can contribute not only to better budgetary performance and thereby fiscal sustainability but also to a more medium-term orientation with better focus on budgetary priorities and greater efficiency and effectiveness.

The multi-dimensional concept of QPF gives fiscal policy makers a wide range of policy options in support of economic growth. The many policy levers of QPF allow choosing various policy mixes which can explicitly account also for other country-specific objectives. But it is clear that choices need to be made. For example, a rather large public sector can only remain compatible with strong growth prospects if accompanied by sustainable budgetary positions and debt levels, efficient public administrations, spending and revenue systems that are supported by strong fiscal institutions.

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