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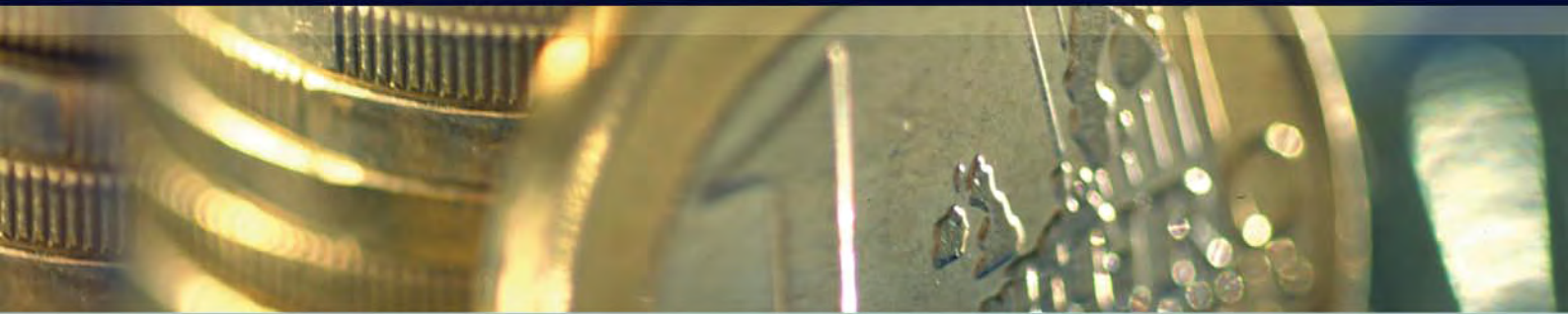
Quality of Public Finances in Support of Growth in the Mediterranean Partner Countries of the EU (Study)

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Study on Quality of Public Finances in Support of Growth in the Mediterranean Partner Countries of the EU
May 28, 2009

EXECUTIVE SUMMARY

Until the early 1990s, the discussions on fiscal policy primarily largely centered on the functions of economic stabilization, income redistribution and resource allocation. Long-term growth was not usually viewed as an end by itself, and fiscal policy was often not sufficiently tailored to the different circumstances and priorities of countries at different stages of development. It was only in the early 1990s that the growth implications of fiscal policy moved to the center of the debate. In the earlier literature, fiscal policy and the discussion of its impact on growth focused on broad aggregates, levels and trends. It is only relatively recently that more disaggregated fiscal parameters are being discussed in the context of growth. While the role of the fiscal policy as a linchpin of a sound macro position and a sustainable debt strategy has hardly been disputed, the discussion has gradually focused on the conditions under which the budgetary policy, and more specifically its expenditure, revenue and financing design, would be supportive of growth.

These issues have already been thoroughly debated within the EU in the context of the Lisbon Strategy for Growth and Jobs and the Strategy and Growth Pact (SGP) and hold clear lessons for the Mediterranean (MED) partner countries. The Euro-Mediterranean ECOFIN Ministerial Meetings held since June 2005 have stressed the importance of the reform of public finance management as part of a broader process of economic and institutional change aimed at fostering higher growth and employment.

The link between fiscal policy and growth has been studied in academia, but has recently also been the subject of thorough analyses by the European Commission, the World Bank and the International Monetary Fund. These studies have set the stage for the analysis undertaken in this study. The study explores empirically the nature of the growth-fiscal link in the MED partner countries, drawing on the lessons of these and other recent studies. It investigates to what extent the lessons drawn from these earlier studies apply to the Partner countries the Mediterranean region.

The main findings of this analysis can be summarized as follows:

- The size of government, measured by the share of budgetary expenditures in GDP, does not seem to be significantly be related to per capita income growth. Countries with large or small governmental expenditures can achieve the same growth performance. However when governance is taken into account countries that score favorably experience a strong positive relationship between the size of government and growth.;

- It does matter much how these government expenditures are financed. Deficit and debt financing clearly undermines the growth performance. This result is a robust one and does not depend on the formulation of the relationship analyzed. This finding confirms that economic stability is a necessary pre-condition for growth;

- The composition of expenditure does matter and so does the efficiency with which expenditure is undertaken. The study finds that expenditures classified as productive do positively influence growth while those classified as unproductive have no significant impact on growth. The way these expenditures are undertaken - referred to as governance in this study - do however, greatly affect their impact on growth. The present study relies on data on general governance for each country in the sample and used them to weight the productive and unproductive expenditures in the regression specifications. The result was that for countries with good governance indicators the positive impact of the productive expenditures on growth was enhanced. That impact was reduced or even nullified in countries that score low on governance. The conclusion is that countries that want to use fiscal policy to achieve higher growth might need to focus on improving their governance rather than on spending more. It is not the remit of this study to suggest an action plan for the improvement of governance, but this deserves more attention than it probably has received from fiscal policy makers;

- These findings on the efficiency of productive expenditure were refined by looking at education expenditure. The ultimate purpose was to trace the budget funding on these functions to outcomes in terms of education and health achievements. Education expenditures were found to improve education outcomes – defined as net enrollment in secondary education—when no account is taken of the country governance scores. However when these indicators are used to weight the education expenditure the result suggests that countries with good scores can obtain very significant improvements in their education outcomes, whereas for countries with poor governance scores these additional expenditures would hardly improve their education outcomes. If countries that score low on their governance indicators would increase their score to the sample average, they could educational outcomes substantially;

- The analysis was also applied to the efficiency of health expenditures with basically similar results. For the same level of expenditure, countries with good governance scores achieve a much better result in terms of child mortality and life expectancy than countries that score low;

- The study also investigated the argument that the composition of revenue influences growth and confirmed the theoretical bias in favor of consumption taxes. In a well specified regression specification taxation depresses growth, but this effect is enhanced when the composition of revenue is biased towards income taxes. Specifically consumption taxes are found to depress growth by up to four times less than income taxes. The lesson here is that increasing the reliance on

Further research could focus on improving the data on budget flows and on outcomes of government programs so that a closer relationship is established between the flow of government funds and the output and outcome investigated. Also, country specific investigations in fiscal policy and growth are likely to provide additional insights on these issues than the analysis reported on here as they could rely on better data and fully account for country specific circumstances. Also the proxy indicators used in this study for governance efficiency could be replaced by indicators that better reflect such issues as budget preparation and execution including the reliance on elements of zero base and performance budgeting, multi year budget frameworks works and specialized (independent) budget oversight outfits.

Main policy recommendations

- Maintaining macro stability is a precondition for growth and deserves the continued attention of policy makers. Countries may want to investigate the use of fiscal rules to anchor their stability policy;
- Fiscal policy in countries that operate within a good governance context have better results that those that score lower. Even though the governance indicators used in this study were not specifically targeted towards good fiscal policy, the results obtained in this study suggests strongly that investing in good budget governance is likely to pay off handsomely. Medium-term budget programming and selectively introducing performance informed budget procedures are suggested;
- Shifting the expenditure structure away from non-productive towards productive expenditure is expected to enhance growth; countries would do well to apply this rule but to obtain a good and agreed upon classification of what expenditures are "productive" and what are "non-productive". In some countries this may suggest a reduction in subsidies;
- Tax reform would help growth o if it were to emphasize the mobilization of fiscal revenue though domestic consumption taxes and deemphasize income taxes. Trade liberalization –which itself is growth enhancing-- will undermine the revenue generation capacity of taxes on international trade; replacing these taxes with broad based consumption taxes would not only assist fiscal stability but would also positively impact on growth.

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1. Introduction and Background

Until the early 1990s, the discussions on fiscal policy primarily centered on its Mugravian dimensions of economic stabilization, income redistribution and resource allocation. Fiscal policy was typically discussed at the macro level as a component of a broader economic-stabilizing policy set (also including the monetary and exchange rate policy), and at the micro level as a mechanism for allocating and distributing resources through taxation and transfers. Long term growth, often viewed as a natural by-product of stabilization policies, was not usually an end by itself, and fiscal policy was often not sufficiently tailored to the different circumstances and priorities of countries at different stages of development. It was only in the early 1990s, following the pioneering works of Barro (1991) and others on the endogenous growth theory, that the growth implications of fiscal policy moved to the center of the debate.[2] In the earlier literature, fiscal policy and the discussion of its impact on growth focused on broad aggregates, levels and trends. It is only relatively recently that more disaggregated fiscal parameters, in addition to other parameters dealing with country specifics, are being discussed in the context of growth.

In a nutshell the question confronting the policymakers is whether there are potential trade-offs and even possible conflicts between the short term and long term objectives surrounding growth and fiscal policy? While the role of the fiscal policy as a linchpin of a sound macro position and a sustainable debt strategy has hardly been disputed, the discussion has gradually focused on the conditions under which the budgetary policy, and more specifically its expenditure, revenue and financing design, would be supportive of growth.

The endogenous growth literature has tried to establish a negative (positive) link between growth and "unproductive" ("productive") expenditure and "distortionary" ("non-distortionary") taxation. While the theoretical and intuitive underpinning of the fiscal-growth link is fairly strong, the empirical results have been less than persuasive, partly because of data shortcomings, but also because of definitional issues (for example, those

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[1] The study was prepared under a contract between the European Commission and CASE - Center for Social and Economic Research and was prepared by Luc De Wulf (consultant), Leonor Coutinho (Europrism - Cyprus/University of Cyprus) and Cyrus Sassanpour (consultant). Santiago s Florez (presently at the World Bank) was responsible for the data collection.

[2] Tanzi and Zee (1997) reviewed the early literature on endogenous growth theory and conclude the fiscal policy could affect long term growth, notwithstanding the difficulties is obtaining empirical support.

surrounding "productive" vs. "unproductive" expenditures, or "distortionary" vs. non-distortionary" taxes), and the estimation methods. The nature and degree of causality and simultaneity between fiscal policy and growth have also been subject to debate. Specific country peculiarities and characteristics, including relative resource endowments, institutional factors, governance and enforcement issues, and a host of other initial conditions have also reduced the scope of sweeping generalizations on the impact of fiscal policy on long term growth.

These issues have already been thoroughly debated within the EU in the context of the Lisbon Strategy for Growth and Jobs and the Strategy and Growth Pact (SGP). The Lisbon Strategy clearly recognized the nexus between the fiscal policy (supported by structural reforms), growth and job creation, and directed the debate toward the nature of public spending and tax structure in support of these objectives. Initially, the debate within the EU on the SGP and effective fiscal surveillance centered on the long term sustainability of public finances, but the subsequent revision of the SGP allowed for country specific medium-term budgetary objectives, and brought on board other fiscal parameters to assess the quality of public finances. Issues related to the composition and efficiency of public spending and taxation, and those related to the institutions, enforcement and governance entered the debate.

The EU experience holds clear lessons for the Mediterranean (MED) partner countries. The first Euro-Mediterranean ECOFIN Ministerial Meetings in Skhirat in June 2005 stressed the importance of upgrading public finance management as one of the four priority areas for accelerated reform in the MED partner countries. Building on that, the subsequent Ministerial Meetings (in Tunis in June 2006 and Porto in September 2007) concluded that the reform of public finance management is part of a broader process of economic and institutional change aimed at fostering higher growth and employment, and lessening the vulnerability of the MED economies to external shocks. In fact, the Ministers concluded that the challenges faced by the MED partner countries were indeed similar to those of the EU.[3] In September 2007, the ministers of Economy and Finance from the Euro-Mediterranean region agreed on the creation of a Euro-Med network of Public Finance Experts. Taking into account the ongoing-debate within the EU on the quality of public finance and the main challenge facing the Mediterranean region, the interest for the network of experts was to include fiscal consolidation as part of a broader agenda for public sector reform, growth and employment and a review of the efficiency and effectiveness of revenue and expenditure. In this context, this study is undertaken to help develop a framework for the analysis of quality of public finances in the context of the EU's Mediterranean partner countries and to help develop a more specific agenda for future research and policy dialogue for the EU partner countries in this area.

The purpose of this study is to explore empirically the nature of the growth-fiscal link in the MED partner countries, drawing as much as possible on the lessons of the EU but also from the experience of developing countries. Section II reviews the existing literature on the subject, focusing on the findings of a number of recent studies that could contribute to the understanding of the growth-fiscal link in the MED partner countries.

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[3] European Commission (2006).

Section III provides some stylized facts of the fiscal variable that are used in the study's analysis. Section IV outlines the analytical methodology, discusses the data issues and reports on the empirical findings. The key recommendations of the study are summarized in Section V and, finally, Section VI presents proposals for further research.

2. Review of Recent Literature

There is a rich theoretical and empirical literature on the link between fiscal policy and growth. Outside the academia, the regional and international institutions, particularly the European Commission, the World Bank and the International Monetary Fund, have initiated most of the recent empirical work. Two comprehensive studies are particularly relevant for the MED partner countries: the EC report "Public Finances in EMU-2008"[4], and the World Bank report "Fiscal Policy for Growth and Development".[5] In addition, there are a number of other recent empirical studies reporting findings on different sub-sets of developing countries. The MED partner represents a diverse group of countries in terms of their stages of economic development and resource endowment, and thus the experience of these countries could hold important lessons for the MED partner countries.

2.1. EC Report: "Public Finances in EMU-2008"

The study identifies a number of dimensions through which fiscal policy could influence growth, while stressing its pivotal role in macroeconomic stability and debt sustainability. Other studies have focused on one or some of these elements, but the EU study probably provides the most comprehensive coverage of these multiple fiscal links and brings together the different dimensions of the quality of public finances (QPF) that have been mostly studied in isolation. This multi-dimensional framework reflects the complex relationship between the QPF and growth, and the multiplicity of fiscal policy objectives and constraints. The report identifies six fiscal and non-fiscal QPF dimensions and their links to growth; most of them would be relevant to the MED partner countries:

1. The *size of the public sector* (measured by the share of total expenditure to GDP) has at best a weak link to growth (measured as per capita income) in the EU. There is a positive link for some countries (at the both ends of the income ladder) and for certain time periods. For countries with smaller public sectors and lower per capita incomes, there could be an initial positive growth impulse by increasing the productivity of labor and capital by increasing the supply of public goods. However, there is a fast diminishing marginal rate of return to such spending that could turn negative as distortions (for example, higher taxes to offset higher spending) set in. In any event, the large size of the government is not necessarily a deterrent to growth as long as the distortions are kept low by efficient expenditure and taxation policies. Apart from the absence of a robust link, the causality between the per capita income and the size of the public sector is also not clear:

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[4] European Commission (2008).
[5] World Bank (2007).

does higher spending facilitate income growth or does higher income demands greater provision of public goods as in those countries with aging populations and greater urbanization?

2. The *size of the fiscal deficits* typically has a negative bearing on growth. A higher fiscal deficit and a rapidly rising debt are commonly associated with macroeconomic instability and directly and indirectly impinge on the saving and investment decisions of the private sector, and hence growth. Higher government borrowing raises the cost of capital and crowds out the private sector. Savings rise to guard against future tax increases while investment declines in reaction to lower expected future returns on the capital, both constraining growth. In addition, the quickest and probably the least politically contentious mean to curb the budget deficit is typically through cuts in the capital budget which would also affect future growth. The empirical results for the EU countries as well as other countries broadly support this negative relationship running from high deficit and public debt to growth. In addition to the *level* of the fiscal deficit, the *variability* of the deficit could also be associated with lower growth: the increased variability of discretionary spending would increase output variability and hence output growth.

3. The *composition and efficiency of public expenditure* is the most common dimension investigated in the fiscal-growth link. The underlying hypothesis is that the provision of those public goods that raise the productivity of the factors of production and address market imperfections are typically growth-promoting. But the link is less robust empirically. The expected positive link between total *public investment* and growth is only detected in some cases, but investment in certain areas (for example, transportation and communication) is clearly growth-enhancing. *Public consumption and transfers* on the other hand are typically negatively related to growth, but there are clearly elements of current expenditure (education, health, and spending on R&D, public safety and order, and environment), which are pro growth. The lesson that emerges from the EU experience is that the growth benefits the most from a well-targeted public expenditure program, rather than in increase in overall public investment. Increasing the *efficiency of spending* at any spending level is likely to contribute to growth. For example, the efficiency of spending on education could in many cases be increased by focusing on curriculum design, student-teacher ratios, and IT spending rather than by spending on brick and mortars, or public spending on R&D is most effective when it spurs private R&D. However, measuring expenditure efficiency is a more complex issue (see Box. 1).

4. The *structure and efficiency of the revenue system* is the other side of the fiscal equation that impacts growth. In general, the tax system addresses a number of public policy objectives: it raises resources to finance the provision of public goods and services; reallocates income (progressive income tax); addresses externalities (fuel and "sin" taxes); and supports specific purposes (tax breaks for housing). Direct taxes usually have a more discretionary element than indirect taxes and hence could be more distortionary and growth inhibiting. Among direct taxes, some (e.g., social security taxes) have a more adverse impact on growth (by affecting costs and competiveness) than others (e.g., income taxes). Similarly, some indirect taxes (e.g., tariffs and trade taxes) are less

growth-friendly than others (e.g., VAT). Additionally, the ability of the tax system to support growth depends on the structure of the economy and the efficiency of tax administration. In the EU, of all taxes, the high tax on labor has probably the most adverse impact on growth and employment. The efficiency of the tax system could also affect the incidence of taxation: a broader tax base and a more efficient revenue collection would allow for lower tax rates. In principle, an optimal tax system would have to be simple and transparent; eliminate (or at least minimize) the incentives for tax avoidance; and would carry a low administrative and compliance cost.

Box. 1 Efficiency of Public Spending

One of the novelties of the EC study is its discussion of the efficiency of public spending and the link between the provision of inputs and the output and ultimate policy objectives. In the education area, for example, the input would be the number of teachers made available through the provision of public resources to achieve a certain output in terms of the number of graduates or the degree of educational attainment. In addition to public spending, there are also a host of other factors that could affect the outcome (for example, parents' educational levels or the extent of family-financed private tutoring). The output, in turn, should also be closely linked to the outcome (in this case, higher labor productivity) and to the ultimate policy objective behind the initial provision of public goods (higher GDP growth). Establishing these links empirically, however, faces some important hurdles including the definition of inputs and outputs, and the availability of sufficiently detailed data at the country level and comparable data for cross-country comparisons. There are also different initial conditions across countries and various leads and lags involved between the provision of inputs and the achievement of final output that could be different between countries. Notwithstanding the data shortcomings, the study discusses efficiency estimates of public spending on education and health in the OECD countries.

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5. Good *fiscal governance* includes sound fiscal rules and strong fiscal institutions, budgetary procedures and medium-term budget frameworks. These rules, procedures and practices could constrain the scope for politically-motivated fiscal decisions, attach a more clear outcome to fiscal decisions (performance-based budgeting) and better focus the policy discussion on spending priorities. Since 1990, the tendency in the EU countries has been to adopt *fiscal rules*, extend the coverage of the existing rules or strengthen their features. In general, stronger fiscal rules in the EU has been associated with stronger budgetary performance, although it is also recognized that rule-based frameworks could weaken the flexibility of fiscal policy to respond to shocks, especially when the monetary policy has a limited room to maneuver. At the same time, more and more EU members have adopted *medium-term budgetary frameworks* on an annual rolling basis with 3-4 years horizons. Such medium-term frameworks provide more transparency, facilitate investment decision-making by the private sector, and lessen the scope for expenditure surges linked to political cycles. However, even in the EU members these frameworks are typically indicative, are not closely linked to the annual budgets, and are not subject to

enforcement. Some EU countries have instituted *independent fiscal agencies* which supply macro assumptions for budget formulation and in some cases assess and monitor the budget performance, and provide medium term budget plans. Finally, *performance-based budgeting*, linking budget appropriations to concrete outcome, is being used, but only in few EU countries and only a few sectors.

6. There are a set of non-fiscal parameters such as *market efficiency and the business environment* that have strong overlaps with the other QPF dimensions and affect growth. Such parameters could, for example, reflect the efficiency of the goods and labor markets, or the legal and regulatory framework, and their direct and indirect impact on growth. By definition, however, such parameters could be assessed only qualitatively and stand the risk of being subjective. A number of institutions publish and regularly update such proxies. The World Banks' Doing Business indices provide a proxy for the quality of business regulations and the effectiveness of their enforcement. The World Bank also publishes "governance indicators" and the World Economic Forum tabulates an index on "wastefulness" of government spending.

Notwithstanding the theoretical foundation of the arguments, establishing an empirical link between growth and QPF has proved more difficult in practice for a number of reasons. First, while some QPF dimensions are easily quantifiable (e.g., public debt, fiscal deficit, share of taxes), other components are only qualitative (e.g., relative efficiency, market flexibility, effective governance). Second, there is the issue of simultaneity and a causality running in both directions between growth and QPF. Third, the degree of influence of QPF on economic growth is complicated by potentially long lags between policy implications and outcome.

With these caveats in mind, the data suggests that divergences in growth performance across the EU and non-EU OECD countries since 1980 have been accompanied by divergences in QFP. Overall, and generally speaking, countries with lower public expenditure to GDP, lower public debt to GDP, lower budget deficit to GDP and lower deficit variability, lower share of direct taxes, lower labor tax wedge, and more market flexibility have displayed a higher growth tendency. Moreover, in the more recent period, the differences in growth performance between the high and low growth countries have been associated with even sharper differences in QPF performance.

Focusing on the overall GDP growth and trying to link it with the different QPF components, however, misses the channels through which growth is more readily affected by QPF parameters. The study suggests decomposing the sources of growth (through a growth-accounting framework in which low-skill labor, high-skill labor, capital, and total factor productivity are the contributing factors) and then link each of the growth components to the QPF component that would most likely influence it. For example, the results suggest that high education attainment and more flexible labor market conditions tend to increase the contribution of skilled labor to growth. Or that high public debt and less flexible capital markets tend to be associated with lower private capital investment impact on growth.

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2. 2. World Bank Report: "Fiscal Policy for Growth and Development"

The World Bank report has a similar premise and essentially touches on the same set of issues as the EC report: (a) macro stability is a necessary, but not a sufficient condition for growth—fiscal policy should aim at macro stability *with* growth; (b) there is need for a deeper understanding of fiscal-growth linkages, focusing on the efficiency and composition of public expenditures and tax structure; (c) policies should be country-specific, taking into account the countries' stage of economic development and their various constraints and priorities. Within this framework, the focus of policies should be to create a "fiscal space"[6] to support growth and, additionally, consistent with the thrust of World Bank policies, the growth should be pro-poor and environmentally sustainable.

Effective pro-growth fiscal policy requires a better recognition of the role of the fiscal policy at both the macro and micro levels, of the rules and procedures, and of the institutions and governance. In the macro area, there should be a recognition that the *speed* as well as the *composition* of fiscal adjustment may impinge on growth. Rapid adjustment, often coming at the expense of cuts in capital expenditure and quick revenue mobilization (that would affect private sector decisions) could lower the growth trajectory. With this mind, the fiscal-growth link should be viewed within a longer-term framework in order to evaluate inter-temporal trade-offs. In the micro area, there should be a better recognition of financial returns and costs of various expenditure and revenue options. Stronger fiscal rules and procedures should limit discretions and provide a longer-term perspective to dampen the impact of business cycles on growth. Finally, all these efforts would need to be supported by stronger institutions and effective governance built around greater transparency and accountability.

A strong macroeconomic footing and fiscal stability are central to a pro-growth policy, but ultimately the stronger and the most direct impact of policies on growth comes through the growth-content and the efficiency of public spending and taxation, especially in areas that spur private sector investment and production. Drawing on a number of country studies, the World Bank paper concludes that capital expenditure, as well as spending on transport and communication, and health and education are typically pro-growth. The effects would be stronger the higher the efficiency of resource use and the quality of governance. The effect would be accumulative over time, and hence the importance of a longer term perspective. The empirical evidence also seems to suggest that the causality runs from public expenditure to growth. The report is rather mute on the effect of alternative revenue options on growth, save for the general principle that the tax structure should not adversely affect private investment decisions. The World Bank, in coordination with the International Monetary Fund, has typically advocated a gradual move from direct taxes toward indirect taxes, especially broad-based consumption taxes; a broadening of the tax base which would allow for lower tax rates; reducing tax expenditure; lowering reliance on trade taxes; limiting tax earmarking which could limit budget flexibility; and avoiding ad-hoc tax changes that create uncertainty; all supported by stronger tax administration and effective enforcement.

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[6] "Fiscal Space" refers to the government ability to spend without impairing its solvency. See Heller (2005) and World Bank (2006).

Against this background and observations, the report suggests an explicit "growth-oriented approach" to fiscal policy, which is the most innovative contribution of the study. The approach first tries to identify the constraints to higher growth and to ascertain whether fiscal policy (public expenditure and taxation) could be used to address these constraints. If public spending is judged to be the binding constraint, then the question becomes whether compositional changes and efficiency gains could alleviate these constraints. And if not, it might be even necessary in some cases to raise the level of public spending within a prudent and cost effective revenue and financing resource envelope. If compositional shifts, higher efficiency or increases in spending levels were deemed insufficient to achieve the growth target, the target itself would then have been adjusted. This iterative process seeks to ensure that: (a) the fiscal policy is securely anchored within a prudent macro framework; (b) potential gains from compositional expenditure shifts and efficiency are fully captured; (c) the fiscal contra nits to growth are alleviated and ultimately removed; and (d) that the fiscal policy remains consistent with a higher long term growth projectile. This approach stands in contrast to the conventional approach where initial conservative assumptions about resource availability could constrain growth objectives. The approach also allows countries to identify and address country-specific constraints to higher growth. Cast in a medium term framework, and tapping the full potential of fiscal policy, while staying within prudent macro limits, the suggested World Bank approach is more likely to help countries achieve the United Nations' Millennium Development Goals which are predicated on high and sustained rates of economic growth.

The paper reports the findings of a number of detailed country studies that draw on country specifics to establish the optimal link between the fiscal policy and growth objectives. [7] This "tailor-made" approach leads to some interesting conclusions for the MED countries. It was reported that in some countries (Turkey included) a stronger growth impulse would come from improved composition and efficiency of expenditure. In other countries (Morocco included), improving the efficiency of tax policy would improve the growth orientation of the fiscal policy. For the African countries in the sample (Morocco excluded), an increase in the level of expenditure, financed by predictable aid, would ease the growth constraints.

2.3. Other Selected Studies on the Growth-Fiscal Link

There have been a number of recent empirical studies investigating the impact of changes in the fiscal components on growth in developing countries. The following selected studies provide a flavor of the recent trend in research on the issue that might be relevant for the studies on the MED partner countries; in fact, some of these studies include the MED countries in their sample coverage.

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[7] In fact, two of the twelve countries are MED countries (Turkey and Morocco). The other countries in the group were: Brazil, Cameroon, Ukraine, India, Kenya, Philippines, Rwanda, Tajikistan, Madagascar and Uganda.

Semmler et al (2007) develop in a theoretical framework of an economy where the government taxes optimally and spends on education and health, infrastructure, public consumption and transfers, and debt service. The model is calibrated and numerical examples are used to explore the impact of shifts in the consumption of government spending on long term per capita income and welfare. Since the model is not estimated, the results are influenced by the values assigned to different parameters. Moreover, since the model assumes that taxation is already optimal, the fiscal impact on growth only emanates from compositional changes in public spending.

One set of results suggests that the composition of investment expenditure indeed matters as the income and welfare gains of moving to an optimal allocation of expenditure between infrastructure on the one hand, and health and education on the other hand are significant. Based on the calibration exercise, the per capita income and welfare gains would be maximized if roughly two third of public investment is allocated to the development of infrastructure that facilitates market production and the remaining one third allocated, equally, to public investment that supports health and education. The model also suggests that allocating human capital to market production or to more human capital production poses an important trade-off and recommends that human capital should be largely used for market production. Interestingly, the model also suggests that long term debt sustainability is not an issue as long as resources allocated to public investment are used in a growth maximizing manner.

Moreno-Dodson (2008) explores the impact of changes in public spending on growth in a sample of seven fast-growing developing countries.[8] Specifically, the study seeks to establish the conditions under which public spending contributes to growth and identify those spending components that have a stronger and more durable impact on growth. The model specifies growth as a function of a set of fiscal variables (ratios of expenditure, revenue, deficit to GDP); macroeconomic stability variables (inflation); private sector contributions (private investment to GDP ratio); and country-specific initial conditions (human capital, degree of openness). The model focuses on total expenditure, arguing that the growth content of some categories of current spending (for example, maintenance) cannot be conceptually isolated from investment spending. To investigate the impact of compositional shifts in expenditure on growth, total government spending is divided on the basis of alternative different criteria, driving a wedge between productive and unproductive, and between social and economic expenditures.

The results suggest that the net impact of public spending on growth has been positive. Inflation (proxying macro instability) had a negative impact on growth, while private investment and the openness of the economy supported growth. The growth impact of the composition of public spending was very much a function of the definitions. As expected, "productive" expenditure (including education and health as well as some economic

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[8] None of the seven countries covered in this study (Korea, Singapore, Malaysia, Thailand, Indonesia, Botswana, and Mauritius) are in the MED partner sample. These countries were chosen because their high growth rates had been sustained over many years, allowing sufficient time for policies (in this case fiscal policy) to manifest itself. Also, they were chosen to investigate the reasons for their rapid growth (and whether fiscal related) and draw lessons from their experience for the slower growing countries.

expenditure such as transport and communication) had the largest positive impact on growth, particularly over the medium term.[9] The implication is that social spending is most effective when accompanied by increases in certain economic spending; in isolation, economic spending had a positive impact on growth whereas social spending was not statistically significant. The country results also broadly confirmed the cross-country analysis. In brief, the empirical results suggest that public spending has a net positive impact on growth if: (a) macroeconomic stability is maintained; (b) the size of the government is relatively small; (c) social and economic spending are mixed in a productive cocktail; and (d) are supported by private investment and open foreign trade.

Rajkumar and Swaroop (2008) investigate the impact of public spending on health and education. Earlier empirical findings suggest that the level of public education spending has little impact on the outcomes, because it 'crowds out" private spending but also because of inherent inefficiencies and weaknesses in public service delivery. Extending the framework to include a "governance" variable, Rajkummar and Swaroop find that the differences in the efficacy of public spending can be explained largely by the quality of governance. Education and health outcomes are substantially better where governance is good, and when the governance is poor, these expenditures do not seem to have much of an impact on the outcomes. These findings are based, however, on preliminary World Bank measures of governance and a short sample period for expenditure and outcome.

Eken et al (1997) is one of the earliest empirical studies on the impact of fiscal policy on growth in the Middle East and North Africa (MENA) region.[10] Similar to the studies reviewed above, this study also seeks to determine the impact of the level and the composition of public expenditure on growth. However, in contrast to these studies, this study also investigates the impact of government revenue on growth in the context of both oil importers and oil exporters.[11] The empirical results were mixed. In the non-oil exporting countries, there was robust evidence on the negative impact of both overall expenditure and overall revenue on growth—the size of the government argument. However, no robust estimates were obtained on the growth impact of the composition of expenditure and revenue, which attributed to the diversity of the countries in the sample as well the lack of a clear divide between productive and unproductive expenditure. In the oil-exporting countries, there was some evidence of a positive link between the overall expenditure and revenue and non-oil GDP growth. Both current and capital expenditure were positively correlated with growth. (discussed further below). The overall budget deficit was found to have a positive (though statistically insignificant) impact on growth in oil-exports while the relation was negative for the non-oil exporters. Similar to the previous study, macro instability variables (inflation) had a negative impact on growth while private investment exerted a positive influence.

The MED partner countries include a number of oil and gas exporters: Algeria and to a lesser extent, Egypt and Syria. The fiscal mechanism and channels that impact growth

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[9] The study finds that reallocating 1% of unproductive spending to productive spending would increase GDP per capita growth by 0.35%.

[10] This study provides a good overlap of countries with MED running in an arc from Syria to Morocco.

[11] Fiscal policy in the oil exporting countries has its own nuances and is further discussed below.

could be conceptually different between the oil exporters and oil importers. [12] The revenue structure in oil exporters is dominated by oil revenue (meant to include revenue from all hydrocarbon recourses); non-oil revenue is dominated by non-tax revenue (mostly specific fees and charges on a limited range of goods and services, and investment income); and the tax base is very narrow (personal and corporate income taxes are low or are nonexistent, import duties are low, and there are typically no mass consumption taxes). The narrow revenue base and the volatility of oil prices have rendered the public finances of these countries particularly vulnerable to the vagaries of the oil market.

In most Middle Eastern oil-exporting countries the governments play a central in redistributing the oil income. Most, if not all, of the oil revenue in the MENA oil exporting countries accrue in one form or the other to the government. The government also has a central role in distributing the oil income to the general population through employment; transfers, subsidies and entitlements; public security and defense; and public development projects. For these reasons, the share of total government revenue (including oil revenue) and expenditure in GDP is very high in the oil exporting countries. However, with salaries, pensions, subsidies and entitlements, education and defense dominating public spending, the efficiency of government spending is rather low and the expenditure structure is fairly rigid. In these circumstances, the growth impulse largely originates from increases in the overall expenditure. [13] As such, there has been a strong correlation between the oil income, government expenditure levels, and non-oil GDP in the oil exporting countries, creating boom-bust cycles that follow the oil price cycles. It is only more recently that the proceeds from the investment of the surplus assets have emerged as an important expenditure-smoothing element in some countries, helping to dampen expenditure and output gyrations.

Reducing the vulnerability of the economies of oil exporters to external terms of trade shocks requires forward looking policies to diversify the revenue base, improve the quality of spending, and reduce certain clearly unproductive spending, without significantly changing the welfare-state features that have been in place in these countries for some time. [14]

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[12] This characterization is more typical of the larger Middle East oil exporters. The marginal oil exporters (i.e., Egypt and Syria in the MED sample) have features closer to the oil importers.
[13] Eken (1997).
[14] See, Sassanpour (1996) for a discussion of policy challenges in oil exporting countries.

3. Fiscal Policy and Growth: Some Stylized Facts

The technical description of the general invitation to tender for the present study refers to the conceptual framework prepared by the Commission that sets out the key channels through which fiscal policy could impact economic growth (see Section 2 above). These were identified as (i) size of government, (ii) composition and efficiency of public expenditures, (iii) structure and efficiency of revenue systems, and (iv) fiscal governance institutions and practices. We will analyze these channels in detail throughout the study. Starting in this section we point out some important stylized facts. Originally, the intention was to undertake the analysis for all countries included in The Barcelona Process Union for the Mediterranean. However because of data limitations, the coverage was narrower as a number of countries (Mauritania, Monaco, the Palestinian Authority, Bosnia-Herzegovina and Montenegro) were excluded from the sample. Hence the present study is limited to Albania, Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Syria, Tunisia, Croatia, and Turkey.

Table **1** brings together a number of fiscal and other variables for the Mediterranean partner countries of the EU considered in the study. The table provides data for the period 1980-2008 and for the sub periods 1980-1995 and 1996-2008 (all data sources are listed in the Annex). The data is provided for low growing countries (with average growth rate below 2% over the sample) and fast growing countries (with growth rates above 2% over the sample).[15] Data for Israel and Turkey are presented separately as for some of the data series they are clearly outliers and the analysis discussed below will take that into account in the regression specifications. The data sources are described in Appendix 1. The governance indicator corresponds to the average of six World Bank governance indicators which measure the country's performance in terms of voice and accountability, political stability; government effectiveness, regulatory quality, rule of law, and control of corruption (see Box 2). Several stylized facts are worth mentioning. They provide a bird's eye view of the relationships under investigation and will be subjected to rigorous analysis in Section 5.

- Countries that experience low growth seem to have a somewhat larger government as defined by the share of expenditures in GDP; Israel has an exceptionally large government sector, while Turkey has a very small government sector;

- Slow growing countries have a substantial fiscal deficit and a high level of debt, while fast growing countries on the other hand operate their government with a slight surplus and substantially lower levels of debt;.

- Productive expenditures make up a are consistently higher share in total expenditures in fast growing countries than in slow growing countries; in Israel the non productive expenditures are very high largely because of its high defense expenditures; data for Turkey were not available;

- Domestic consumption taxes raise a larger share of fiscal revenue in fast growing countries than in slow growing countries, while the reverse is true for taxes on international trade. Income taxes raise a larger share of total revenue in slow growing versus fast growing countries.

- The average for governance indicators, while still negative for nearly all countries included in t his study is less negative in fast growing than in slow growing countries; Israel stands as the only country with a positive score.

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[15] This classification puts in the group of fast growing countries Albania, Croatia, Egypt, Morocco, and Tunisia; and in the group of low growth Algeria, Jordan, Lebanon, and Syria. More details on growth rates are given in Table 2. The 2 percent benchmark was chosen because it is the average of the growth experienced by this group of countries over the sample.

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Table 1: Growth and the quality of public finances, selected indicators for the Euro-Med region

	1980-2008				1980-1996				1996-2008			
	low growth	*high growth*	*Israel*	*Turkey*	*low growth*	*high growth*	*Israel*	*Turkey*	*low growth*	*high growth*	*Israel*	*Turkey*
Average GDP per capita growth rate	1.17	3.10	1.98	2.92	0.70	2.01	2.25	2.80	1.71	4.15	1.67	3.05
Inflation, percent	15.39	30.33	29.78	41.34	25.97	71.64	49.52	46.27	3.41	3.96	3.47	34.77
1. The size of the government												
Government Expenditure	31.61	29.60	44.19	21.64	30.43	26.86	42.77	15.33	32.08	30.41	44.90	24.79
2. Fiscal deficit and sustainability												
Size of deficit	-5.67	2.14	-2.87	-4.41	-6.62	3.91	-3.17	-1.12	-5.72	1.56	-2.73	-6.06
Public debt	62.81	54.05	56.12	34.18	57.58	43.33	54.83	28.24	69.81	52.76	56.52	42.09
3. Composition of expenditure*												
Productive	36.64	39.95	32.98	-	42.04	38.13	32.99	-	35.51	40.44	32.98	-
Non-productive	63.36	60.05	67.02	-	57.96	61.87	67.01	-	64.49	59.56	67.02	-
4. Structure of revenues												
Income taxes	21.51	15.33	32.32	30.06	24.55	14.53	33.08	32.23	21.49	8.51	31.95	28.97
Consumption taxes	21.51	24.50	27.14	43.86	-	17.13	27.40	32.35	22.42	26.95	27.02	49.61
Taxes on External Trade	17.62	10.40	0.83	2.15	29.60	14.53	1.16	3.85	15.64	8.51	0.67	1.30
5. Governance												
Average of governance scores*	-0.54	-0.09	0.60	-0.20	-	-	-	-	-0.54	-0.09	0.60	-0.20

Notes: Weighted averages, using per capita GDP in international USD (PPP exchange rates) in 2007 as weights.

   *In percent of GDP

   [1] Average of governance scores constructed by the World Bank, described in detail in the next section.

   The panel is unbalanced, not all data is available for the whole period

In Table 2 we show in addition other macroeconomic variables that are traditionally linked to growth. Countries in the region differ substantially in terms of their openness (exports plus imports as a ratio to GDP), and of their foreign direct investment inflows as a percent of GDP, and the two variables appear somehow correlated.

Table 2: Selected Macroeconomic Indicators, ratios to GDP, sample averages (1980-2008).

	Openness	*Foreign Direct Investment**
Albania	37.2	
Algeria	39.7	
Croatia*	68.6	33.5
Egypt	29.4	34.4
Israel	52.9	13.5
Jordan	75.7	66.9
Lebanon	50.7	
Morocco	40.6	35.9
Syria	41.6	
Tunisia	67.6	60.4
Turkey	5.4	12.8

*The data on FDI is not available for the whole sample, and data availability differs across countries, and is not used in the analysis.

To further look into the relationship between size of the government and growth, Figure 1 plots for the countries in the sample the average growth rate and the average size of Government for 1980-2008. An inspection of the chart shown in the figure does not suggest a systematic relationship either way. Countries with large governments –such as Israel with expenditure to GDP ratio of 44 percent—have not experienced a slow growth. However, the one country with smaller government than the sample average – Turkey with expenditure to GDP ratio of 22 percent - did experience a somewhat above average growth rate. In most countries in the sample, expenditures represent about 30 percent of GDP yet they experienced substantially different growth rates. Clearly, without taking other factor into account, the size of government does not seem to be unambiguously related to growth performance.

Figure 1: Growth and Government Size

Correlation Between Growth Rates of Real Output Per Capita and Size of Government, averages between 1980-2008
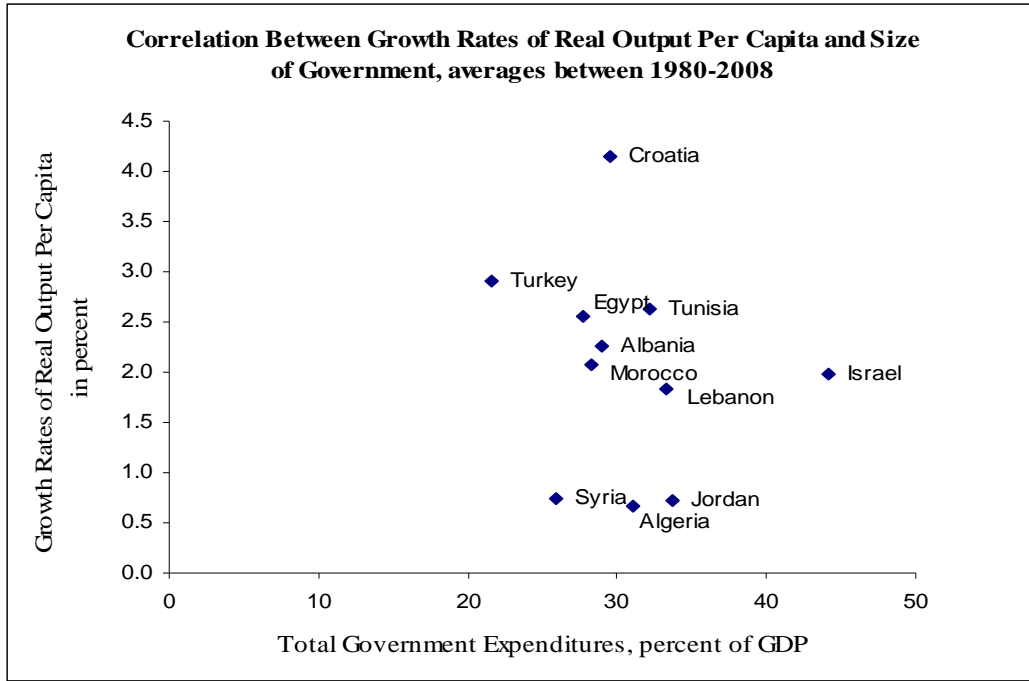
We notice in Table 1 however, that one thing that clearly seems to distinguish slow from fast growing countries is the average governance scores. Assuming that governance affects the impact of fiscal policy in the economy, we simply multiply fiscal expenditures as a ratio to GDP by the average governance scores, to see if there seems to be a pattern by re-scaling government expenditures in this way. Figure 2 shows the cross-plot of this re-scaled expenditure variable against growth, and the correlation seems to change significant. When we control for governance it does appear that countries with larger governments and/or more effective governments do realize a somewhat faster growth.

Figure 2: Growth, Government Size, and Governance

Correlation Between Growth Rates of Real Output Per Capita and Size of Government scaled by governance, averages between 1980-2008
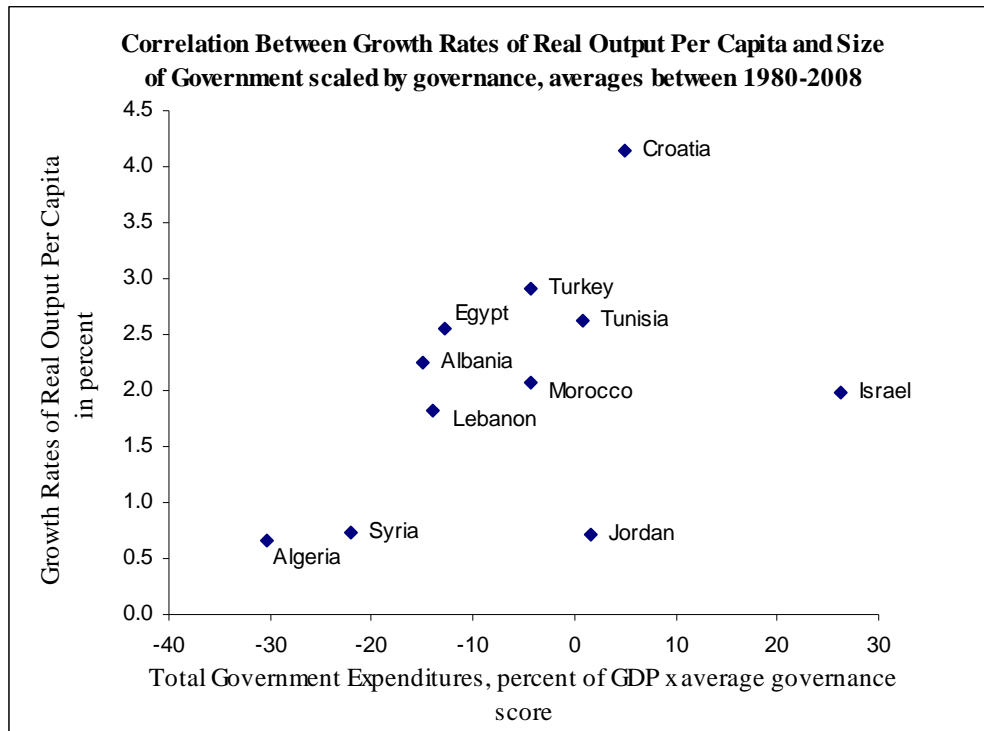
To explore further the relationship between the size of government and per capita growth, and to further analyze the importance of its composition, financing, and effectiveness, we apply regression analysis to the panel data, using the methodology which we describe in Chapter 4. The results of the analysis are explained in Chapter 5.

4. Study Methodology

4.1. Fiscal Policy and Growth Analysis

The hypotheses that we intend to test and for which we define the methodology and collect the necessary data are the following:

- *The size of government by itself is not systematically related to growth performance. What matters more is the way the government expenditures are financed.*
- *Whatever the impact of the size of government, the composition of expenditure affects growth. The larger the share of productive expenditures in overall expenditure, the better the growth performance is expected to be. Good governance will enhance this effect.*
- *Revenue systems that rely relatively more on consumption taxes have a less negative impact on growth than those that rely more on income taxes. But taxes*

on international depress growth more than domestic consumption taxes as they have a greater distortive effect on production.

We estimate growth equations with fiscal policy variables as part of a comprehensive set of explanatory variables. The empirical model is broadly based on the methodology of Barro and Sala-i-Martin (2003), Bose et al. (2007), and Moreno-Dodson (2008), adapted to the framework of this study and its data weaknesses.

The countries included in the panel regression estimates are Albania, Algeria, Croatia, Egypt, Israel, Jordan, Lebanon, Morocco, Syria, Tunisia, and Turkey. The estimation sample is 1996-2008, which is the period for which we have information on governance, but not all countries have all the data for this period, hence the panel is unbalanced. The data sources are described in the Appendix 1, and the data availability in Appendix 2.

The baseline specification relates the growth rate of per capita GDP to the GDP per capita growth rate lagged one period and a range of control variables, which can be classified in three broad categories:
(i)   Macroeconomic indicators
(ii)   Initial conditioning variables
(iii)   Fiscal policy variables

This specification can then be summarized as follow:
$$y_{it} = \alpha_0 + \alpha_1 y_{it-1} + \alpha_2 ' X_{it} + \alpha_3 ' IC_i + \alpha_4 G_{it-1} + \alpha_5 T_{it-1} + \alpha_6 S_{it} \qquad (1)$$

where

α_1 *to* α_6 contain the coefficients assigned to the independent variables, and α_0 is a constant; the subscript i indexes the country; the subscript t indexes the year; *y* is the rate of growth of GDP per capita; X is a vector of macroeconomic indicators; IC is a vector of initial conditioning variables; G is the ratio of government expenditure to GDP; T is the ratio of government revenues to GDP; and S is a vector of fiscal sustainability indicators.

The lagged value of the dependent variable is included to capture cyclical effects. Since we have a limited time series for each country, it is not possible to net out cyclical effects by taking 5 or 10 year averages.

In the set of control variables representing macroeconomic conditions (X vector) we have included: a measure of openness (imports plus exports divided by GDP) to capture the various benefits that are related to openness such as those that are responsible for the success of export-led growth, increased competitiveness that result from lower protection and economies of scale, as well as the attractiveness of the country for FDI and related access to modern technology. The latter could not be taken into account directly for lack of comparable data. Also included is the CPI inflation rate as a measure of the degree of macroeconomic instability (as proposed in Moreno-Dodson, 2008). The coefficient

associated with openness is expected to be positive and the coefficient on inflation to be negative.

As initial condition variables (IC vector) we only included the log of GDP per capita in the initial year since other variables considered in the literature, such as life expectancy at birth and school enrolment, were not statistically significant. To the extent that this variable captures the initial stock of human capital, the coefficient is expected to be positive.

In the set of fiscal policy variables we include the first lag of government expenditures to GDP ratio to account for the size of the government. We also include the first lag of the revenues to GDP ratio to control for the way fiscal policy is financed. There is a large body of literature that shows that balanced-budget fiscal expansions should have a different impact on output than debt-financed fiscal expansions (see Perotti, 2007, and references therein).

 The expenditures and revenues are lagged by one period to account for fiscal policy lags, and for possible endogeneity problems (that arise if higher growth leads to higher expenditure. We could not consider more lags, given our short time series. If large governments are less conducive to growth, the coefficient on government expenditures should come out negative.

Finally, as indicator of the sustainability of fiscal policy we consider the debt-to-GDP ratio. The coefficient of the debt variable should be negative, as large debt to GDP could signal higher interest rates, tighter access to finance, and the crowding out of private investment.

In alternative specifications we extended the model to account for the impact of governance. Previous studies have argued that governance can change the effectiveness of fiscal policy (see Rajkumar and Swaroop, 2002). [16] At the same time, the growth literature has stressed the importance of accounting for the quality of inputs, and therefore measuring inputs, such as labour in efficiency units (see Barro and Sala-i-Martin, 1995, for instance). We do not have a direct measure of government efficiency, with which to scale government expenditures, but we assume that government efficiency is correlated with a set of governance indicators, and we re-scale government expenditures according to efficiency using this assumption.

The governance indicators we use to capture efficiency are the six world governance indexes constructed by the World Bank, which measure how each country scores in terms of (i) voice and accountability; (ii) political stability; (iii) government effectiveness; (iv) regulatory quality; (v) rule of law; and (vi) control of corruption (see Appendix 2, for a summary of the data). **Error! Reference source not found.** gives a description of these

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[16] Rajkumar and Swaroop (2002) show that the effectiveness of fiscal expenditures is correlated with governance measures.

governance indexes.[17] Since these indicators range in practice between -2.5 and 2.5, with higher scores corresponding to better outcomes, we choose to take as our efficiency scaling factor, the exponential of the average of these scores: countries with a negative average governance score will have an efficiency scaling factor lower than 1, and countries with a positive average governance score will have a scaling factor above 1. In this way we obtain a similar re-scaling of expenditures to that of Figure 1, but avoiding dealing with negative numbers. As such scaled expenditures are defined as the exponential of the average of the individual governance scores.

We test two alternative specifications regarding the role of governance: (i) governance affects growth directly (equation 2) and (ii) governance affects growth by changing the effectiveness of fiscal variables. In the second specification (equation 3), replace government expenditures by our re-scaled variable.

$$y_{it} = \alpha_0 + \alpha_1 y_{it-1} + \alpha_2 'X_{it} + \alpha_3 'IC_i + \alpha_4 G_{it-1} + \alpha_5 T_{it-1} + \alpha_6 S_{it} + \alpha_7 ewgi_{it} \qquad (2)$$

$$y_{it} = \alpha_0 + \alpha_1 y_{it-1} + \alpha_2 'X_{it} + \alpha_3 'IC_i + \alpha_4 G_{it-1} \times ewgi_{it} + \alpha_5 T_{it-1} + \alpha_6 S_{it} \qquad (3)$$

In the first specification (2) theory predicts that the coefficient associated with governance (alpha 7) should be positive; better governance is more conducive to a better environment for the private sector to operate and therefore leads to higher growth.

The second specification (3) implies that the marginal impact of a change of 1 percent in the expenditure to GDP ratio in country *i*, in period *t*, ceteris paribus, will be different across countries and equal to α_4 x $ewgi_{it}$; therefore, fiscal policy will have a more positive (or less negative) effect in countries that score better in terms of governance and vice versa.

We also estimate equation (3) substituting the time-varying ewgi for each country by its average over the period, and alternatively we estimate equation (1) extended with an interaction term $G_{t-1}xDgov$, where *Dgov* takes the value 1 for countries with positive governance scores, and zero otherwise. Both these alternative specifications lose information in terms of changes in governance. The dummy specification in addition implies an arbitrary grouping of countries. We test these specifications in order to identify possible problems associated with the interaction of two time-varying variables in the regression, but they yield broadly the same results and are reported in the Appendix B.[18]

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[17] Between 1996 and 2002, the indexes are available every other year, hence the values for 1997, 1999, and 2001 have been interpolated.
[18] Aitken and (1991) describe possible problems with dynamic interactions in regression analysis, but these apply mostly to regressions where interactions are included together with the variables themselves in the regressions, while here we are simply re-scaling one variable.

<div style="border:1px solid black;padding:1em;">

<p align="center">Box 2. Governance Indicators</p>

As of 1996 the World Bank has constructed aggregate governance indicators that combine the views of a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. The individual data sources underlying the aggregate indicators are drawn from a diverse variety of survey institutes, think tanks, non-governmental organizations, and international organizations.

Governance is defined broadly as the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them. The six dimensions of governance corresponding to this definition that we measure are:

1. *Voice and Accountability* – measuring perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

2. *Political Stability and Absence of Violence (PV)* – measuring perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.

3. *Government Effectiveness* – measuring perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

4. *Regulatory Quality* – measuring perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

5. *Rule of Law* – measuring perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

6. *Control of Corruption* – measuring perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

In brief, the methodology consists of identifying many individual sources of data on governance perceptions that can be assigned to these six broad categories. The statistical methodology known as an unobserved components model to construct aggregate indicators from these individual measures is then applied. These aggregate indicators are weighted averages of the underlying data, with weights reflecting the precision of the individual data sources.

Source: Kaufmann, Daniel, Kraay, Aart and Mastruzzi, Massimo,Governance Matters VII: Aggregate and Individual Governance Indicators, 1996-2007(June 24, 2008). World Bank Policy Research Working Paper No. 4654. Available at SSRN: http://ssrn.com/abstract=1148386

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Another extension to the model looks at the composition of government expenditure by disaggregating the data into "productive" and "unproductive" expenditures. We looked into disaggregating the expenditure data into investment and recurrent expenditure.

However this distinction, even though appealing at first, was rejected as it ran into serious definitional and data availability problems. First, data on investment expenditures as compiled for administrative purposes in national budgets, where available, includes substantial amounts of recurrent expenditures. Secondly, since 2000 the IMF GFS system asked Member states to classify their investment expenditures into their functional categories. Many countries found this rather cumbersome and have stopped providing their functional expenditure classification. As such the often made recommendation to "increase investment expenditure to foster growth" cannot be tested within the confines of this study. Such a recommendation may be valid for individual countries where decision making can benefit from the detailed composition of expenditures classified as "recurrent" and "investment" and the recommendation refers to subcategories in the "investment" category.

As an alternative this study defines "productive" expenditure as the sum of expenditure on economic affairs, agricultural affairs, mining, manufacturing, and construction, transport, communication, housing, health, education, and environmental protection. "Unproductive" expenditures are defined to include general public services, public debt, transfers between levels, defense, public order, fuel and energy, and social protection.[19] The sign of the coefficient associated with productive expenditures is expected to be positive, while the sign of the coefficient associated with unproductive expenditures is expected to be negative, or at least insignificant. This alternative definition of expenditure is somewhat arbitrary as it is likely that some expenditure classified as productive still can in fact be unproductive. The estimated coefficients described in the next section provide a test to this classification, and do show some evidence that it seems to be approximately correct. Nevertheless, obtaining a more refined classification could constitute an issue for further research.

In addition we look at the impact of fiscal revenues disaggregated between income taxes, consumption taxes, and external trade taxes. The prior is that income taxes should have a stronger negative impact on growth than consumption taxes, which are generally perceived as less distortionary. The impact of external trade taxes is particularly interesting to measure, because according to Table 1, low-growth countries seem to rely on this type of taxes significantly more than high growth countries and theory suggest that because of their protective role, they promote misallocation of resources and undermine growth.

We also tested the significance of regional dummy variables (Balkans, Maghreb, Mashrek), and an oil dummy (Algeria, Egypt, and Syria) to capture the common features of the country groups, but these classifications did not seem significant. We did however estimate a number of regressions using dummies for Israel and for Turkey which for a number of variables are outliers. Israel is the most industrialized country in the sample, but scores poorly in terms of political stability and violence, and has a relatively large share of non-productive expenditures (mostly on defense). Turkey has had an above

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[19] We consider "fuel and energy" expenditures as non-productive since in this region most of such spending is on subsidies and transfers.

average performance in terms of growth, while having high inflation through most of the sample.

The regressions are estimated using panel OLS (Ordinary Least Squares), with panel corrected standard errors allowing for heteroscedasticity and contemporaneous correlation of residuals across panels and these are reported in the text.[20] We also ran the same set of regressions using panel GLS (Generalized Least Squares), controlling for panel hereroscedasticity, and again the same set of regressions controlling for AR(1) autocorrelation in the residuals, but the results did not change substantially and were not reported but are available from the authors.

We tested the significance of regional dummy variables (Balkans, Maghreb, Mashrek), and an oil dummy (Algeria, Egypt, and Syria), but these classifications do not seem significant.

4.2. Quality of Budget expenditures

The hypothesis we are testing and for which we define the methodology and collect data is:

> *Expenditures on education and health have a positive impact on educational and health achievements, more so in countries that score high on governance and much less for countries that score lower.*

To analyze the effectiveness of specific budget expenditure on their policy objectives we focused on expenditures in education and health. Out attempt to use as a reference group the Low and Middle Income Countries (a classification found in the World Development Indicators published by the World Bank), to evaluate countries outcomes was not successful as the necessary data to undertake this analysis were lacking.

To understand the correlation between expenditures and outcomes in education and health we have estimated the following panel data regressions:

$$Outcome_{it}^{j} = \alpha_0 + \alpha_1 IC_t + \alpha_2 t + \alpha_3 \ln G_{it}^{j}$$

where
Outcome^j is the variable that measures the country's performance in the sector j; α_0 is a constant; α_1 is the coefficient associated with initial conditions, captured here by the log of GDP per capita in the initial year; α_2 is the coefficient associated with a time trend, included to capture other factors not explicitly taken into account; and α_3 is the coefficient associated with the ratio of government expenditures to GDP in sector *j*. We also looked at an alternative specification in which governance affects growth either directly or indirectly through a re-scaled measure of expenditures $G_{it}^{j} \; x \; ewgi_t$.

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[20] The standard errors are corrected using the Beck and Katz (1995) procedure.

In the education sector, we considered as outcome the variable *net enrolment in secondary education*, since it was the one with the longest time series span. Even so, the series is of poor quality since it has many gaps that vary across countries (see Appendix 2 for a description of the data availability) and it was not possible to find a satisfactory method of interpolation for this series. The interpretation of the results from this analysis should have these problems in mind.

In the health sector, we considered the variables *life expectancy at birth*, and *under-5 infant mortality* also due to data availability.[21] As governance indicators, we tested each of the world governance indexes in our database as well as their average. The expenditure data is the IMF's GFS data on expenditures on education and health. For secondary education we also used the World Bank data on per student expenditure on secondary education. However, the time span in short for several countries and did not yield significant results, so we used this data only on cross-plot analysis in which we only take into account averages over the sample.

Notice that when we re-scaled expenditures, the marginal effect of a one percent of GDP increase in "raw" expenditures, ceteris paribus, will be given by $\alpha_3 x \, ewgi_{it}$. Therefore, if α_3 is positive, expenditures will have a more positive (or less negative) effect in countries with higher governance scores. Notice that if we look at a negative outcome, such as under-5 mortality rates, we would expect the coefficient α_3 to be negative.

Box 3. PISA scores

PISA is an OECD Programme for International Student Assessment (PISA). It a standardized assessment, jointly developed by participating countries to be administered to15-year-olds in schools. PISA assesses the abilities of students near the end of compulsory education in the areas of reading, mathematical, and scientific literacy.

The survey was implemented in 43 countries in the 1st assessment in 2000, in 41 countries in the 2nd assessment in 2003, in 57 countries in the 3rd assessment in 2006 and 62 countries have signed up to participate in the 4th assessment in 2009.
Tests are typically administered to between 4,500 and 10,000 students in each country.

In our sample we have PISA scores for Albania, Croatia, Israel, Jordan, Tunisia, and Turkey, but not for all three survey years.

The regressions were estimated using panel OLS. Since long time series data on other and perhaps more informative outcome data are not available we have also analyzed cross-plots correlating them with average expenditures. In the education sector, we

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[21] Between 1980 and 2005, the series of under-5 mortality rates has values for every five years only. We have interpolated the series to obtain annual data.

looked at the cross-plot between average PISA scores (see **Error! Reference source not found.**) in mathematics and science and average public expenditure per student in secondary education in percent of per capita GDP over the sample. In the health sector we looked at the cross-plot between average maternal mortality ratios and average expenditures in health over the sample.

5. Quality of Public Finance in the Mediterranean Partners of the EU Countries: Analysis

This section will summarize separately the study's findings on impact on growth from: (i) size of Government and the way it is financed, (ii) composition of expenditures and growth, (iii) composition of budget revenue and growth, and (iv) quality of expenditure: health and education, using the methodology proposed in the previous chapter. Each subsection will position a hypothesis that will be tested drawing on the data for the sample countries. This study will focus on providing and commenting on the results of the regression analysis. The economic rationale for the analysis is thoroughly discussed and clearly detailed in the EC study on Public Finance in EMU-2008 (Part III and IV).

a. Size of Government and the way it is financed

Following the methodology proposed in Chapter 4, we investigate the relationship between growth and size of government (controlling for a range of other factors) using regression analysis. The results are shown in Table 3. As the stylized facts of Chapter 3 suggested, but now in a more rigorous manner, the results show that the size of government is only significantly related to growth when the impact of governance on government expenditures is taken into account. In addition, it emerges from the analysis that the degree of openness of the economy is positively related to growth while the level of inflation and debt is negatively related to growth. Column (1) in Table 3 provides the results of the baseline specification given in equation (1). Only the coefficient for the debt variable shows any significance and has the expected sign. Debt reflects the accumulation of past levels of expenditure that could not be financed through budgetary revenues. Its level negatively impacts growth because higher levels of debt tend to lead to higher interest rates and thus increasing the financing costs for the private sector. Also a high level of debt creates uncertainties about the future of the economy and creates expectations that the level of taxation will increase to finance future debt service, both depressing private sector activities. The openness and inflation variables have the expected sign but the coefficients are not significant even at the 10% level

Table 3: Fiscal Policy and Growth - Results from panel data regressions of per capita growth rates on fiscal policy variables and a range of control variables

	(1)	(2)	(3)	(4)	(5)	(6)
Real per capita growth rate (-1)	-0.181	-0.243	-0.236	-0.319	-0.302	-0.302
	[1.205]	[1.749]*	[1.695]*	[2.155]**	[2.143]**	[2.149]**
Openness	0.022	0.030	0.041	0.030	0.028	0.026
	[1.153]	[1.582]	[1.996]**	[1.717]*	[1.951]*	[1.834]*
Inflation	-0.044	-0.111	-0.117	-0.118	-0.119	-0.117
	[1.113]	[2.107]**	[2.270]**	[2.506]**	[2.389]**	[2.384]**
Log(initial per capita real gdp)	-0.026	0.239	0.228	0.419	0.380	0.380
	[0.161]	[1.814]*	[1.653]*	[2.926]***	[2.765]***	[2.792]***
Expenditures/GDP (-1)	-0.019	0.122	0.120	0.045		
	[0.288]	[1.299]	[1.276]	[0.486]		
Expenditures/GDP (-1)*ewgi					0.116	0.112
					[3.145]***	[3.840]***
Revenues/GDP (-1)	-0.007	0.048		-0.036	-0.015	
	[0.121]	[0.983]		[0.582]	[0.276]	
Debt/GDP	-0.054	-0.067	-0.068	-0.075	-0.075	-0.075
	[2.894]***	[4.183]***	[4.204]***	[4.740]***	[4.637]***	[4.902]***
ewgi				4.819		
				[2.861]***		
Constant	6.656	-0.886	0.130	-1.195	1.108	0.857
	[3.987]***	[0.342]	[0.055]	[0.547]	[0.761]	[0.678]
Dummy Israel		-4.619	-3.886	-7.423	-8.717	-8.701
		[2.694]***	[2.336]**	[4.654]***	[4.703]***	[4.761]***
Dummy Turkey		5.500	5.659	4.751	5.115	5.104
		[2.279]**	[2.309]**	[2.093]**	[2.218]**	[2.206]**
Observations	108	108	108	108	108	108
Number of country	10	10	10	10	10	10
R-squared	0.157	0.277	0.271	0.330	0.323	0.323
Chi squ.	18.362	42.198	41.312	79.05	67.282	66.044
Prob > Chi squ.	0.0104392	0.0000030	0.0000018	0.0000000	0.0000000	0.0000000

z statistics in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

The control variables include macroeconomic indicators (the openness ration and the rate of inflation); initial conditions (log of per-capita gdp in 1980); and a governance indictor (the average of the world governance index scores). Fiscal variables include the ratio of government expenditures to GDP (lagged on period), G/GDP(-1), the ratio of total revenues to GDP (lagged one period), and the debt to GDP ratio. A variable capturing the effect of government expenditures re-scaled by governance Expenditures/GDP (-1)*ewgi is also considered. The sample is unbalanced and includes observations form 1996-2008. Algeria is excluded due to few observation towards the end of the sample.

Other specifications of this baseline equation were attempted and are reported in Table 3. In column (2) we add dummies for Israel, and Turkey, which are outliers. Turkey has experienced exceptionally high inflation rates over the observation period and Israel has a very large government. These dummies are both significant, and improve the explanatory power of the regression. Inflation becomes now significant with the desired sign. In column (3) we exclude revenues, but this does not significantly affect the conclusions regarding the effect of government expenditures. The per capita income

growth of previous year also becomes significant, with a negative sign. This variable suggests that the rate of growth of per capita income in any given years trend to return to an average. For instance, if in any given year the per capita growth is above trend (e.g. Morocco experienced favorable rainfall that boosted its growth rate) the rate of growth for the successive year will tend to drop to a trend value.

Noteworthy is that when the direct effect of the governance factor on growth is taken into account (column 4), its coefficient becomes very significant. We also tested the alternative specification (equation 3, in Chapter 4) in which governance affects growth through its impact on the effectiveness of public spending, by considering instead the efficiency scaled measure of expenditures (Expenditures/GDP (-1)*ewgi).[22] This variable (column 5) is statistically significant and has a positive sign, meaning that an increase in government expenditure will increase growth by more in countries with good governance. In column 5 we drop the revenues from the equation and the results remain largely unchanged.

 It is also worth noting that when we control for governance, either directly or indirectly, the statistical significance of other variables increases. In particular, the coefficient on openness becomes significant and with the expected sign, while that on inflation remains significant and with the expected sign.

Conclusion: *The size of Government (proxied by the share of government expenditure in GDP) all by itself is not systematically related to growth. However, when governance is taken into account the size of government is positively related to growth: governments expenditures increase growth in countries with good governance, but depresses growth in countries with negative scores on governance. Openness, inflation, and the level of debt variables also yield significant coefficients. A sound fiscal policy and a good macroeconomic environment matter for growth. This finding is similar to the one obtained in the Public Finance in EMU 2008, which suggests that when governments resort unsustainably to deficit and debt financing, the growth performance suffers.*

      b.   Composition of Government Expenditures and Growth

All government expenditure fulfills an objective. Some expenditure is undertaken to provide public goods defined as goods whose inherent qualities require public provision (goods that are non rival in consumption and exclusion is inapplicable) and merit goods that can be provided by the private sector, but because of their characteristics are considered so meritorious that they are provided by the public sector above what the

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[22] The variable ewgi$_t$ is time dependent and is equal to the exponential of the average of the country's six governance scores in period t.

private sector would supply[23]. These are goods for which the social benefit is above the private benefit due to positive externalities, hence they are underprovided if financed only privately. Both contain some politically motivates expenditures. Some expenditure is needed to permit social and economic activity to take place particularly defense expenditure and expenditure on law and order. Other expenditure enhances the productive capacity of the economy. Still other expenditure is undertaken for social and distributive reasons. It is therefore clear that this categorization cannot be drawn upon to classify neatly and unambiguously the expenditures as productive and unproductive. Yet it is intuitively clear that some expenditure is likely to improve the growth performance of the economy, while other expenditure aims at achieving other objectives.

This study uses the IMF's GFS functional classification of government expenditure to identify some expenditure as "productive" and some as "unproductive" (see Annex 1 for details). To analyze the relationship between growth and the composition of exxpenditure we substitute government expenditures in the regression analysis by "productive" and "unproductive" expenditures (as a ratio to GDP and lagged by one period). It is important to stress that the quality of the GFS data leaves somewhat to be desired; for some countries not all the categories are reported, and sometimes not for every period. Turkey has no detailed functional expenditure breakdown and had to be excluded in this part of the analysis.

From the analysis reflected in Table 4 it appears that unproductive expenditure is unrelated to the growth performance, while productive expenditure enhances it. The estimated impact of productive expenditures on growth hides however important differences in the effect of expenditures across the governance scale, which are tested when we substitute productive expenditures by an efficiency-scaled measure of expenditures. The openness variable is significant in all regressions; and the inflation coefficient is significant as well in all regressions and has the correct sign.

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[23]See Richard A. Musgrave, The Theory of Public Finance, McGraw-Hill, New York, 1959,pp. 6-13

Table 4: Composition of Fiscal Policy and Growth - Results from panel data regressions of per capita growth rates on fiscal policy variables and a range of control variables.

	(1)	(2)	(3)	(4)	(5)	(6)
Per capita growth rate (-1)	-0.395	-0.384	-0.383	-0.432	-0.439	-0.579
	[2.711]***	[2.680]***	[2.617]***	[2.971]***	[3.087]***	[5.214]***
Openness	0.049	0.062	0.069	0.050	0.065	0.090
	[2.404]**	[3.203]***	[3.790]***	[2.913]***	[2.925]***	[4.706]***
Inflation	-0.334	-0.353	-0.334	-0.352	-0.406	-0.610
	[2.673]***	[2.846]***	[2.642]***	[2.739]***	[3.127]***	[5.728]***
Log(initial per capita real gdp)	0.522	0.562	0.692	0.693	0.743	0.727
	[3.612]***	[3.795]***	[4.671]***	[5.473]***	[4.985]***	[4.973]***
Unproductive Exp./GDP (-1)	0.090	0.078				
	[1.636]	[1.436]				
Productive Exp./GDP (-1)	0.223	0.253	0.249			
	[2.057]**	[2.213]**	[2.081]**			
Productive Exp./GDP (-1)*ewgi				0.220	0.280	0.395
				[3.677]***	[3.721]***	[6.389]***
Revenues/GDP (-1)	0.064					
	[1.203]					
Tax Revenues/GDP (-1)					-0.083	
					[1.482]	
Income Taxes/GDP (-1)						-1.011
						[4.267]***
Consumption Taxes/GDP (-1)						-0.309
						[2.952]***
Taxes on External Trade/GDP(-1)						-0.573
						[2.673]***
Debt/GDP	-0.114	-0.117	-0.114	-0.111	-0.118	-0.172
	[6.971]***	[7.209]***	[7.058]***	[6.553]***	[5.948]***	[7.211]***
Constant	-1.792	-1.009	-1.104	0.647	2.691	8.989
	[0.664]	[0.422]	[0.410]	[0.363]	[1.405]	[3.173]***
Dummy Israel	-6.049	-5.187	-4.373	-7.798	-7.441	-2.192
	[3.879]***	[4.342]***	[4.369]***	[5.657]***	[5.772]***	[1.160]
Observations	82	82	82	82	82	68
Number of country	9	9	9	9	9	8
R-squared	0.467	0.458	0.434	0.487	0.507	0.632
Chi squ.	104.497	90.131	96.714	101.181	117.657	170.417
Prob > Chi squ.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

z statistics in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

The control variables include macroeconomic indicators (the openness ration and the rate of inflation); initial conditions (log of per-capita GDP in 1980); and a governance indictor (the average of the world governance index scores). Fiscal variables include the ratio of unproductive government expenditures to GDP (lagged on period), Unproductive Exp/GDP(-1); the ratio of productive government expenditures to GDP (lagged on period), Productive Exp/GDP(-1); the ratio of total revenues to GDP (lagged one period), and the debt to GDP ratio. A variable capturing the effect of government expenditures re-scaled by governance Productive Exp./GDP (-1)*ewgi is also considered. The sample is unbalanced and includes observations form 1996-2008. Algeria is excluded due to few observations towards the end of the sample. Turkey is excluded from lack of comparable data, and data on tax composition could not be found for Syria.

In column (1) unproductive expenditures have an insignificant coefficient, while the coefficient on productive expenditures is positive and significant. These estimates provide a test on the classification of expenditures, and our classification passes this test. Noteworthy is that any regression that included the governance variable gains considerably in explanatory value as measured by R square. For instance R square increases from 43 percent in equation (3) to 48-63 percent in columns (4)-(6). The variable capturing the effect of efficiency-scaled productive expenditures has always a positive and statistically significant sign, suggesting that the impact of productive expenditures on growth is higher in countries with high governance scores and lower in countries with low governance scores.

Based on the results of regressions reported in Table 4 columns 4 and 6 a simulation was undertaken on the impact of a 1 percentage point of GDP shift of non-productive expenditures to productive expenditures on the real per capita growth rate, given the average governance score of the country over the sample (everything else constant). Although these results should be interpreted with caution since we do not have an exact measure of government expenditure efficiency, they give an idea of the differences in the impact of expenditures across the governance spectrum. These results are reflected in Table 5, and suggest that those countries with the best governance scores would benefit significantly (Israel would gain between .37 and .56 percent in annual per capita income growth). On the other hand, countries with low governance scores would gain the least (namely Syria and Algeria).   This finding is particularly important for countries that rely heavily on food and energy subsidies. Reducing these subsidies and channeling these funds towards productive expenditures would boost growth.

Table 5: Simulation of the effect of a 1 percent of GDP shift in the composition of expenditure on per capita growth

Assuming model (Table 4):	(4)	(6)
Albania	0.13	0.24
Algeria	0.08	0.15
Croatia	0.27	0.48
Egypt	0.14	0.25
Israel	0.40	0.72
Jordan	0.23	0.41
Lebanon	0.15	0.26
Morocco	0.19	0.34
Syria	0.09	0.17
Tunisia	0.23	0.41
Turkey	0.18	0.33
Region Average	0.19	0.34
Region Average Excluding Israel	0.17	0.30

Note: Governance is held constant in the simulation.

In Table 6 we simulate instead the effect on per capita real growth rates of bringing the governance score up to the regional average, for countries that score below the average or to the highest score of the region (Israel), for countries that score above the average.   All

countries, could experience greater per capita growth by improving their governance indicator. For the countries with below average governance scores the estimates range from about 0.4-0.8 percentage point in the case of Albania to 1.5-2.7 in the case of Syria . For countries with above average scores there appears still significant potential to accelerate per capita growth by bringing up their score to the level of Israel. For example Tunisia could gain between 3.4 percent and 6 percent. Given the power of compound growth rates, these results suggest that improving the governance score could make a big difference in reducing poverty in the region.

Table 6: Simulation of the effect of improving governance scores on per capita growth

	(4)	(6)
Countries scoring below the regional average		
Albania	0.45	0.82
Algeria	1.32	2.38
Egypt	0.63	1.14
Lebanon	0.51	0.92
Syria	1.49	2.69
Countries scoring above the regional average		
Croatia	1.92	3.45
Jordan	2.38	4.28
Morocco	2.39	4.29
Tunisia	3.37	6.05

Israel is excluded because it is used as a benchmark for countries that score above the regional average

Conclusion: *The composition of government expenditure does matter for growth with productive expenditures contributing positively and unambiguously to growth. Further, the impact would be enhanced by good governance and weakened by lower governance performance. A shift from non-productive to productive expenditures would enhance growth, particularly for those countries with good governance. Also improving governance could have a powerful effect on growth and poverty alleviation*

      c. Composition of budget revenue and growth

Government revenues and taxation in aggregate do not appear to be significantly related to growth performances (Tables 3, and Table 4). In Table 4: the coefficient of taxation is as expected negative but not statistically significant (column 5). However when the regression is specified with domestic consumption taxes, taxes on external trade, and income taxes separately the results are most interesting. The results are also shown in Table 4 (column 6). The signs remain negative, as we would expect, but the coefficient become all statistically significant. Most interestingly, income taxes have the most negative estimated impact. According to the estimated coefficients, a tax reform that

would partially replace income taxes for consumption taxes would improve growth. In fact, growth for the countries in the sample could on average be increased by 0.7 per cent, if the equivalent of one percent of GDP were raised by domestic consumption taxes rather than by income taxes (taking into account the coefficients estimated in column 6). The reason for this outcome is that consumption taxes interfere less with labor participation and labor incentives than income taxes. The taxation rate could also be lower as the base is larger. Also the complexity of tax regimes is usually higher for income taxes than for consumption taxes, hence the former entail higher compliance costs for the taxpayer, adding to their negative impact on growth. In addition, the results show that taxes on external trade also seem to have a more negative effect on growth than consumption taxes. Reducing the reliance on these taxes towards domestic consumption taxes would also benefit growth. This suggests that these countries can have a lot to benefit from bilateral or multilateral agreements to reduce tariffs with a concomitant effort to raise revenues through domestic consumption taxes.

Conclusion: *The composition of revenues does have an impact on the growth performance, providing additional support for tax reforms aimed at enhancing the role of consumption taxes and relying less on external trade taxes and direct income taxes. It should be noted though that the growth objective is not the only objective of tax policy which also has distributional and equity aspects. Yet, this analysis permits us to roughly estimate how the growth performance is likely to be affected by implementing other tax policy objectives that would argue to retain or to increase the share of revenues from direct taxes.*

d. Quality of Expenditures: Education and Health

Traditionally, budgetary funds allocated to particular sectors--such as infrastructure, health, education and defense-- have been viewed as a measure of government's efforts to achieve the objectives set out for these sectors. More recently, however, the focus of analyzing government spending has shifted towards assessing what these expenditures actually achieve and whether they achieve it efficiently. In this effort a distinction needs to be made between (i) funding *:* the resources spent by especially designated government departments and recorded in expenditure statistics, (ii) inputs: the units of specialized resources that these funds finance (teachers, nurses, bulldozers, engineers deployed), (iii) output: which refers to what is being achieved (students taught, such hospitalized, roads build) and (iv) outcomes that refers to the ultimate objectives for which the expenditures were undertaken such as, in education, useful knowledge gained by students that were taught in the system as well as their employability; in health, prolonged life expectancy; in infrastructure, reduced transport costs [24]. These considerations are at the core of the performance budgeting exercise and the currently

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[24] Public Finance in EMU in 2008, European Commission 2008, p. 141.

active "budgeting for results" debate. [25] Perfect data to analyze this input-output-outcome relationship are hardly ever available, yet the focus on the above mentioned relationships would enable the authorities to pursue evidence-based policies.

Data availability does, however, restrict the analysis and often the need arises to use proxies for the output and outcome data. Budgetary data are not always available to track funds destined to specific objectives, and even when data on these funds are available they frequently refer to budgeted funds and not to funds actually spent. Other data to track the above noted production function rarely exist in the desired format and frequency. This study had initially sought to analyze the efficiency of spending on infrastructure, education and health. However, attempts to relate budgetary spending on infrastructure or communication to the quality of the road infrastructure (as reported by the World Economic Forum) were not successful. Instead, the present study focuses on the efficiency of health and education expenditure.

Education

Government spending on education has as its main objective to assist its citizens to achieve their fullest human potential. In the process these citizens are expected to become more productive members of society and as such contribute to the growth of the economy. These outcome data are not available on a comparable basis for the countries in the sample. Hence the analysis had to downscale its objectives and relate a broad category of expenditure to more narrow output indicators. Country specific studies could draw on more pertinent sets of data. Because of data limitation for the sample of countries the study chosen to relate per capita spending on secondary education and general spending on education as a percent of GDP to net enrollment in secondary education –clearly an output rather than an outcome - and to PISA scores for science and mathematics (see **Error! Reference source not found.**). Data on net enrollment in secondary education are available for eight of countries in the sample for a number of time periods, while the PISA scores are available only for one recent year for only six of the countries in the sample.

To analyze the correlation between the net enrolment rate in secondary education and education expenditures we carried out the regression analysis explained in Chapter 4. . In column (2) we decide to drop the log of initial per capita GDP, since it was not significant in any specification and had a counterintuitive sign. The results are given in Table 7. In the baseline specifications (column 1 and 2) the net enrollment rate for secondary schools is clearly positively related to the level of education spending. This relationship explains about 41% of the variation in the sample. However Rajkumar and Swaroop (2008) find that public spending on education and health has hardly any impact on education and health outcomes in poorly governed countries. This finding is verified and confirmed in equation (3) where the governance variable is entered in the equation. Doing so the coefficient for education expenditure fails to be significant at even to 10

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[25] Donald Moynehan (2003), Performance Based Budgeting; Beyond the Rhetoric, PREM Note # 78, World Bank, Washington DC.

percent level while the coefficient for the governance indicator is significant at the 1 percent level; the R-square is increased from 41 per cent to 65 percent.

In columns (3) to (9) we estimate an alternative specification in which governance affects the outcome through its impact on the effectiveness of spending. We do this by entering in the regressions expenditures in education re-scaled by an efficiency factor. In column (4) we use as efficiency factor the exponential of the average of all the World Bank government scores, and the coefficient on the efficiency scaled expenditures is positive and significant. What that means is that the impact of an increase in education expenditures on net enrolment is higher for countries with higher governance scores.

In further experiments (columns 5 to 10) the spending on education is adjusted for a specific governance indicator (using the exponential of the governance score). The findings are similar and suggest that education spending does matter on average, but when account is taken of country specific governance, the impact is enhanced for those countries with good governance and lower for countries with lower governance scores.[26] As shown in Table 7, running the regressions with detailed governance indicators yields slightly different the coefficients, but the main results stand. On balance it would appear that the governance indicators that reflect voice and accountability and regulatory quality yield the best results in terms of explained variation (R square).

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[26] In column 6 we include a dummy for Israel, which is highly significant, but not significant when other governance indicators are considered.

Table 7: Net Enrolment Rate in Secondary Education and Educations Expenditures in percent of GDP

	(1)	(2)	(3)	(4)	(5)	(6)1	(7)	(8)	(9)	(10)
G-education/GDP	2.409	2.418	0.127							
	[2.855]***	[2.888]***	[0.189]							
Average of Governance Scores: ewgi			19.167							
			[7.051]***							
G-education/GDP*ewgi				1.850						
				[5.451]***						
G-education/GDP*voice account.					1.692					
					[6.315]***					
G-education/GDP*pol. stability						1.475				
						[1.835]*				
G-education/GDP*gov. effectiv.							0.811			
							[4.466]***			
G-education/GDP*reg. quality								1.098		
								[5.620]***		
G-education/GDP*rule of law									1.190	
									[5.667]***	
G-education/GDP*control of corrup.										0.926
										[4.653]***
Log(initial per capita real gdp)	-0.025									
	[0.041]									
Trend	-14.67	-14.93	-0.66	-0.13	5.68	-1.82	-0.89	-0.66	-0.07	-1.34
	[1.148]	[1.234]	[0.106]	[0.013]	[0.576]	[0.185]	[0.067]	[0.056]	[0.007]	[0.111]
Constant	2.43	2.43	1.68	2.01	1.89	2.13	2.15	2.10	2.08	2.16
	[4.963]***	[4.965]***	[6.623]***	[5.627]***	[5.542]***	[5.825]***	[4.719]***	[5.244]***	[5.643]***	[5.135]***
Observations	38	38	38	38	38	38	38	38	38	38
No. of Countries	8	8	8	8	8	8	8	8	8	8
R-squared	0.415	0.415	0.648	0.534	0.574	0.501	0.452	0.525	0.512	0.469

Absolute value of z statistics in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%
[1] Includes a dummy for Israel, coefficient not reported (statistically significant). Not significant in regressions with other governance indicators.

The explanatory variables include the ratio of government expenditure in education to GDP, G-education/GDP, the Log of initial GDP per capita, and efficiency-scaled expenditures in education. The scaling factors are the exponential of the average of the six world governance indicators, ewgi, or the exponential of one of the six world governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption). A constant and a trend are included to capture other factors not explicitly accounted for

Based on the findings in column (4), Table 7, we could estimate what the effect would be of an increase of in education expenditures by one percent of GDP (everything else constant) on net enrollment in secondary education given the average governance score of the country over the sample. Countries with the best governance score would be able to increase their net enrollment substantially. For instance Croatia could increase it by 2.1 percent (Table 8). On the other hand in Syria and Algeria there would be no increase in net enrollment.

Table 8: Simulated effect of an increase in education expenditure on the net enrolment in the secondary

Albania	1.1
Algeria	0.7
Croatia	2.2
Egypt	1.2
Israel	3.4
Jordan	1.9
Lebanon	1.2
Morocco	1.6
Syria	0.8
Tunisia	1.9
Turkey	1.5
Region Average	1.6
Region Average Excluding Israel	1.4

Marginal effect on the net enrollment rate in secondary education associated with increasing education expenditures by 1% of GDP, given average governance score of the country over the sample.

Increasing the governance score would have a greater impact than increasing educational spending. This is shown in the simulation reported in Table 9. Bringing up the below average governance score of the various countries to the sample average would increase enrollment by about 2 percent in Syria and 8 per cent in Algeria.

Table 9: Simulated effect of Improving Governance Scores on Net Enrolment in Secondary

Countries scoring below the regional average	
Albania	0.3
Algeria	7.8
Egypt	2.0
Lebanon	0.9
Syria	1.8
Countries scoring above the regional average	
Croatia	3.5
Jordan	7.1
Morocco	8.6
Tunisia	8.9
Turkey	5.2

Effect on the net enrollment rate in secondary education associated with bringing the countries with below average governance score to the sample average and the above average scores to the best practice score in the sample (Israel).

The importance of accounting for governance in the analysis is illustrated in Figure 3. On the left had cross-plot there is no apparent relationship between average expenditures and output over the sample, but once we multiply expenditures by our factor of efficiency ewgi (the exponential of the average of governance scores), some positive correlation seems to appear.[27] Inspecting the charts, we can see that countries like Algeria spend more than the average in education (left chart) while having relatively low enrolment rates in the secondary; once we scale expenditures by the governance score, however, the scaled expenditures. In other cases, like Croatia, expenditures in education are relatively low (left chart), while the enrolment rate is high, but the scales expenditures (right chart), seem more in line with the output. The picture is less clear for other countries, perhaps because the charts take into account sample averages, and ignore the dynamics in the data.

Figure 3: Expenditure in Education, Governance, and Net Enrolment Rates
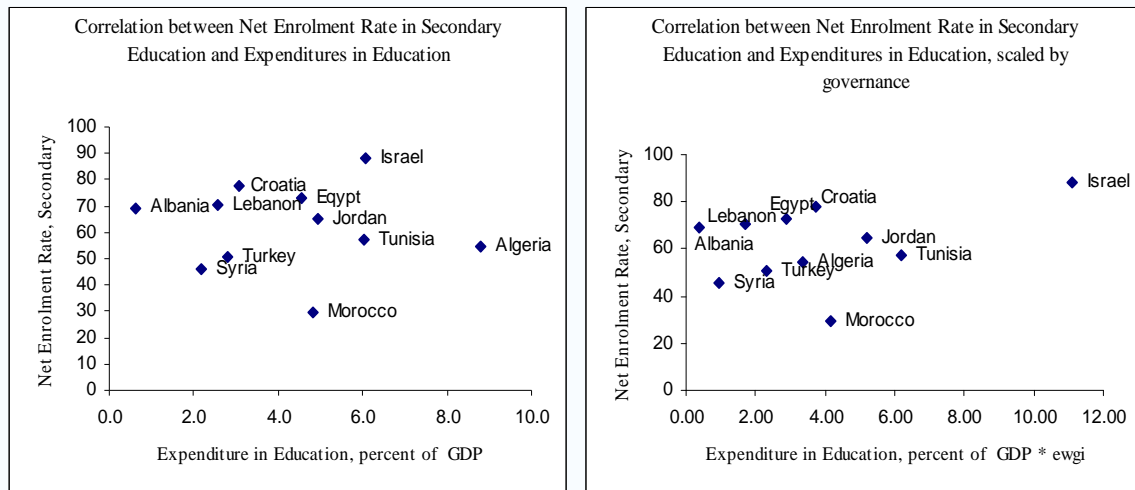
Now we turn to another education output variable namely the PISA scores. These data are only available for six countries in the sample and only for one or two years at the end of the period under consideration in this study, which makes regression analysis impossible. We can however analyze the cross-plots between average expenditures over the sample and the PISA scores. The plots are shown in

Figure **4**. The plots to the left use as the expenditure variable the average government expenditure per student in the secondary, in percent of GDP per capita (which is more related to PISA scores than general expenditures in education); while in the plots to the right, these expenditures are scaled by the index of regulatory quality. The plots in the top panel of the figure refer to science scores, while the plots in the bottom panel refer to scores for mathematics. Once more, the relationship between the outcome and

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[27] All government indexes, except political stability give very similar plots.

expenditure becomes more apparent when we take governance into account. Turkey and Jordan for instance seem to spend relatively little in education while having relatively high PISA scores in science, but when governance is taken into account these countries move up on the efficiency-scaled expenditure scale, while countries like Albania and Tunisia (with relatively low PISA scores) move down.

Figure 4: Expenditure in Education, Governance, and PISA scores
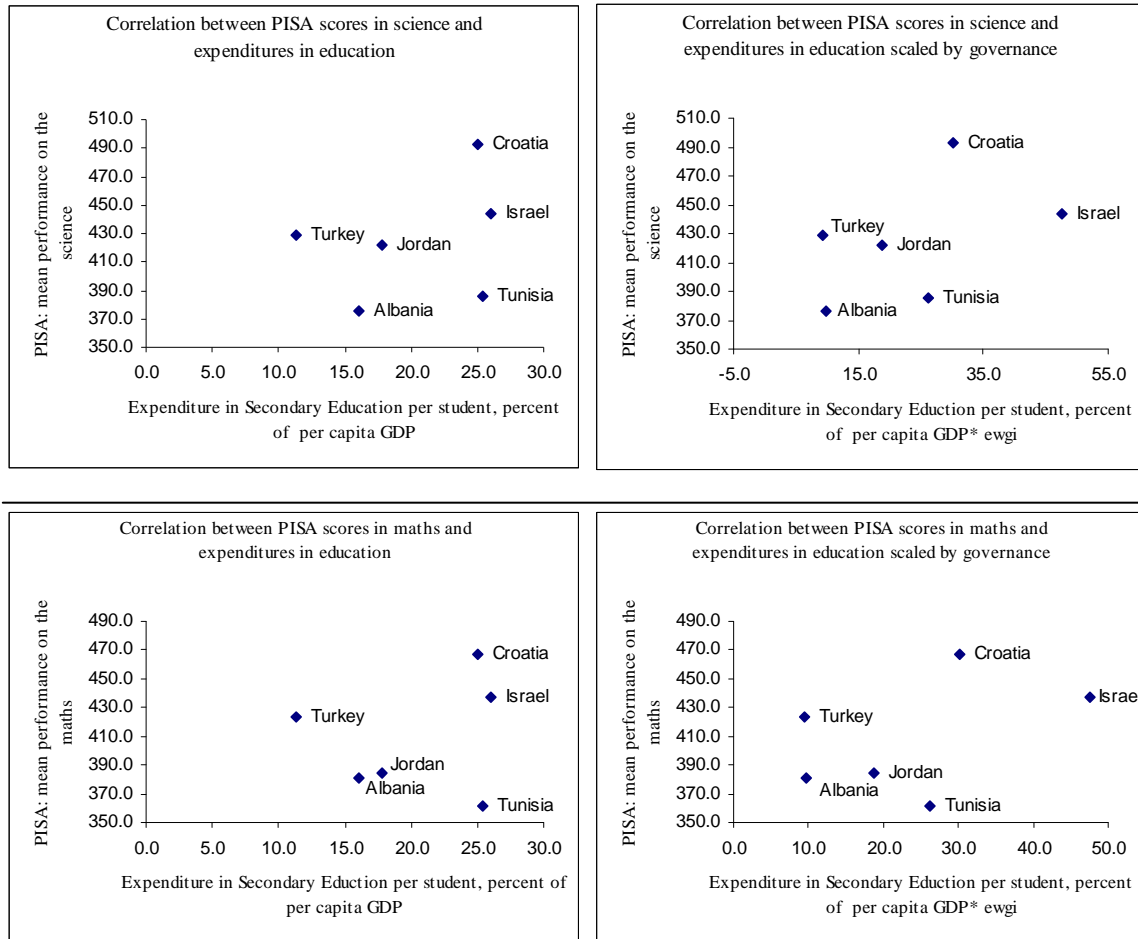
Conclusion: *Education expenditures on average do positively affect educational outcomes. However it does matter greatly how these expenditures are managed. Where poorly managed, as proxied by low governance scores for the country, they will undermine the positive effect of these expenditures. On the other hand good governance will enhance these effects. On balance it would appear that the best way to boost educational outcomes is to spend more only if spending is efficient.*

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Health

In the analysis of the relationship between outcomes in the health sector and government spending, we have focused on three outcome indicators, given the available data: (i) life expectancy at birth; (ii) under-five mortality rates, and (iii) the maternal mortality ratio. We also looked at immunization rates for measles but this variable did not seem related to expenditures in this sector and we did not report the results. In the regression analysis, we apply the methodology proposed in Chapter 4 to study the relationship between life expectancy at birth and health expenditures, as well as the relationship between under five mortality rates and health expenditures, but we could not do the same analysis for the third outcome indicator (maternal mortality rates) because we have only one or two observations per country for this variable, but we do analyze the cross plots. It is also important to note that we only have general expenditures in health, and not expenditures specially directed at the specific outcomes we are analyzing.

The results from the regression analysis are shown in Table 10 for life expectancy and Table 11 for under-5 mortality rates. Outcomes seem to have a desired and significant correlation with health expenditures (columns 1). In column (2) we introduce governance affecting outcomes independently and both for life expectancy and for under-five mortality the impact of expenditures becomes insignificant, while the coefficient on governance has the desired sign and is statistically very significant, suggesting that the relationship between expenditures and health may vary across the governance scale. In columns (3) to (9) we replace raw expenditures by measures of expenditures re-scaled by governance. The results are similar to those for education, since the coefficients on efficiency-scaled expenditures are significant and have the expected sign. The R-squares also increase when we account for governance, in the case of health outcomes.

Table 10: Life Expectancy at Birth and Government Expenditures in Health in percent of GDP

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
G-health/GDP	1.215	0.099							
	[8.246]***	[0.747]							
Average of Governance Scores: ewgi		5.749							
		[7.400]***							
G-health/GDP*ewgi			0.695						
			[12.167]***						
G-health/GDP*voice account.				0.603					
				[11.267]***					
G-health/GDP*pol. stability					0.453				
					[3.960]***				
G-health/GDP*gov. effectiv.						0.492			
						[17.913]***			
G-health/GDP*reg. quality							0.500		
							[16.744]***		
G-health/GDP*rule of law								0.513	
								[14.202]***	
G-health/GDP*control of corrup.									0.460
									[12.927]***
Log(initial per capita real gdp)	0.300457	0.258928	0.180385	0.077027	0.413864	0.149928	0.144403	0.180317	0.140696
	[7.336]***	[7.137]***	[6.589]***	[2.216]**	[3.600]***	[5.625]***	[5.498]***	[7.126]***	[5.249]***
Trend	0.07	0.23	0.16	0.13	0.19	0.14	0.18	0.22	0.25
	[0.999]	[9.059]***	[3.384]***	[2.761]***	[2.369]**	[3.185]***	[4.438]***	[5.042]***	[5.971]***
Constant	64.82	56.80	63.92	66.25	62.16	64.77	63.73	62.19	61.85
	[29.236]***	[51.852]***	[40.695]***	[41.857]***	[23.884]***	[43.477]***	[46.104]***	[42.510]***	[44.734]***
Observations	58	58	58	58	58	58	58	58	58
Number of country	10	10	10	10	10	10	10	10	10
R-square	0.649	0.85	0.774	0.748	0.225	0.838	0.806	0.769	0.792

Absolute value of z statistics in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

The explanatory variables include the ratio of government expenditure in health to GDP, G-health/GDP, the Log of initial GDP per capita, and efficiency-scaled expenditures in health. The scaling factors are the exponential of the average of the six world governance indicators, ewgi, or the exponential of one of the six world governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption). A constant and a trend are included to capture other factors not explicitly accounted for. The regressions exclude Turkey for lack of expenditure data

.Table 11: Under 5 Mortality Rates and Government Expenditures in Health in percent of GDP

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
G-health/GDP	-4.831	-0.203							
	[5.194]***	[0.212]							
Average of Governance Scores: wgi		-23.390							
		[8.190]***							
G-health/GDP*wgi			-2.799						
			[8.567]***						
G-health/GDP*voice account.				-2.485					
				[7.457]***					
G-health/GDP*pol. stability					-3.296				
					[2.676]***				
G-health/GDP*gov. effectiv.						-1.863			
						[10.415]***			
G-health/GDP*reg. quality							-1.914		
							[11.296]***		
G-health/GDP*rule of law								-1.933	
								[16.538]***	
G-health/GDP*control of corrup.									-1.709
									[13.815]***
Log(initial per capita real gdp)	-1.433	-1.441	-1.095	-0.663	-1.605	-0.960	-0.994	-1.088	-0.917
	[6.959]***	[7.469]***	[6.572]***	[3.802]***	[4.225]***	[5.561]***	[5.477]***	[7.930]***	[7.081]***
Trend	-0.722	-1.118	-0.944	-0.859	-1.006	-0.914	-1.039	-1.181	-1.248
	[5.060]***	[6.239]***	[8.742]***	[7.663]***	[8.550]***	[8.782]***	[9.733]***	[11.193]***	[11.132]***
Constant	76.801	101.300	77.191	68.650	81.862	74.178	78.304	83.338	83.052
	[14.985]***	[19.636]***	[17.180]***	[14.566]***	[16.794]***	[17.142]***	[16.745]***	[19.129]***	[18.450]***
Observations	80	80	80	80	80	80	80	80	80
Number of country	10	10	10	10	10	10	10	10	10
R-square	0.391	0.538	0.47	0.473	0.266	0.46	0.453	0.422	0.424

z statistics in brackets

 * significant at 10%; ** significant at 5%; *** significant at 1%

The explanatory variables include the ratio of government expenditure in health to GDP, G-health/GDP, the Log of initial GDP per capita, and efficiency-scaled expenditures in health. The scaling factors are the exponential of the average of the six world governance indicators, ewgi, or the exponential of one of the six world governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption). A constant and a trend are included to capture other factors not explicitly accounted for. The regressions exclude Turkey for lack of expenditure data

Once more we simulate the effect of a 1 percent of GDP increase in health expenditures (ceteris paribus), on health outcomes to understand the differences in the impact of expenditures across countries, due to differences in governance scores. The results for both life expectancy at birth and under-5 mortality rates are shown in Table 12. The estimated impacts on life expectancy range from 0.27 years in Algeria to 1.27 years in Israel, while those on under-5 mortality rates range from -0.1 percent in Algeria to -0.5 percent in Israel.

Table 12: Simulated effect of an increase in health expenditure on health outcomes

Based on estimates (3), Tables 10 and 11	Life Expectancy (years)	Under-5 Mortality (per 1000)
Albania	0.42	-1.7
Algeria	0.27	-1.1
Croatia	0.84	-3.4
Egypt	0.44	-1.8
Israel	1.27	-5.1
Jordan	0.73	-2.9
Lebanon	0.46	-1.9
Morocco	0.60	-2.4
Syria	0.30	-1.2
Tunisia	0.71	-2.9
Turkey	0.57	-2.3

Marginal effect on health outcomes associated with increasing health expenditures by 1% of GDP, given average governance score of the country over the sample.

In order to highlight the important of governance in the analysis, we also simulate the effect on health outcome of moving up along the efficiency scale, by improving governance scores (everything else constant). For countries with governance scores below the regional average, we simulate the effect on improving the scores to the average of the region; for countries that score above the regional average we simulate the effect of matching their scores to the best performance of the region. The results are shown in Table 13. Comparing Tables 13 and 14, we can see that some countries would benefit more by improving governance and therefore efficiency, rather than increasing expenditures. Algeria for instance would increase life expectancy by 0.6 years by moving its governance scores up to the regional average, and this is twice as much the impact of increasing expenditures by 1% of GDP.

Table 13: Simulated Effect of Improving Governance
Scores on Health Outcomes
Countries scoring below the regional average

Based on estimates (3), Tables 10 and 11	Life Expectancy (years)	Under-5 Mortality (per 1000)
Albania	0.2	-1.0
Algeria	0.6	-2.2
Egypt	0.2	-0.8
Lebanon	0.1	-0.5
Syria	0.2	-0.8
Countries scoring above the regional average		
Croatia	1.0	-3.9
Jordan	1.6	-6.4
Morocco	0.6	-2.3
Tunisia	1.1	-4.4
Turkey	-	-

Effect on the net enrollment rate in secondary education associated with bringing the countries with below average governance score to the sample average and the above average scores to the best practice score in the sample (Israel).

We also analyzed the relationship between health expenditures and maternal mortality rates using a cross-plot of these rates against expenditures in health. The results are shown in Figure 5. The right hand plot shows expenditures scaled by regulatory quality. Again, the relationship between the two variables appears clearer when we control for governance. Countries like Algeria, which have relatively high expenditures in health as a share of GDP, but a poor outcome result, appear more to the left on the governance-scaled expenditure scale; while countries like Croatia with an average level of health expenditures to GDP ratio but above average outcome, move to the right on the governance-scaled expenditure scale. In summary, the scaled measure of expenditures seems more in line with the outcomes achieved. It is also noteworthy that controlling for governance, the elasticity of the outcome with respect to the expenditure variable seems to increase. This suggests that a small increase in expenditures may be able to reduce maternal mortalities significantly, given the level of governance.

Figure 5: Expenditure in Health, Governance, and Maternal Mortality Rates
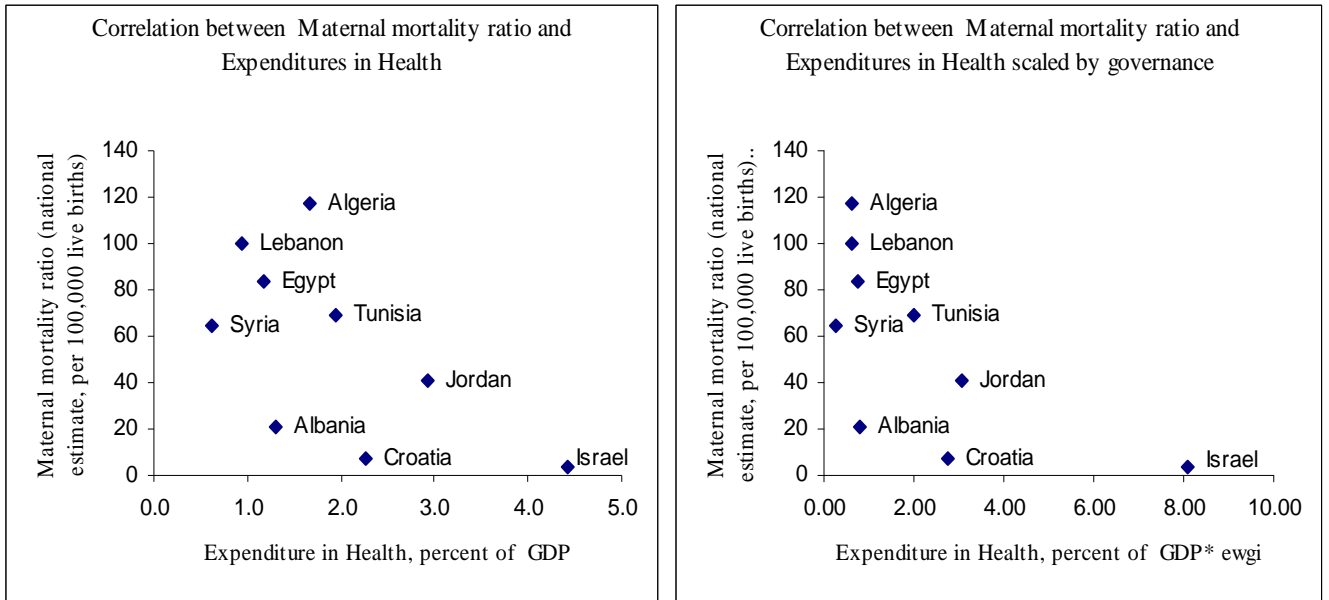
Conclusion: *Health expenditures on average do positively affect health outcomes. However governance also seems to play an important role. The relationship between outcome and expenditures varies depending on the country's level of governance. An increase in Health expenditures has a more positive impact on outcomes for countries that score better in terms of governance indicators.*

6. Issues for Further Research

(i)   *Data used in the analysis need to be refined.* More directly relevant data could become available if countries were to attach greater importance to collect relevant fiscal and output/outcome data. While the Government Finance Statistics published by the International Monetary Fund are a major help in sourcing the fiscal data needed for an analysis of the type undertaken here, these data are far from complete. Since 2000 GFS does not publish the functional classification of expenditure for a number of countries, as a number of countries do not classify investment expenditure in the functional breakdown. This has reduced the sample that could be used in this study. Also a more detailed set of expenditure data would permit a tighter analysis, one that more closely relates funding, inputs and outcomes. As noted in Section 5 where the efficiency of health expenditure was analyzed, the exercise was stymied by the fact that the expenditure data related to expenditures on health in general, while the outcomes were specific to much more specific and detailed health subprograms such as measles immunization, maternal

and under-5 mortality.   Also in the analysis of efficiency of education expenditure, the study used the expenditure data as reported on education and training incurred by all Ministries, not only the Education Ministry.

(ii)   Incorporate in the studies the data on education and health expenditures undertaken by the private sector. The scope of private sector participation in these sectors varies across countries and may have a considerable impact on the outcomes in these sectors.

(iii)   Extend the present analysis to the economic classification of expenditure to verify whether it can be shown that the bias in expenditure composition towards wages and salaries versus other operational expenditures—as per budget outcome data rather than ex ant budget data- does impact on outcomes. Results of such an analysis could strengthen the advice given to some governments in the region to reduce the salary bill in favor of other operational expenditures so as to enhance fiscal stability and improve the contribution budget expenditures make to growth and budget outcomes.
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(iv)   Cross-section analysis versus country specific research

There are limits to what cross-country analysis and panel data analysis could suggest and the policy conclusions that could be drawn from such analysis. Therefore, greater effort is needed to undertake country-specific analysis. Such analysis could benefit from better data that might well be available to researchers that can approach the various institutions that collect these data. In particular a better classification of "productive" and non-productive" expenditures could be tested. A country specific analysis could also go beyond the output analysis and investigate the outcomes. For instance, data on the employment prospects of recent graduates could be used as outcome of the educational expenditures, and that would be more relevant than net enrollment that is used as the output variable.

(v)   Taxation systems:

This study suggests that economic growth would benefit from a gradual shift from income taxes and taxes on external trade to consumption taxes. This conclusion is a sweeping one that deserves further analysis in a specific country context that can take more factors into account.   Most tax analysis agrees that income taxes distort labor market incentives and are more prone to tax evasion, and that taxes on external trade reduce the incentives of domestic producers to become more efficient and compete in international markets. Also, a better analysis of the progressivity or lack thereof of income taxation in the various countries that consider moving towards greater dependence on consumption taxes would inform the debate about the trade-off between the two broad types of taxes.

(vi)   *Measures of Government Efficiency*

Government efficiency indicators could be constructed for study-specific purposes such as the current study of the fiscal policy and growth linkages. More tailor-made governance indicators would track such data as the adoption of as medium-term budget planning, initiatives to introduce performance budgeting, etc. (listed in the Public Finance in EMU -2008). These would be better targeted to the subject matter of the research on quality of fiscal policy than the governance variables used in this study that were compiled with another and broader objective in mind. Such fiscal policy governance indicators could also inform the design of a fiscal policy reform program.

(vii)   *Undertake studies to check the present findings with those of a benchmark et of countries*. This study ran into data gathering problems and time constraints to compare the results with some benchmarks or comparator countries as initially envisaged. Clearly the obtained results are consistent with those obtained in the EC (2008) study on the subject. Future research could investigate whether they are consistent with those that that apply for a broader group of comparable developing countries (e.g. lower and middle income countries) or for recently acceded Member States.

7. Summary and recommendations

7.1 Summary

This study was to help develop a framework for the analysis of quality of public finances in the context of the EU's Mediterranean partner countries and to help develop a more specific agenda for future research and policy dialogue for the EU partner countries in this area. It is based on the conceptual framework prepared by the European Commission (2008) that was used to analyze this topic for the EMU countries and on a series of studies undertaken by the World Bank and others that investigated the impact of fiscal policy on growth. These studies while recognizing that fiscal stability is a pre-condition for economic growth, aimed at tracking down other channels of the impact of fiscal policy on growth. In the process the impact of the size of government on growth and stability, and of the composition of expenditures and revenues on economic growth were investigated. Additionally the framework investigated the quality of expenditures in key sectors and how fiscal governance might affect the growth impact of the budget expenditures.

The analysis was to be applied to all countries included in The Barcelona Process Union for the Mediterranean. So as to ensure that all data used in the analysis were comparable the study used internationally available macroeconomic, fiscal,

governance and outcome data. Data limitations limited to analysis of fiscal policy and growth to use data for Albania, Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Syria, Tunisia, Croatia, and Turkey. Even for these countries not all data were available for the full extent of the time period under consideration. The analysis was based on panel data regression analysis; a detailed description of the methodology and the data used is provided respectively in Section 4 and Annex 1.

The main findings of this study   conform largely to those obtained in the earlier literature with the added twist that the growth performance of the countries in the sample is found to be very sensitive to the quality of governance in the countries retained in the sample. For instance the basic regression specification suggests that size of government does not impact on growth performance. However, when governance indicators are introduced the results change and now suggest that combined with favorable governance indicators, large governments do positively influence growth. As such the negative growth effect of taxation is compensated by positive effect of public spending. With less favorable governance indicators large governments do depress growth and the negative effect of growth that results from taxation are emphasized by negative impact of government spending.

The traditional emphasis that the way government finances its expenditures impact on stability and growth is confirmed as under any regression specification growth suffers from deficit financing and debt. Also confirmed is the fact that the negative effect on growth caused by consumption taxes is several times smaller than the negative impact of income taxes. The latter appear to distort incentives in a way that harms growth. This result contains lessons for tax reform; also because it suggests a likely negative effect on growth when tax policy relies heavily on income taxation to pursue affect income distribution and "fair" distribution of the tax burden amongst other objectives. Obviously the design and administration of the various taxes as well as tax compliance will impact on the income distributional impact of these various taxes.

The study investigated the efficiency of education and health expenditures, two components of the expenditure of countries that attract large amount of resources and whose outcomes have been retained in the Millennium Development Goals. Education expenditures were not found to improve education outcomes – defined as net enrollment in secondary education—when no account is taken of the country governance scores. However when these indicators are used to weight the education expenditure, the result suggests that countries with good scores can obtain very significant improvements in their education outcomes, whereas for countries with poor governance scores these additional expenditures would hardly improve their education outcomes. If countries that score low on their governance indicators would increase their score to the sample average, they could enhance educational outcomes substantially. The analysis was also applied to the efficiency of health expenditures and basically similar results were obtained. For the same level of expenditure, countries with good governance

scores achieve much better results in terms of infant mortality and life expectancy than countries that score low.

The study suggest that further research on this topic could well covert the following issues; (i) collect better fiscal and outcome data so that the relationship between the two is tighter;(ii) undertake country specific studies that can benefit from better data but also can take additional country specific variables into account,(iii) improve on the data used to proxy governance by collecting data the better reflect governance in the domain of public finance management, (iv) deeper analysis of the tax system of individual countries taxes –design, administration as well as compliance- to better analyze the trade-off between tax structure and growth. A better understanding of how the tax structure affects income distribution could inform the tax reform program.

7.2 Recommendations

- Maintaining stability has proven to be a precondition for growth. Hence policies that contribute to maintaining a sustainable budgetary stance are important to achieve growth. They are a necessary but not sufficient condition and should remain high on the policy agenda. Fiscal rules can contribute to stability as was shown in the EU2009 (pp148-151). These rules include capping expenditure growth, the use of windfall revenues, rules regarding balance budget or rules that require that additional budget expenditures can only be approved when additional revenues are generated, having external institutions provide the macro "cadrage" for the budget preparations. The public should be made aware that the budget is being prepared within the context of fiscal rules and top level policy support for the adherence of the fiscal rules should be mustered.
- This study has shown that governance matters in fiscal performance. Even though the indictors used were rather generic and constructed as a broad indicator of governance in a country, they suggest that a broad measure of governance matters a lot. Countries could look in greater detail on how to implement good governance in budget preparation and execution. Medium term programming of the budget and introducing elements of performance budgeting are steps that might greatly contribute to achieving good budget outcomes.
- Adopting a medium-term budgetary framework would provide the public institutions as well as the private sector greater predictability of budget allocation sheltering them from drastic modifications that disrupt service delivery and business plans.
- Adopting pure performance budgeting, that closely links inputs to results is probably beyond the means of the countries in the MED region. However much can be gained by adopting performance informed budget (PIB) procedures. These would attempt to better relate funds towards results. In the process data would need to be collected on both, an exercise that might inform the budget discussions, and could lead to

practices that improve over the often adopted across the board changes in budget allocations based on last years allocations. This PIB could be tested in sectors where the measurement of outputs and results present the least difficulties, such as education and health. This would imply that the composition of expenditures in these sectors be subjected to closer scrutiny. Not only budgeted amounts would need to be analyzed, but also actually disbursed amounts, which often differ greatly from those, budgeted. The structure of expenditure across the sector would be focused upon (e.g. higher versus primary education and preventive versus hospital care) as the composition of expenditure within the broad categories probably impact more on growth than the overall allocation of these funds to these sectors. .

- Reducing "non productive" expenditures and using these funds to increase "productive" expenditures would enhance growth perspectives. This would certainly apply to the gradual reduction of fuel and food subsidies that distort the incentive structure in the economy. There are limits to such shifts in the structure of expenditures as expenditures that provide public goods need to be maintained at a critical level to ensure the general environment that enables economic activity including the respect of property rights and security.

- Analyze tax policy within the context not only of the economic impact of the various taxes but also with a view on administrative capacity to effectively and efficiently administer these taxes. It might be that in general income taxes have a greater growth depressing effect than consumption taxes. However how these taxes are administered in any given country and how they interact with the structure of the economy are important issues that need to inform the tax policy debate. This will necessitate a careful country specific review of the tax policy and administration.

- While trade liberalization improves resource allocation, it will lead to lower taxes on international trade. Substituting taxation on domestic consumption for the taxes on international trade will further enhance a country's growth perspective. Tax policy to strengthen domestic consumption taxes should accompany trade liberalization.

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Data Sources

Government Finance Statistics:

Most data used in this report were obtained from the International Monetary Fund's Government Finance Statistics (GFS). This publication contains detailed revenue and expenditure data for most of its Member countries. When it was possible we took consolidated government information, when this information was not available or incomplete we used central government information. Ideally all countries should report expenditure statistics on the functional and economic classification as well as a revenue breakdown and changes in fiscal assets. In reality the data are only partially available as some countries do not report all the desired data. Furthermore in 2000 the methodology for compiling expenditure data as changed from cash basis to accrual basis. The latter methodology does not correspond with the data gathering procedures in many countries. As a result a number of countries did not communicate expenditure breakdown to the IMF after 2000. A major effort was undertaken to complete the GFS published data by consulting the statistical Annexes contained in the periodic Country Consultation Reports that have become publicly available on the IMF website. So as to have long time series available the data used for this study combine the county series compiled either on a cash (before 2000 for all countries retained in the sample and several that did not report accrual data to IFS) and on an accrual basis. The authors believe that this hybrid approach does not impact on the findings of this study.

Expenditure data:
The series for productive expenditure is made up of: Economic Affairs, Agriculture Affairs, Mining, Manufacturing and Construction, Transport, Communication, Housing, Health, Education and Environmental protection.

The series on non-productive investment is made up of: General Public Services, Public Debt, Transfers Between Levels, Defense, Public Order, Fuel, Energy and Social Protection.

Revenue data :
Revenue data is made up of: Taxes, Taxes on Income and Profit, General Taxes on Goods and Services, Taxes on International Trade and Transactions and Grants.

Debt data were taken from GFS or from the Consultation reports. Failing that defined the deficit as the difference between revenue and expenditure.

Other Fiscal Data:
Fiscal information was further complemented using the Global Development Finance – GDF- database (World Bank). The following fiscal indicators where obtained: Debt outstanding, Foreign direct investment (net inflows) Grants, Total Debt/Exports (%), Total Debt/GNP (%), Total Debt Stocks (DOD, US$) and Short Term Debt Outstanding (DOD, US$)

Health outcome indicators:
Health, Nutrition and Population (HNP) Statistics (World Bank) database provided the following health Indicators: Lifetime Risk of Maternal Debt, Life Expectancy at Birth, measles immunization and under 5 Mortality. The latter series is available only on a five year basis for the earlier years, and the missing data were interpolated.

Education Outcomes:
Educational (ED-Stat) Statics (World Bank) provided the following education indicators: Literacy Rate Adult (Total), Average Years of Schooling of Adults (Total), Graduates in Science (% of Total), Current Education Expenditure on Teaching Materials (% primary), Net Enrolment Rate (secondary), PISA: highest level of proficiency in science and Math, PISA: mean performance in science and math, and Public Expenditure per student (% of p.c. GDP, secondary).

Governance:
Indicators on Voice and Accountability , Political Stability and Absence of Violence (PV), Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption, where obtained in the World Bank website of *Governance Matters* for 2008: http://info.worldbank.org/governance/wgi/sc_country.aspWB . For earlier years data were only available for every other year; the missing years were obtained by interpolation so as not to lose a large number of observations and strengthen the results.

Macroeconomic indicators.
1- World Economic Outlook : GDP per capital (constant prices) and GDP per capital purchasing power parity (current prices).
2- IFS: Consumer Prices, Goods: Exports f.o.b., Goods Imports f.o.b., Direct Investment in the Rep. Economy, Net Cash Inflow, Net Lending/Borrowing, Gross Domestic Product, GDP Deflator and Population.
3- World Development Indicator : External Debt (total DOD, current US$), GDP (current US$), Cash Surplus/Deficit % of GDP and Gross Capital Formation % of GDP.

Infrastructure outcome:
1. Global Competitiveness Reports, (World Economic Forum) information on Quality of infrastructure. http://www.weforum.org/pdf/GCR08/GCR08.pdf
2. From the World Development Indicators, information on percentage of paved roads.

Data Availability

Table Annex B.1: Data Availability for Regression Analysis

GDP per capita and input/outcome variables:

	Per Capita Income	Net Enrolment Secondary	Life expectancy	Under-5 Mortality
Albania	1981-2008	1999-2004	1972-2006	1970-2006
Algeria	1981-2008	1980-2004	1972-2006	1970-2006
Croatia	1981-2008	1990-2006	1972-2006	1970-2006
Egypt	1981-2008	1993-2002	1972-2006	1970-2006
Israel	1981-2008	1999-2006	1972-2006	1970-2006
Jordan	1981-2008	1975-2006	1972-2006	1970-2006
Lebanon	1981-2008	1997-2007	1972-2006	1970-2006
Morocco	1981-2008	1975-2003	1972-2006	1970-2006
Syria	1981-2008	1975-2007	1972-2006	1970-2006
Tunisia	1981-2008	1975-2003	1972-2006	1970-2006
Turkey	1981-2008	1985-2006	1972-2006	1970-2006
Middle and Low Income Countries	1981-2007	1990-2006	1970-2006	1970-2006

Macro Variables, Debt, and Governance:

	Openness	Inflation	Debt	Governance Indicators
Albania	1981-2008	1980-2007	1991-2007	1996-2007
Algeria	1981-2008	1980-1991	1980-2007	1996-2007
Croatia	1993-2008	1993-2007	1993-2007	1996-2007
Egypt	1981-2008	1980-2007	1980-2007	1996-2007
Israel	1981-2008	1980-2007	1992-2008	1996-2007
Jordan	1981-2008	1980-2007	1980-2007	1996-2007
Lebanon	1981-2008	2002-2007	1980-2007	1996-2007
Morocco	1981-2008	1980-2007	1980-2007	1996-2007
Syria	1981-2008	1980-2006	1980-2006	1996-2007
Tunisia	1981-2008	1980-2007	1980-2007	1996-2007
Turkey	1981-2008	1980-2007	1980-2007	1996-2007
Middle and Low Income Countries	-	-	-	-

(Table Annex B.1, cont.)

Government Expenditures:

	Total	Unproductive	Productive	Education	Health
Albania	1995-2004	1995-2004	1995-20044	1995-1998	1995-1998
Algeria	1994-2007	1994-2007	1994-1999	1994-1999	1994-1999
Croatia	1992-2007	1992-2007	1992-2007	1992-2007	1992-2007
Egypt	1990-2007	1990-2007	1990-2007	1990-2007	1990-2007
Israel	1990-2007	1990-2007	1990-2007	1990-2007	1990-2007
Jordan	1990-2007	1990-2007	1990-2007	1990-2007	1990-2007
Lebanon	1993-2007	1993-2007	1993-2007	1993-2007	1993-2007
Morocco	1990-2008	1990-1999	1990-1999	1990-1999	1990-1999
Syria	1990-2007	1990-1999	1990-1999	1990-1999	1990-1999
Tunisia	1990-2008	1990-2008	1990-2008	1990-2007	1990-2008
Turkey	1990-2007	-	-	1998-2004	-
Middle and Low Income Countries	-	-	-	-	-

Government Revenues:

	Total	Tax Revenues	Income Taxes	Domestic Consumption Taxes	Foreign Trade Taxes
Albania	1995-2004	1995-2004	1995-2005	1995-20004	1995-2004
Algeria	1994-2007	1994-2007	1994-2008	1994-2007	1994-2007
Croatia	1992-2007	1992-2007	1992-2008	1992-2007	1992-2007
Egypt	1990-2007	1990-2007	1990-2007	1999-2007	1990-2007
Israel	1990-2007	1990-2007	1990-2007	1990-2007	1990-2007
Jordan	1990-2007	1990-2007	1990-2007	1999-2007	1990-2007
Lebanon	1993-2007	1993-2007	1993-2008	1998-2007	1993-2007
Morocco	1990-2007	1990-2007	1990-2007	1990-2007	1990-2007
Syria	1990-2007	1990-1999	1990-1999	-	1990-1999
Tunisia	1990-2008	1990-2008	1990-2008	1990-2008	1990-2008
Turkey	1990-2007	1980-2007	1980-2008	1980-2007	1980-2007
Middle and Low Income Countries	-	-	-	-	-

Additional Data and Statistics

Table Annex C.1: Governance Indicators, 1996-2007

Table Annex C.1: Governance Indicators, 1996-2007

	Voice and Accounta-bility	Political Stability and Absence of Violence	Government Effectiveness	Regulatory Quality	Rule of Law	Control of Corruption	Average 1996-2008	Average 2008
Albania	-0.203	-0.602	-0.542	-0.187	-0.868	-0.706	-0.518	-0.298
Algeria	-1.124	-1.798	-0.666	-0.751	-0.904	-0.629	-0.978	-0.759
Croatia	0.271	0.288	0.332	0.241	-0.058	-0.071	0.167	0.334
Egypt	-0.995	-0.724	-0.345	-0.313	-0.045	-0.348	-0.462	-0.579
Israel	0.670	-1.052	1.048	0.987	0.911	1.010	0.596	0.559
Jordan	-0.498	-0.198	0.143	0.311	0.384	0.133	0.046	0.088
Lebanon	-0.437	-0.959	-0.223	-0.182	-0.293	-0.410	-0.417	-0.779
Morocco	-0.479	-0.306	-0.067	-0.077	0.027	-0.016	-0.153	-0.285
Syria	-1.576	-0.560	-0.868	-1.067	-0.403	-0.625	-0.850	-0.986
Tunisia	-0.907	0.184	0.527	0.122	0.075	0.156	0.026	-0.021
Turkey	-0.336	-0.934	0.010	0.253	-0.021	-0.147	-0.196	-0.077
Region Average							-0.249	-0.255
Region Average Excluding Israel							-0.334	-0.336

Table Annex C.2: Fiscal Policy and Growth - Results with time invariant measure of governance.

Table Annex C.2: Fiscal Policy and Growth - Results with time invariant measure of governance.	(1)	(2)	(3)	(4)	(5)	(6)
Real per capita growth rate (-1)	-0.181	-0.243	-0.236	-0.319	-0.264	-0.266
	[1.205]	[1.749]*	[1.695]*	[2.155]**	[1.904]*	[1.919]*
Openness	0.022	0.030	0.041	0.030	0.018	0.017
	[1.153]	[1.582]	[1.996]**	[1.717]*	[1.131]	[1.053]
Inflation	-0.044	-0.111	-0.117	-0.118	-0.117	-0.115
	[1.113]	[2.107]**	[2.270]**	[2.506]**	[2.260]**	[2.245]**
Log(initial per capita real gdp)	-0.026	0.239	0.228	0.419	0.329	0.328
	[0.161]	[1.814]*	[1.653]*	[2.926]***	[2.453]**	[2.464]**
Expenditures/GDP (-1)	-0.019	0.122	0.120	0.045		
	[0.288]	[1.299]	[1.276]	[0.486]		
Expenditures/GDP (-1)*Mean(ewgi)					0.127	0.118
					[2.574]**	[3.210]***
Revenues/GDP (-1)	-0.007	0.048		-0.036	-0.020	
	[0.121]	[0.983]		[0.582]	[0.331]	
Debt/GDP	-0.054	-0.067	-0.068	-0.075	-0.069	-0.069
	[2.894]***	[4.183]***	[4.204]***	[4.740]***	[4.494]***	[4.606]***
ewgi				4.819		
				[2.861]***		
Constant	6.656	-0.886	0.130	-1.195	1.493	1.199
	[3.987]***	[0.342]	[0.055]	[0.547]	[0.926]	[0.882]
Dummy Israel		-4.619	-3.886	-7.423	-9.240	-9.003
		[2.694]***	[2.336]**	[4.654]***	[3.877]***	[4.202]***
Dummy Turkey		5.500	5.659	4.751	4.565	4.618
		[2.279]**	[2.309]**	[2.093]**	[1.868]*	[1.928]*
Observations	108	108	108	108	108	108
Number of country	10	10	10	10	10	10
R-squared	0.157	0.277	0.271	0.33	0.300	0.299
Chi squ.	18.362	42.198	41.312	79.05	63.513	61.985
Prob > Chi squ.	0.010439	0.000003	0.000002	0.000000	0.000000	0.000000
z statistics in brackets						
* significant at 10%; ** significant at 5%; *** significant at 1%						
The control variables include macroeconomic indicators (the openness ration and the rate of inflation); initial conditions (log of per-capita gdp in 1980); and a governance indictor (the average of the world governance index scores). Fiscal variables include the ratio of government expenditures to GDP (lagged on period), G/GDP(-1), the ratio of total revenues to GDP (lagged one period), and the debt to GDP ratio. A variable capturing the effect of government expenditures re-scaled by governance Expenditures/GDP (-1)*Mean(ewgi) is also considered, where Mean(ewgi) is the sample mean of the exponential of the average of the six World Bank governance scores. The sample is unbalanced and includes observations form 1996-2008. Algeria is excluded due to few observation towards the end of the sample.						

Table Annex C.3: Composition of Fiscal Policy and Growth - Results with a time invariant measure of governance.

Table Annex C.3: Composition of Fiscal Policy and Growth - Results with a time invariant measure of governance.						
	(1)	(2)	(3)	(4)	(5)	(6)
Per capita growth rate (-1)	-0.395	-0.384	-0.383	-0.393	-0.393	-0.527
	[2.711]***	[2.680]***	[2.617]***	[2.630]***	[2.672]***	[4.518]***
Openness	0.049	0.062	0.069	0.045	0.054	0.067
	[2.404]**	[3.203]***	[3.790]***	[2.432]**	[2.566]**	[3.403]***
Inflation	-0.334	-0.353	-0.334	-0.323	-0.366	-0.580
	[2.673]***	[2.846]***	[2.642]***	[2.435]**	[2.728]***	[5.413]***
Log(initial per capita real gdp)	0.522	0.562	0.692	0.622	0.677	0.609
	[3.612]***	[3.795]***	[4.671]***	[4.968]***	[4.436]***	[3.947]***
Unproductive Exp./GDP (-1)	0.090	0.078				
	[1.636]	[1.436]				
Productive Exp./GDP (-1)	0.223	0.253	0.249			
	[2.057]**	[2.213]**	[2.081]**			
Productive Exp./GDP (-1)*Mean(ewgi)				0.203	0.284	0.493
				[2.433]**	[2.591]***	[5.626]***
Revenues/GDP (-1)	0.064					
	[1.203]					
Tax Revenues/GDP (-1)					-0.166	
					[1.210]	
Income Taxes/GDP (-1)						-1.191
						[4.727]***
Consumption Taxes/GDP (-1)						-0.347
						[3.208]***
Taxes on External Trade/GDP(-1)						-0.770
						[3.414]***
Debt/GDP	-0.114	-0.117	-0.114	-0.103	-0.108	-0.164
	[6.971]***	[7.209]***	[7.058]***	[6.194]***	[5.769]***	[7.289]***
Constant	-1.792	-1.009	-1.104	1.066	2.708	11.141
	[0.664]	[0.422]	[0.410]	[0.545]	[1.251]	[3.451]***
Dummy Israel	-6.049	-5.187	-4.373	-7.270	-7.448	-2.515
	[3.879]***	[4.342]***	[4.369]***	[3.992]***	[4.229]***	[1.267]
Observations	82	82	82	82	82	68
Number of country	9	9	9	9	9	8
R-squared	0.467	0.458	0.434	0.447	0.461	0.587
Chi squ.	104.497	90.131	96.714	89.199	90.358	101.939
Prob > Chi squ.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
z statistics in brackets						
* significant at 10%; ** significant at 5%; *** significant at 1%						

The control variables include macroeconomic indicators (the openness ration and the rate of inflation); initial conditions (log of per-capita GDP in 1980); and a governance indictor (the average of the world governance index scores). Fiscal variables include the ratio of unproductive government expenditures to GDP (lagged on period), Unproductive Exp/GDP(-1); the ratio of productive government expenditures to GDP (lagged on period), Productive Exp/GDP(-1); the ratio of total revenues to GDP (lagged one period), and the debt to GDP ratio. A variable capturing the effect of government expenditures re-scaled by governance Productive Exp./GDP (-1)*Mean(ewgi) is also considered, where Mean(ewgi) is the sample mean of the exponential of the average of the six World Bank governance scores. The sample is unbalanced and includes observations form 1996-2008. Algeria is excluded due to few observations towards the end of the sample. Turkey is excluded from lack of comparable data, and data on tax composition could not

Table Annex C.4: Fiscal Policy and Growth - Results with a dummy for governance.

Table Annex C.4: Fiscal Policy and Growth - Results with a dummy for governance.							
	(1)	(2)	(3)	(3)	(4)	(5)	(6)
Real per capita growth rate (-1)	-0.181	-0.243	-0.236	-0.281	-0.300	-0.305	-0.305
	[1.205]	[1.749]*	[1.695]*	[2.000]**	[2.078]**	[2.161]**	[2.162]**
Openness	0.022	0.030	0.041	-0.008	-0.010	-0.008	-0.008
	[1.153]	[1.582]	[1.996]**	[0.359]	[0.469]	[0.431]	[0.431]
Inflation	-0.044	-0.111	-0.117	-0.125	-0.132	-0.134	-0.130
	[1.113]	[2.107]**	[2.270]**	[2.446]**	[2.659]***	[2.740]***	[2.701]***
Log(initial per capita real gdp)	-0.026	0.239	0.228	0.442	0.513	0.531	0.511
	[0.161]	[1.814]*	[1.653]*	[2.971]***	[3.049]***	[3.224]***	[3.438]***
Expenditures/GDP (-1)	-0.019	0.122	0.120	0.103	0.026		
	[0.288]	[1.299]	[1.276]	[1.133]	[0.267]		
Expenditures/GDP (-1)*Dgov					0.128	0.134	0.121
					[2.891]***	[3.254]***	[3.786]***
Revenues/GDP (-1)	-0.007	0.048		-0.030	-0.030	-0.034	
	[0.121]	[0.983]		[0.492]	[0.500]	[0.569]	
Debt/GDP	-0.054	-0.067	-0.068	-0.077	-0.081	-0.082	-0.080
	[2.894]***	[4.183]***	[4.204]***	[4.677]***	[4.649]***	[4.681]***	[5.030]***
Dgov				3.496			
				[2.812]***			
Constant	6.656	-0.886	0.130	1.387	3.181	3.827	3.084
	[3.987]***	[0.342]	[0.055]	[0.536]	[1.055]	[1.995]**	[2.244]**
Dummy Israel		-4.619	-3.886	-5.705	-6.670	-6.436	-6.460
		[2.694]***	[2.336]**	[3.491]***	[4.179]***	[5.151]***	[5.125]***
Dummy Turkey		5.500	5.659	4.879	4.905	4.965	4.983
		[2.279]**	[2.309]**	[2.021]**	[2.080]**	[2.125]**	[2.140]**
Observations	108	108	108	108	108	108	108
Number of country	10	10	10	10	10	10	10
R-squared	0.157	0.277	0.271	0.314	0.319	0.318	0.316
Chi squ.	18.362	42.198	41.312	77.775	84.009	81.101	72.415
degrees of freedom	0.010439	0.000003	0.000002	0.000000	0.000000	0.000000	0.000000
z statistics in brackets							
* significant at 10%; ** significant at 5%; *** significant at 1%							

The control variables include macroeconomic indicators (the openness ration and the rate of inflation); initial conditions (log of per-capita gdp in 1980); and a governance indictor (the average of the world governance index scores). Fiscal variables include the ratio of government expenditures to GDP (lagged on period), G/GDP(-1), the ratio of total revenues to GDP (lagged one period), and the debt to GDP ratio. A variable capturing the interaction between government expenditures and governance, Expenditures/GDP (-1)*Dgov is also included, where Dgov is a dummy that takes the value 1 for countries with a mean average governance index (Mean(ewgi)) above 1. The sample is unbalanced and includes observations form 1996-2008. Algeria is excluded due to few observation towards the end of the sample.

Table Annex C.5: Composition of Fiscal Policy and Growth - Results with a dummy for governance.

Table Annex C.5: Composition of Fiscal Policy and Growth - Results with a dummy for governance.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Per capita growth rate (-1)	-0.395	-0.384	-0.383	-0.397	-0.399	-0.400	-0.522
	[2.711]***	[2.680]***	[2.617]***	[2.652]***	[2.579]***	[2.598]***	[3.586]***
Openness	0.049	0.062	0.069	0.050	0.037	0.039	0.038
	[2.404]**	[3.203]***	[3.790]***	[2.551]**	[2.045]**	[2.078]**	[1.700]*
Inflation	-0.334	-0.353	-0.334	-0.327	-0.313	-0.333	-0.499
	[2.673]***	[2.846]***	[2.642]***	[2.541]**	[2.318]**	[2.438]**	[3.806]***
Log(initial per capita real gdp)	0.522	0.562	0.692	0.687	0.577	0.596	0.457
	[3.612]***	[3.795]***	[4.671]***	[4.686]***	[4.343]***	[3.962]***	[2.779]***
Unproductive Exp./GDP (-1)	0.090	0.078					
	[1.636]	[1.436]					
Productive Exp./GDP (-1)	0.223	0.253	0.249	0.165			
	[2.057]**	[2.213]**	[2.081]**	[1.037]			
Productive Exp./GDP (-1)*Dgov				0.083	0.144	0.173	0.303
				[0.996]	[2.348]**	[2.189]**	[5.003]***
Revenues/GDP (-1)	0.064						
	[1.203]						
Tax Revenues/GDP (-1)						-0.083	
						[0.640]	
Income Taxes/GDP (-1)							-0.909
							[3.484]***
Consumption Taxes/GDP (-1)							-0.235
							[2.215]**
Taxes on External Trade/GDP(-1)							-0.727
							[2.928]***
Debt/GDP	-0.114	-0.117	-0.114	-0.110	-0.099	-0.101	-0.133
	[6.971]***	[7.209]***	[7.058]***	[6.797]***	[5.572]***	[5.225]***	[4.939]***
Constant	-1.792	-1.009	-1.104	0.250	3.031	4.251	13.523
	[0.664]	[0.422]	[0.410]	[0.084]	[1.909]*	[1.857]*	[3.580]***
Dummy Israel	-6.049	-5.187	-4.373	-4.865	-4.636	-4.201	1.348
	[3.879]***	[4.342]***	[4.369]***	[4.741]***	[4.554]***	[3.394]***	[0.603]
Observations	82	82	82	82	82	82	68
Number of country	9	9	9	9	9	9	8
R-squared	0.467	0.458	0.434	0.441	0.432	0.436	0.521
Chi squ.	104.497	90.131	96.714	92.244	59.695	63.099	60.226
Prob > Chi squ.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
z statistics in brackets							
* significant at 10%; ** significant at 5%; *** significant at 1%							

The control variables include macroeconomic indicators (the openness ration and the rate of inflation); initial conditions (log of per-capita GDP in 1980); and a governance indictor (the average of the world governance index scores). Fiscal variables include the ratio of unproductive government expenditures to GDP (lagged on period), Unproductive Exp/GDP(-1); the ratio of productive government expenditures to GDP (lagged on period), Productive Exp/GDP(-1); the ratio of total revenues to GDP (lagged one period), and the debt to GDP ratio. A variable capturing the interaction between productive government expenditures and governance, Productive Exp./GDP (-1)*Dgov is also included, where Dgov is a dummy that takes the value 1 for countries with a mean average governance index (Mean(ewgi)) above 1. The sample is unbalanced and includes observations form 1996-2008. Algeria is excluded due to few observation towards the end of the sample.

Table Annex C.6: Net Enrolment - Regressions using alternative specifications.

Table Annex C.6: Net Enrolment - Regressions using alternative specifications.		
	(1)	(2)
G-education		0.589
		[1.623]
G-education/GDP*Mean(ewgi)	1.759	
	[4.875]***	
G-education/GDP*Dgov		2.125
		[2.767]***
Log(initial per capita real gdp)	-0.387	0.529
	[0.861]	[1.111]
Trend	2.013	1.975
	[5.740]***	[5.047]***
Constant	3.863	-4.829
	[0.302]	[0.385]
Observations	38	38
No. of Countries	8	8
R-squared	0.536	0.484
Absolute value of z statistics in brackets		
* significant at 10%; ** significant at 5%; *** significant at 1%		

Table Annex C.7: Health Outcomes - Regressions using alternative specifications.

	Life Expectancy		Under-5 Mortality	
	(1)	(2)	(1)	(2)
G-health		-0.980		15.941
		[2.187]**		[6.608]***
G-health/GDP*Mean(ewgi)	0.748		-2.920	
	[17.763]***		[9.981]***	
G-health/GDP*Dgov		1.906		-17.933
		[5.578]***		[8.269]***
Log(initial per capita real gdp)	0.174	0.394	-1.101	-2.535
	[7.312]***	[8.255]***	[6.107]***	[6.694]***
Trend	0.123	0.115	-0.836	-0.881
	[2.645]***	[2.090]**	[7.424]***	[5.328]***
Constant	65.002	64.013	74.015	77.231
	[41.691]***	[35.582]***	[15.798]***	[21.400]***
Observations	58	58	80	80
No. of Countries	10	10	10	10
R-squared	0.809	0.739	0.466	0.688
Absolute value of z statistics in brackets				
* significant at 10%; ** significant at 5%; *** significant at 1%				