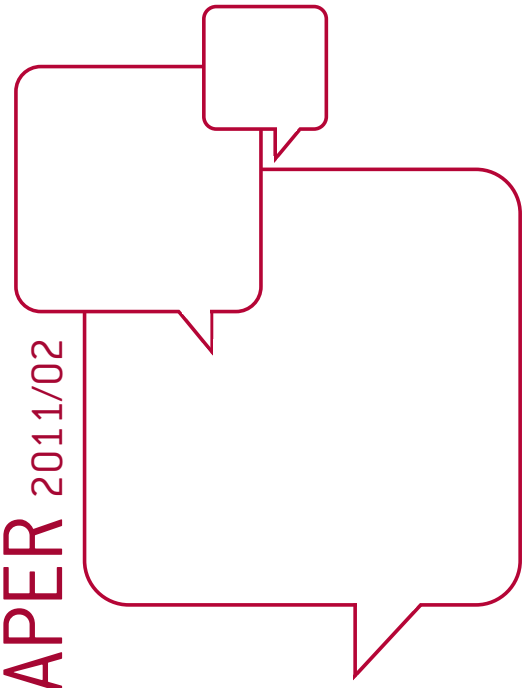

BRUEGEL WORKING PAPER 2011/02

THE FISCAL AND MONETARY INSTITUTIONS OF CESEE COUNTRIES

ZSOLT DARVAS* AND VALENTINA KOSTYLEVA**

Highlights

- This paper examines the role of fiscal and monetary institutions in macroeconomic stability and budgetary control in CESEE (central, eastern and south eastern European) countries in comparison to other OECD countries.
- CESEE countries tend to grow faster (at least before the crisis) and have more volatile output than non-CESEE OECD countries, which has implications for macroeconomic management: better fiscal and monetary institutions are needed to avoid pro-cyclical policies. Our budgetary discipline index suggests that fiscal institutions are weaker in most CESEE countries than in non-CESEE OECD countries.
- The pre-crisis declines in CESEE debt/GDP ratios were largely the consequence of a very favourable relationship between the economic growth rate and the interest rate, but such a favourable relationship cannot be expected to continue. Our econometric estimations confirm that better monetary institutions reduce macroeconomic volatility, and countries with better budgetary procedures had better fiscal outcomes. All these factors call for improved monetary institutions, stronger fiscal rules, and better budgetary procedures.

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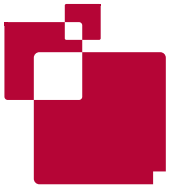

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1. Introduction

This paper aims to identify the major institutional determinants of macroeconomic stability and aggregate budgetary control in central, eastern, and south-eastern European[1] (CESEE) countries. The region grew fast before the crisis, but the crisis hit hard most of these countries harder than any other country group of world and the recovery from the crisis has also been generally slow. As a consequence, the pre-crisis seemingly smooth economic progress and good budgetary record suddenly came to an end.

Have fiscal[2] and monetary institutions played important roles in macro-economic stability and aggregate budgetary control? Since the crisis had a decisive impact on both macro-economic stability and budgetary control, the impact of these institutions on the build-up of pre-crisis vulnerabilities and on crisis response has a crucial relevance to this question. In our paper we define fiscal institutions as a set of legal procedures directing budgetary preparation (including expenditure frameworks and fiscal rules), legislation and execution. We characterise monetary institutions with the exchange rate regime, the quality of financial regulation and supervision, the independence of central banks, and the transparency of central bank decision making. We hypothesise the following causal links from fiscal and monetary institutions to budgetary control and macroeconomic stability.

- *Fiscal institutions and macroeconomic stability:* Countries with better fiscal frameworks are presumably following counter-cyclical fiscal policy. Letting automatic stabilisers to run and implementing counter-cyclical discretionary fiscal policy through the business cycle can dampen macroeconomic volatility.[3]
- *Fiscal institutions and budgetary control:* Better fiscal institutions can directly lead to better budgetary outcomes (ie lower deficits and debts) by constraining fiscal policy. But there is an indirect channel as well: a higher level of macroeconomic stability –which can be the result of better fiscal institutions as discussed above– can stabilise government revenues over the business cycle, thereby leading to lower average deficits over the cycle.
- *Monetary institutions and macroeconomic stability:* the ultimate goal of monetary policy should be the stabilization of the economy through the business cycle, and better monetary institutions should be more successful in achieving this goal. As said, we define monetary institutions broadly and also consider the role of financial stability through regulation and supervision. The crisis has proven even more clearly that financial stability has strong implications to macroeconomic stability.

[1] This paper analyses 26 countries of Central, Eastern, and South-Eastern Europe: 12 central European and Baltic members of the EU (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovak Republic, Slovenia), the seven European CIS countries (Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russian Federation, Ukraine), five non-EU countries of former Yugoslavia (Bosnia and Herzegovina, Croatia, FYR Macedonia, Montenegro, Serbia; data for Kosovo is not available), and Turkey and Albania.

The information in this paper with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey will preserve its position concerning the "Cyprus issue".

[2] For the purposes of this paper, "budgetary" and "fiscal" have the same meaning.

[3] On the contrary, that part of discretionary fiscal policy that is not related to the economic cycle can cause excessive macroeconomic volatility. A large literature following Fatás and Mihov (2003) have studied this casual link and confirmed that non-cycle related discretionary policy has indeed contributed to larger macroeconomic volatility. However, we do not follow this line of research and therefore our regressions may suffer from the omitted variable bias.

- *Monetary institutions and budgetary control:* There should not be a direct causal link form monetary institutions to budgetary control. However, the indirect channel through a higher level of macroeconomic stability can again at work, identically to the indirect channel described for fiscal institutions.

Our paper is structured as follows. We first describe macroeconomic stability and budgetary outcomes in Section 2. Budgetary institutions are assessed in Section 3: we argue that existing indicators suffer from certain weaknesses and therefore our 'budgetary discipline index' deviates from similar indices of the literature. In section 4 we characterise monetary institutions. Section 5 presents the empirical analysis on the impact of fiscal and monetary institutions on macroeconomic stability and budgetary control. Section 6 presents some concluding remarks.

2. Macroeconomic stability and fiscal outcomes

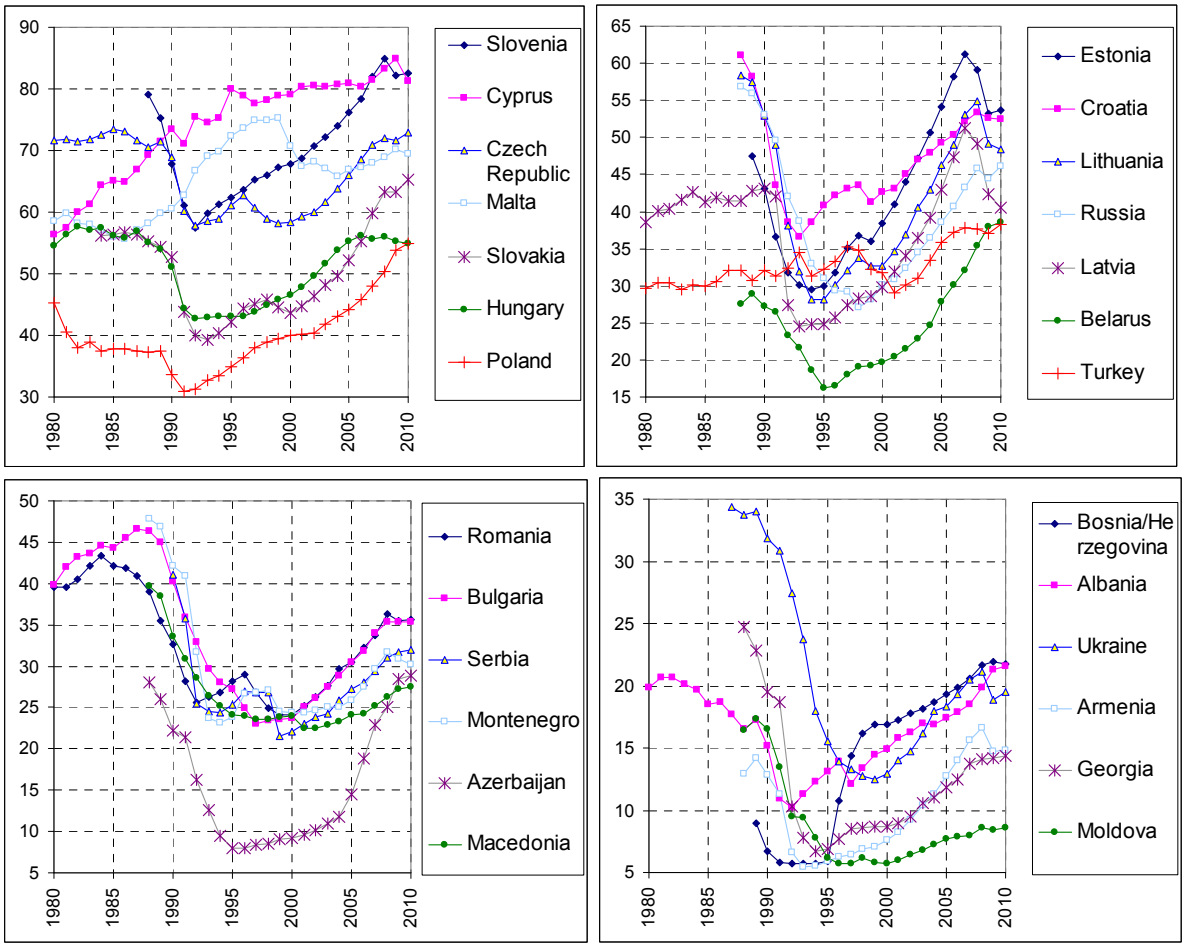
2.1 Development of GDP

Most of the CESEE countries went through a historically unprecedented transition from socialist political systems towards democracies and from centrally planned economies towards market economies. The extraordinary deep recession after the collapse of the communist regimes had been followed by a fast and apparently smooth economic catching up, that is, growth of per capita GDP has well exceeded the growth in main trading partners (*Figure 1*).[4]

Figure 1 also indicates that the duration of the transition recession in the 1990s varied substantially across CESEE countries, which complicates the selection of a start date of the sample period for the econometric analysis of our study. The current global financial and economic crisis complicates the selection of the end date of our sample period. *Figure 1* indicates that catching-up has halted in several CESEE countries and even reversed in some of them. Quarterly GDP indicators also show that recovery from the crisis is in general slow in CESEE countries and much slower than in other emerging country groups (*Figure 2*). For example, in the six small and open Asian economies shown on Panel A of *Figure 2* output growth is currently faster than it was before the crisis implying that these countries may converge to their pre-crisis trend line. But in CESEE countries the speed of recovery so far falls behind pre-crisis growth, even though there is heterogeneity: Albania and Poland has not suffered from a recession in 2009, while in Armenia, Estonia, Latvia, Lithuania and Ukraine output fall was close to or even above 20 percent.

[4] Of course, the three non-transition CESEE country, Cyprus, Malta and Turkey, show a different pattern.

Figure 1. GDP per capita at purchasing power parity (EU15=100), 1980-2010



Source: Author's calculation based on data from IMF World Economic Outlook April 2010 and EBRD.
Note. Countries are ordered according to their 2010 forecast values.

The reasons behind both the more serious average impact of the crisis on CESEE and the diversity among CESEE have been studied (eg Mitra, Selowsky and Zalduendo 2009, Darvas 2010, and Bruegel and WIIW 2010) and therefore we just briefly summarise the main issues.

The pre-crisis development model pursued by CESEE countries had many special features compared to other emerging economies. It was based on deep political, institutional, financial and trade integration with the EU,[5] which was also accompanied by substantial labour mobility into EU15 countries. Other emerging country regions did not have an anchor similar to the role the EU played for CESEE countries. Economic growth in the CESEE region relied on net private capital inflows, which have reached higher levels than elsewhere. In the aftermath of the dramatic crises in Asia and Latin America in the late 1990s and early 2000s, the CESEE region was the only emerging region of the world that had persistent current account deficits. Economic catching-up was accompanied by real exchange-rate appreciations, again a largely unique feature of the CESEE development model, and real interest rates fell.

[5] There are also differences within the CESEE region, however. The new EU member states have reached the highest level of integration, followed by the countries of the western Balkans and Turkey that have either EU 'candidate' or 'potential candidate' status. The six 'Eastern Partnership' countries, which were part of the Soviet Union, have reached a varying degree of integration with the EU15 and the Russian Federation still remains and important anchor for these countries.

But the CESEE development model had two important variants within the region. Some countries, most notably countries in Central Europe, were more successful in making a better use of the development model. In these countries pre-crisis growth was accompanied by small and even improving trade balances, as a reflection of reindustrialisation after the collapse that followed the fall of communist regimes. In most other countries, however, the trade and current account balances deteriorated sharply before the crisis, reaching double digit levels in several cases. As a consequence, external debt has risen fast before the crisis. Also, housing prices have risen much faster, real exchange-rate appreciation was also more rapid, while real interest rates fell to lower levels than in Central European countries, and inflation also rose considerably before the crisis. All of these factors suggest that economic growth in this group of countries was to a considerable extent fuelled by unsustainable booms. Indeed, there was extremely rapid growth of credit to the private sector, and the composition of FDI was also biased in favour of banking, real estate and other domestic sectors.

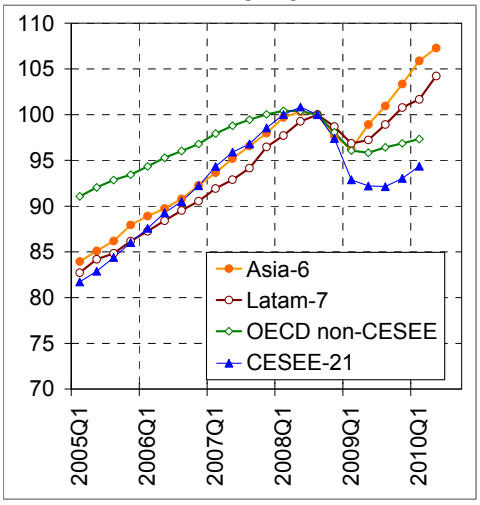
When the crisis started, most of us thought that the CESEE region will be not hit much. For example, the April 2008 Regional Economic Outlook Europe of the IMF foresaw that "*Emerging Europe's convergence trend is set to continue, based on good fundamentals, although its pace is likely to slow.*" (IMF, 2008), and other institutions and commentators shared this view. However, after the collapse of Lehman Brothers there was a sudden interruption, and even reversal in some countries, of capital inflows to CESEE countries. This has led to a credit crunch, which, combined with the subsequent export and investment declines, has depressed economic activity. Commodity exporters, such as Russia, Ukraine or Azerbaijan, were also hit by falling commodity prices. As the crisis unfolded, the credit crunch was replaced by falling demand for credit, caused by increased uncertainty and lowered expectations with respect to future growth prospects (Ghosh, 2009).

The diversity of crisis response within the CESEE region could be related to different reliance on pre-crisis capital inflows, trade, and commodity exports. But the crisis response have likely been influenced by fiscal and monetary policies during the crisis: there were only a few CESEE countries (e.g. Azerbaijan, Czech Republic, Poland, Russia, Slovenia, Turkey) that implemented fiscal stimulus in order to dampen the crisis. Most other countries had to consolidate public finances, thereby likely amplifying the downturn (Darvas, 2010).[6] Furthermore, monetary policy could not be eased at a time when capital was moving out and indeed several countries had to raise interest rates as well.

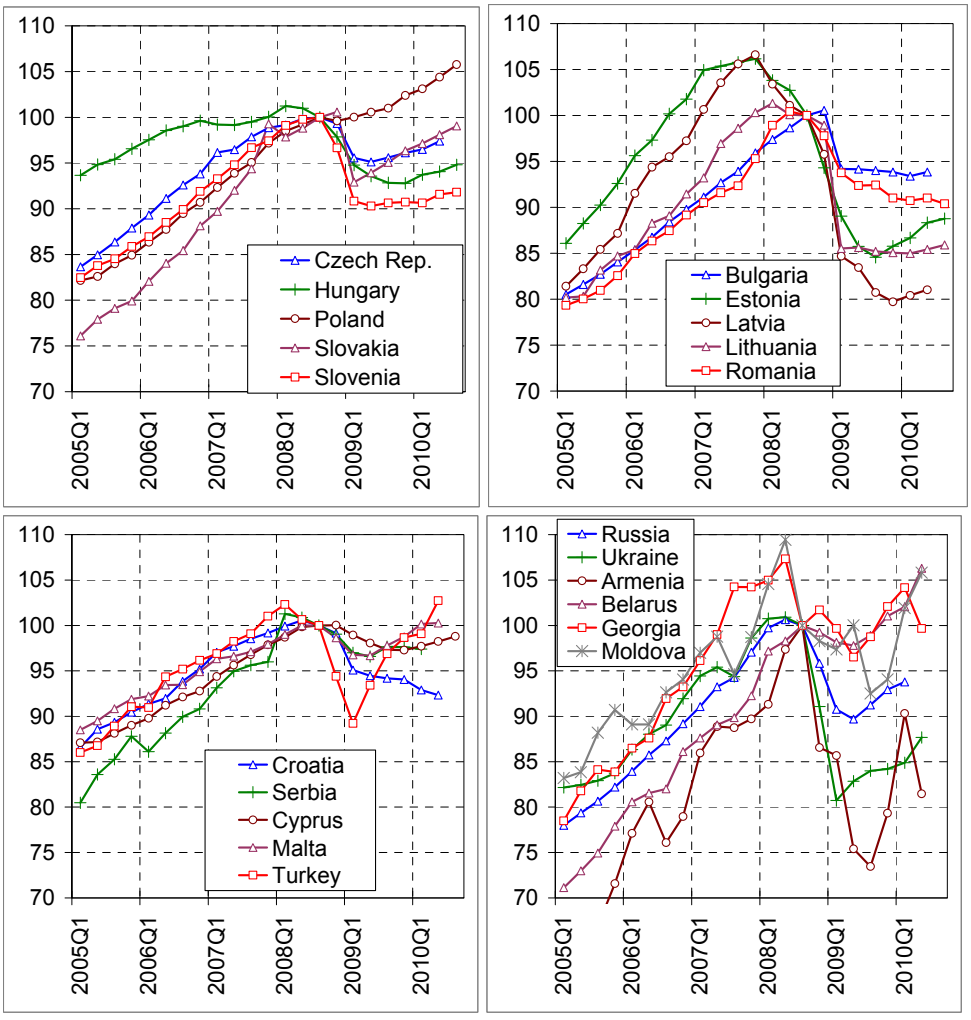
[6] The appendix table in Darvas (2010) details the fiscal measures taken by the CESEE countries in response to the crisis.

Figure 2. Quarterly GDP developments (2008Q3=100), 2005Q1-2010Q3

Panel A: Main country regions



Panel B: CESEE countries



Sources: Eurostat (EU countries and Croatia), OECD (other OECD countries and Russia), and national statistical offices, IMF and EBRD (other countries). Whenever seasonally adjusted series were not available, we have used the Census X-12 method for seasonal adjustment.

Note: Country group averages on panel A are non-weighted averages. Asia-6: Indonesia, Korea, Malaysia, Philippines, Taiwan and Thailand. Latam-7: Argentina, Brazil, Chile, Columbia, Ecuador, Mexico and Peru. CESEE-21: the average of 21 countries shown on Panel B. OECD non-CESEE: 27 OECD countries except Czech Republic, Hungary, Poland, Slovakia, Slovenia and Turkey.

2.2 Macroeconomic stability

We use two measures of macroeconomic stability for the econometric analysis of Section 5:

- Volatility of GDP growth rates in 2000-2010,
- Output decline in 2009.

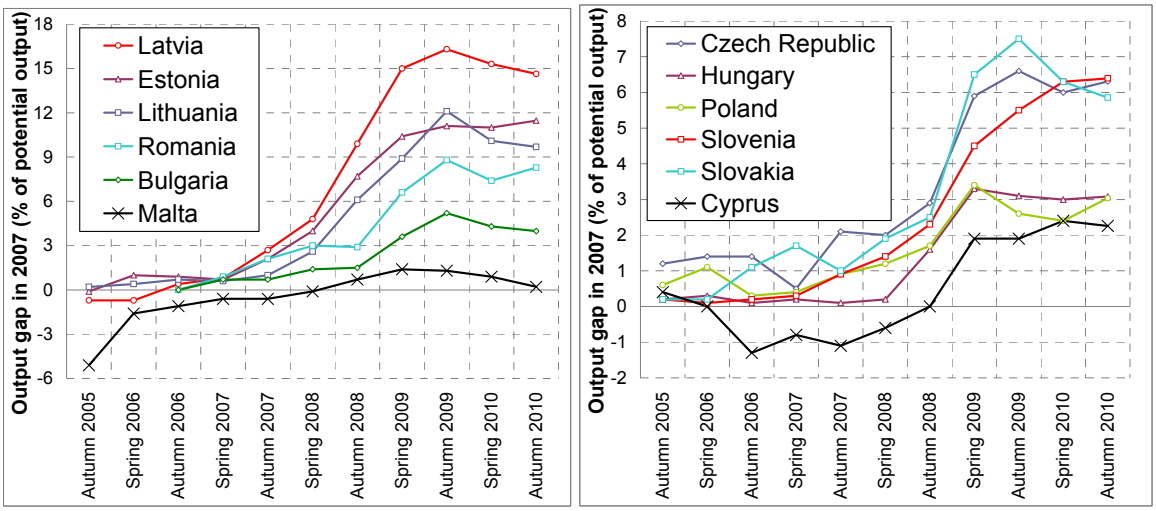
The first one can be regarded as an average measure of stability, while the second can be regarded as a 'tail' event. Our motivation for the selection of these measures is the following.

The developments described in the previous section suggest that considering the pre-crisis period only would be misleading, since pre-crisis economic growth has led to economic structures that made CESEE countries more prone to the crisis. In particular, the seemingly fast and smooth growth before the crisis has led to vulnerabilities in several CESEE, which eventually resulted in huge output falls and slow recoveries so far. Therefore, the crisis should be included in the sample. On the other hand, the 1990s was burdened with so many structural changes that the inclusion of this sample period would not be informative. Therefore, whenever data availability allows, we concentrate on the 2000-2010 sample period when studying macroeconomic stability, but will also use a pre-crisis sample (2000-2007) for comparison.

Macroeconomic stability has various interpretations. At the broadest level it can be defined as the volatility of output. It could also be defined, for example, as the level and volatility of inflation (representing internal equilibrium in the economy), or the level and volatility of the current account balance (representing external equilibrium). However, the assessment of both internal and external equilibrium is complicated by the economic developments of CESEE countries. These countries are catching-up economies, implying that both GDP per capita and the domestic price level approaches the values of developed economies. Price level convergence implies that it is not straightforward to decompose inflationary developments into an 'equilibrium' part (corresponding to sustainable economic catching-up) and a disequilibrium part. It also needs to be emphasized that current account imbalances are not necessarily bad: current account deficits and the consequent capital flows across countries may reflect the better utilization of resources when capital moves to fast-growing regions to the benefit of both the source and the recipient countries. Again, decomposing the current account balance into 'equilibrium' and 'disequilibrium' components is rather cumbersome.

For these reasons, we concentrate on GDP volatility, which, of course, can also reflect internal and external disequilibrium. Ideally, GDP volatility should be measured as the volatility of the deviation from potential output. However, measures of potential output are uncertain especially for countries like CESEE and at the time of the global crisis. An example is given in *Figure 3*, which depicts the 2007 output gap in EU member CESEE countries as seen at different dates, using data from the European Commission. The figure shows huge revisions in potential output calculations. The EC first published forecasts for the 2007 output gap in autumn 2005, when e.g. it predicted that the output gap of Latvia in 2007 will be -0.7 percent. This forecast was maintained in the spring of 2006, but later it was substantially revised upward. In the spring of 2008 the 2007 output gap was seen at 4.8 percent, and in autumn 2009 it was seen at 16.3 percent.

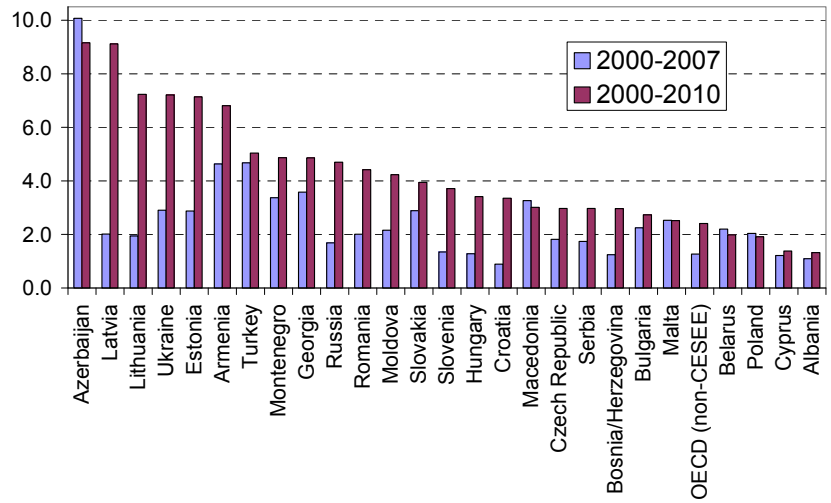
Figure 3. The 2007 output gap as seen at different dates



Source: European Commission forecasts.

Figure 4 shows the standard deviation of real GDP growth rates in 2000-2007 and in 2000-2010 in order to be able to assess the possible increase in volatility in response to the crisis. Indeed, considering the pre-crisis period of 2000-2007, volatility was seemingly low in several CESEE countries. In some cases volatility was even below the average of non-CESEE OECD countries. However, data for 2000-2010 suggest that the seemingly low pre-crisis volatility has indeed masked underlying vulnerabilities. In some cases, such as Latvia, Lithuania, Ukraine and Estonia, the rise in volatility is quite dramatic. On the other hand, there are four countries (Belarus, Poland, Cyprus and Albania) in which volatility is below the non-CESEE OECD average in the 2000-2010 period.

Figure 4. Standard deviation of annual GDP growth rates



Source: Authors' calculation using data from the IMF.

2.3 Fiscal outcomes

We use two measures of fiscal outcomes for the econometric analysis of Section 5:

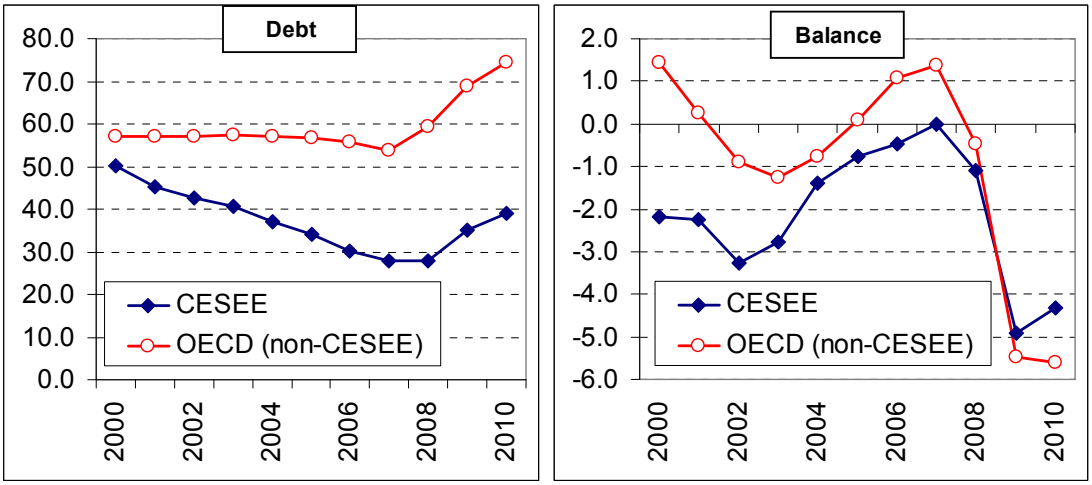
- Average general government balance (as a percent of GDP) in 2000-2010,
- Change in general government gross debt (as a percent of GDP) from 2000 to 2010.

The two measures are related, but not perfectly, as we demonstrate below. Our second measure considers the *change* in the debt/GDP ratio (as opposed to the *level* of debt/GDP ratio), because eg

good fiscal institutions in a given year cannot impact the inherited stock of debt, but can impact only the change in debt. We shall, of course, control for the initial level of debt and to other potential determinants in the econometric analysis. Similarly to macroeconomic stability, we also use the pre-crisis period (2000-2007) for comparison to our preferred sample of 2000-2010.

Figure 5 shows developments in general government balance and debt as a percent of GDP. The trend in general government gross debt has been much more favourable in CESEE than in non-CESEE OECD countries. The average ratio debt/GDP has decreased by more than 20 percentage points between 2000 and 2008 in CESEE, whereas it has been stable (or showed just slight decreases) in (other) OECD countries. One reason for this development could be differences in budget balances. However, this is certainly not the case, since the budget balance[7] was better in non-CESEE OECD countries than in CESEE countries. Therefore, the two measures highlighted in the beginning of this section are not perfectly correlated.

Figure 5. General government balance and gross debt (% GDP), 2000-2010



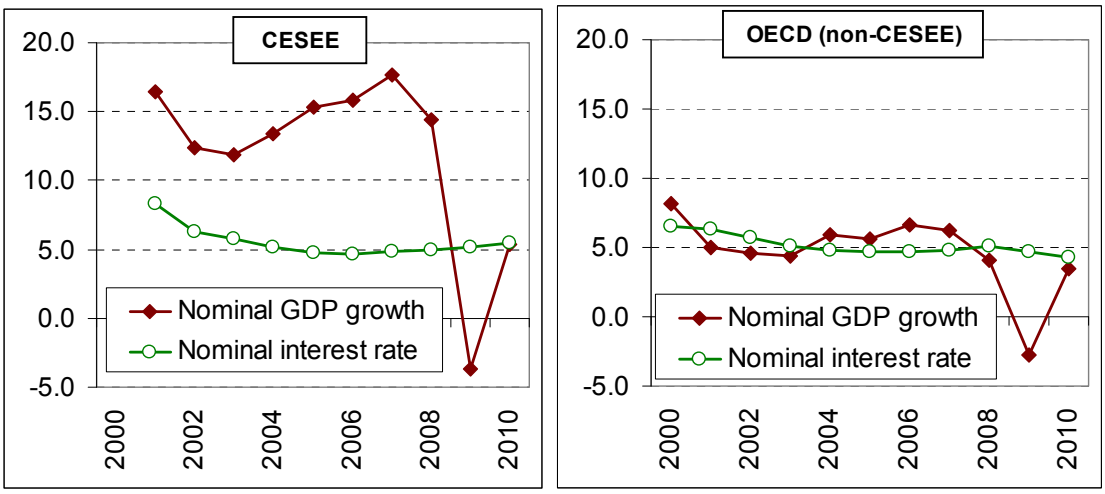
Source: IMF World Economic Outlook, EBRD, and Eurostat.

The explanation for the divergent trends in debt/GDP ratios is most likely the consequence of a highly favourable relationship between the economic growth rate and the interest rate. As *Figure 6* indicates, in CESEE countries economic growth largely exceeded the interest rate before the crisis, while in (other) OECD the two variables broadly moved together. The favourable relationship in CESEE was supported by financial integration (by reducing borrowing costs), higher real GDP growth rates and higher inflation rates.[8]

[7] The primary balance is unfortunately not available for several CESEE countries.

[8] We note that during the crisis the interest rate risk premium has increase and may remain about pre-crisis levels in the coming years, while nominal GDP growth may be squeezed. Therefore such a highly favourable relationship between the growth rate and the interest rate may not return. Note also that we show the actual implicit interest rate, which is largely determined by past interest rates due to long maturity bonds. A rise in spot interest rates will be shown in the implicit interest rates after a lag.

Figure 6. Implicit nominal interest rate on government debt and nominal GDP growth (%), 2000-2010



Source: Authors' calculation using data from IMF World Economic Outlook and Eurostat.
Note. Interest rate=government interest expenditures/previous year gross debt.

3. Fiscal institutions

In this section we identify budgetary institutions which may contribute to aggregate control and fiscal discipline and propose a new index called 'Budgetary Discipline Index'. The 'Fiscal Institutions Index' of Fabrizio and Mody (2008) has motivated the development of our own 'Budgetary Discipline Index', but our index differs from the index of Fabrizio and Mody (2008), because we consider different aspects important. We design a set of institutional features which seem to be the most important for mechanisms of fiscal discipline at the three stages of the budgetary cycle: the preparation stage (when the budget is drafted), the authorisation stage (when the budget is approved by parliament), and the implementation phase (when the budget is implemented and may be amended). The set provides a benchmark for assessing the countries and a basis for constructing the budgetary discipline index.

3.1 Budget preparation stage

At the stage of budgetary preparation we consider three leading parameters contributing to budgetary control: fiscal rules, medium term expenditure framework and multi-annual expenditure estimates.

3.1.1 Fiscal rules

The definition of a fiscal rule proposed by Kopits and Symanski (1998) states that a fiscal rule is "*a permanent constraint on fiscal policy, typically defined in terms of an indicator of overall fiscal performance (E) A critical feature of a fiscal rule is that it is intended for application on a permanent basis by successive governments in a given country.*"

Fiscal rules can serve different goals and their role in promoting budgetary control varies. Depending on how their affect fiscal discipline, we classified the rules as follows:

Expenditure rules usually set permanent limits on total, primary, or current spending in absolute terms, growth rates, or in percent of GDP. As such, these rules are not linked directly to the debt sustainability objective since they do not constrain the revenue side. They can provide, however, an operational tool to trigger the required fiscal consolidation consistent with sustainability when they

are accompanied by debt or budget balance rules. Steering on the expenditure side rather than on a cyclically adjusted deficit constraint is more transparent and possibly less susceptible to manipulation (Anderson and Minarik, 2006). Therefore, we assigned the largest value to expenditure rules.

Budget balance rules, which can be specified as nominal balance, structural or cyclically adjusted balance, and balance "over the cycle" can help ensure that the debt-to-GDP ratio converges to a finite level (the "over the cycle" rule has only been adopted by the UK and Sweden).

Nominal deficit rules have certain disadvantages. Under such a rule the revenue side is almost entirely determined by substantive legislation, namely tax legislation, and the expenditure side is partly determined by substantive legislation, in particular social security and health legislation (entitlements). This means that forecasts for the actual deficit are permanently moving, not only during the formulation phase of the budget process, but also during the execution phase. Focus on the actual deficit requires therefore that the budget be amended often during both phases of the budget process to react to the latest predictions. This hampers an orderly decision-making process and tranquillity in the budget numbers. Moreover, it leads to a volatile fiscal stance that changes from month to month in the light of the latest forecasts. Budgetary adjustments motivated by short-term macroeconomic fluctuations bring a pro-cyclical element into budgetary policy and hamper the stabilizing effect of the budget (Kraan et al 2007).

Structural (or cyclically adjusted) deficit rule may solve some issues associated with the nominal deficit rule and improve the balance between sustainability and cyclicality concerns. The cyclically adjusted fiscal balance is obtained by removing the cyclical component from the nominal fiscal balance. The cyclical component, in turn, depends on two factors: the size of the output gap; and the output elasticity of the budget, which is determined by the extent to which individual budgetary items react to fluctuations in output, as well as by the size of the budget. However, a disadvantage of a cyclically adjusted deficit constraint is that there are arbitrary elements in the calculation of the output gap on which the cyclically adjusted deficit is based.[9] Moreover, the concept of the cyclically adjusted deficit is not always transparent to politicians and the public.

Some variant of cyclically adjusted deficit rules is now used by about 11 percent of the countries (IMF, 2009). However, none of the CESEE countries have adopted cyclically adjusted rules. Concerns about the accuracy of estimates of budgetary elasticity might be the main reason for the countries' abstinence. Given the relatively high volatility of macroeconomic variables in these countries, it would be difficult to find proper variables, which would be needed for accurate econometric estimations.

Therefore, we didn't separate structural and nominal balance rules in the paper and attribute them the same value to them.

Moreover, we didn't use balance rule as a single parameter in the index construction. We coupled it with public debt rules because a significant proportion of countries have balance and debt rules frequently combined. This reflects governments' preferences for rules with a close link to fiscal sustainability. Thus, balance rules accompanied by debt rules are given next high score after expenditure rules.

[9] See Figure 3 for an example of the uncertainty of output gap estimates.

Debt rules set an explicit limit or target for public debt in percent of GDP. This type of rule is, by definition, the most effective in terms of ensuring convergence to a debt target. However, it does not provide sufficient guidance for fiscal policy when debt is well below its ceiling. Therefore, debt rules score low in our calculation.

Finally, we argue that the absence of any fiscal rule doesn't contribute to fiscal discipline and therefore we attributed a zero score to the countries with no fiscal rules.

3.1.2 Medium Term Expenditure Framework

Almost all OECD countries currently work with a multi-annual expenditure framework. Most of them adjust the framework from year to year in the light of the previous year's outcomes, new estimates of the consequences of current policies and new political priorities. This can be called a flexible framework. The major advantage of a flexible framework in comparison to no framework is that at the time of budget formulation the multi-annual consequences of all changes (setbacks and windfalls on the revenue and expenditure sides and new priorities) have to be traded off against each other and against the adjustment of medium-term targets for expenditures, revenues or the deficit. A few countries (notably the Netherlands, Sweden and the United Kingdom) have a multi-annual expenditure framework that is not adjusted from year to year. This can be called a fixed framework. It has also been called a fiscal rule for expenditures. A fixed expenditure framework can be rolling like in Sweden and the United Kingdom, or it can be periodical like in the Netherlands. In a rolling framework, an additional year is added at the end of the sequence of annual ceilings every yea. In a periodical framework, a new sequence of ceilings is drawn up at periodic intervals, for instance at the beginning of every new cabinet period. It is characteristic for an expenditure framework that during budget formulation all line item budget numbers and all line item multi-year estimates have to be squeezed under the overall ceiling over the entire term of the framework. The first major advantage of a fixed expenditure framework in comparison to no framework is identical to that of a flexible framework: all trade-offs have to be considered. A second major advantage, also over a flexible framework, is that it is (more) effective in realising multi-year expenditure targets. Precisely because the overall ceiling cannot be changed from year to year, the target is automatically realised as long as the framework is maintained. Although only few OECD countries work with a fixed expenditure framework, many others seek to keep their expenditure framework as stable as possible from year to year (without formally committing to a fixed framework).

Multi-annual expenditure frameworks usually contain not only overall ceilings or broad sectoral ceilings for central government, local government or the social security funds, but also ceilings at the level of ministries or expenditure areas. Ministerial ceilings are important because, once established; they impose a certain discipline on ministers and help to prevent overspending.

CESEE countries have also adopted expenditure frameworks in their budgetary process, however there are variations of flexibility given to their frameworks. Therefore, for our assessment purposes we attributed the highest score to the countries which have fixed binding ceilings for the ministries at the very beginning of the budget formulation process. If a country has targets which may be changed and renegotiated during the budget drafting process, the country is given a zero score.

3.1.3 Multi-year estimates

Multi-year estimates should be integrated into the annual budget, which would help to ensure consistency with the expenditure framework. Medium-term line-item estimates on the basis of

current policy or current law are essential for the allocation of financial resources in the annual budget negotiation, and they would help to ensure the congruence of current law or policy with the multi-annual ceilings. Multi-annual estimates on the basis of current policy or current law ("baseline estimates") should be produced and agreed between the line ministry and the Ministry of Finance at least quarterly. They are an essential tool for budgetary discipline not only during budget formulation, but also during budget execution (during execution they alert at an early stage to possible overspending, which may trigger correcting measures).

Recently most OECD countries have also started to publish lists of tax expenditure estimates in their annual budget documents with a view to coordinating these estimates with expenditure estimates. Some countries have also wholly or partly moved the oversight of tax expenditures from the tax policy division of the ministry of finance to the expenditure division (the Netherlands, Sweden, and the United States). However, the countries that subsume entitlement legislation under the ceilings (the Netherlands and Sweden) have so far not brought tax expenditures (which are also entitlements) under the ceilings. Since most tax expenditures are more sensitive to macroeconomic fluctuations than most expenditure entitlements, it can be argued that excluding tax expenditures from the ceilings makes sense from the perspective of stabilisation. This is not to say that tax expenditures should not be estimated and published in the budget. Estimation of tax expenditures contributes to transparency and helps to prevent inefficient or inappropriate use of this policy instrument even if the estimates are not brought under the ceilings.

The decision on the expenditure framework can be seen as a top-down process and establishing budgetary and multi-annual estimates as a bottom-up process. In fact, the reconciliation of prescriptive targets or ceilings with descriptive line-item estimates is central to a programme-based budget process. Government spending programmes in OECD countries have reached such levels of size and complexity that it is frequently difficult to make policy changes in the current year that substantially affect next year's budget. If budget formulation focuses on the multiyear estimates, rather than on the upcoming budget, the scope of budget formulation widens to reforms that will affect the budget numbers only in the medium term.

Therefore we attributed the maximum score to the countries where multi-annual line item estimates based on current policy are updated several times per year, lower score – to the countries where multi-annual line item estimates based on current policy are available at the start of the budget preparation and zero score to the countries where the estimates are prepared on ad hoc basis or are nor produced at all.

3.2 Legislation stage

In the legislation stage of the budgetary process, parliament can amend submitted by government budget proposal and either pass or reject it. There are two indicators in this second stage which we argue to be essential for promoting fiscal discipline: constraints on Parliament to amend the budget bill and independent assessment of fiscal policy by a fiscal council.

3.2.1 Constraints on Parliament to amend the budget bill

The approval stage of the budget cycle serves as an important opportunity for debate of the executive's policy and expenditure priorities. Without intention to study the meaning of political representation, or confidence in the legislature held by civil society or even political will that is arguably important for budget process, our argument is that restricted formal amendment power of Parliament contributes to a better budgetary discipline. If the legislature is able to make budget amendments under the conditions that the budget balance (surplus or deficit) within the executive's

budget proposal is unchanged; or , alternatively, if the legislature is only able to amend downwards any aggregates of expenditure, the budgetary cycle will not become fragmented. This will contribute to budgetary centralization and increase fiscal discipline. We attributed the highest score to countries where amendment power of parliaments is restricted and a zero score to the countries where the legislature may increase or decrease the level of revenues and/or expenditures without the consent of the executive. Not discussing issues of democracy, we argue that such unrestricted power impairs budgetary centralization. It also undermines the principles of a multi-annual expenditure framework, because the ceilings fixed by the framework may in fact be altered by the legislature.

3.2.2 Fiscal councils

An independent fiscal agency or a fiscal council can help in the formulation and implementation of sound fiscal policies. Fiscal Councils analyze and asses budgetary developments and policies, offer advice and stimulate public debate and scrutiny while leaving the policy mandate with the elected representatives. They can provide independent input into the budgetary processes and contribute to greater transparency and raise the political cost of inappropriate policy. The desirable form of a fiscal council is country specific. The best form depends on the nature of a country's political environment, including the constitutional setup, the legal traditions, and customs of policymaking. A fiscal council can complement the role played by existing institutions and enhance the effectiveness of fiscal rules (see Debrun, Hauner and Kumar, 2009).

For our analysis, we considered only fiscal agencies which are fully independent (or a nonpartisan Government Agency) and their role consists in assessing fiscal policy. Our premise is that the larger the guarantee of independence from political interference, the greater the more solid the likelihood of perceived or actual impact on fiscal outcomes.

3.3 Implementation stage

In the third stage, the budget law is executed and further modifications of the law may be possible. We selected two parameters to indicate the level of budgetary control: 1) the rules for carryovers of unused funds to next fiscal year and 2) quality of external audit.

3.3.1 Carryovers of unused funds

The issue of carryovers of unused funds to next fiscal year arises in the stage of budgetary execution. Any automatic carryover arrangement, whether cash based or accruals based, will lead to stacks of unused appropriations that will increase from year to year. Any general rule limiting carryover will lead to "December fever". Therefore the most sensible solution is bilateral negotiation between the line minister and the Minister of Finance on a case-by-case basis. Under a cash regime, each agreed carryover will have to be compensated in the next budget year. Our premise is that in order to avoid December fever the Minister of Finance rather than the line minister should take care of such compensation. In this way, carryovers are financed, as it were, by unused appropriations that are not carried over (Kraan, 2007). Therefore, the rules allowing carryovers within certain limits with authorisation of the Ministry of Finance were given the highest score in our calculation; prohibited or allowed within certain limits without authorization of the MoF were given average score and unlimited carryover rules do not contribute to fiscal discipline and have a zero value in the calculation.

3.3.2 Quality of external audit

The quality of external audit is probably the most arbitrary parameter. It encompasses various issues related to external audit, namely the openness and availability of audit reports to public, timeliness of such publications, the nature of audit reports (for instance, performance audit reports are considered as a more advanced level of auditing with greater outcomes than compliance reports), the mechanism provided for follow up measures, and some other criteria which can differ depending on countries' circumstances. Therefore the countries with both financial and performance audit complemented by strong mechanisms for follow up measures score high in our ranking. Focus on financial audit and/or insufficient use of audit reports indicates an insufficient level of development of audit institutions (zero score).

3.4 Overview

Table 1 provides and overview of the design of the index and indicates our preferred weights.

It should be kept in mind that in our study we look at budgetary institutions from the perspective of how well they contribute to the fulfilment of one particular function of the budget- control of the spending, taxation and borrowing. Therefore, other functions of the budget, namely the efficient allocation of resources, the cost-efficient management of spending programmes, the democratic authorisation of, and accountability for, taxation, spending and borrowing are not considered. This focus determines the set of variables in the construction of the fiscal discipline index. Institutional characteristics that promote coordinated and cohesive decision making are expected to be more conducive to fiscal discipline and therefore receive a higher score in the quantitative index used for the empirical analysis.

Table 1. Construction of the Budgetary Discipline Index: index parameters

	Index	Sub index	Numerical Coding
Budget preparation	0.5		
Fiscal rules		0.5	
Expenditure and debt rules			4.00
Budget nominal balance and debt rules			2.67
Debt rule			1.33
None			0.00
Medium Term Expenditure Framework		0.25	
Binding ceilings are decided at the start of budget preparation			4.00
No framework or ceilings are not binding during budget preparation ("targets")			0.00
Multi-annual expenditure estimates		0.25	
Multi-annual line item estimates based on current policy are updated several times per year			4.00
Multi-annual line item estimates based on current policy are available at the start of the budget preparation			2.00
There are no multi-annual line item estimates based on current policy			0.00
Legislation	0.25		
Constraint on Parliament to amend the budget bill		0.5	
Amendments leading to spending increases or decreases of tax revenue are required to be offset by savings or tax increases			4.00
No restrictions			0.00
Fiscal Counsil		0.5	
There is a fiscal council to assess fiscal policies independently			4.00
No fiscal council			0.00
Implementation	0.25		
Carryover of unused funds to next fiscal year		0.5	
Allowed within certain limits with authorisation of the MoF			4.00
Not permitted or allowed within certain limits without authorisation of the MoF			2.00
Allowed within certain limits without authorisation of the MoF			1.33
Unlimited			0.00
Quality of external audit		0.5	
Financial and performance audit with detailed scrutiny completed by strong mechanisms for follow up measures			4.00
Focus on finacial audit and/or insufficient use of audit reports			0.00

Note. By constriction, the index can take values between zero and four.

3.5 Data

Limited availability of data on CESEE countries restricts the research and our major concern is that the data do not always contain enough information to enable us to draw solid conclusions. There have been two main sources used: OECD budget reviews and the OECD International Database of Budget Practices and Procedures (2007/2008).

The objective of the budget reviews is to provide a comprehensive overview of the budget process in the country under examination, to evaluate national experiences in the light of international best

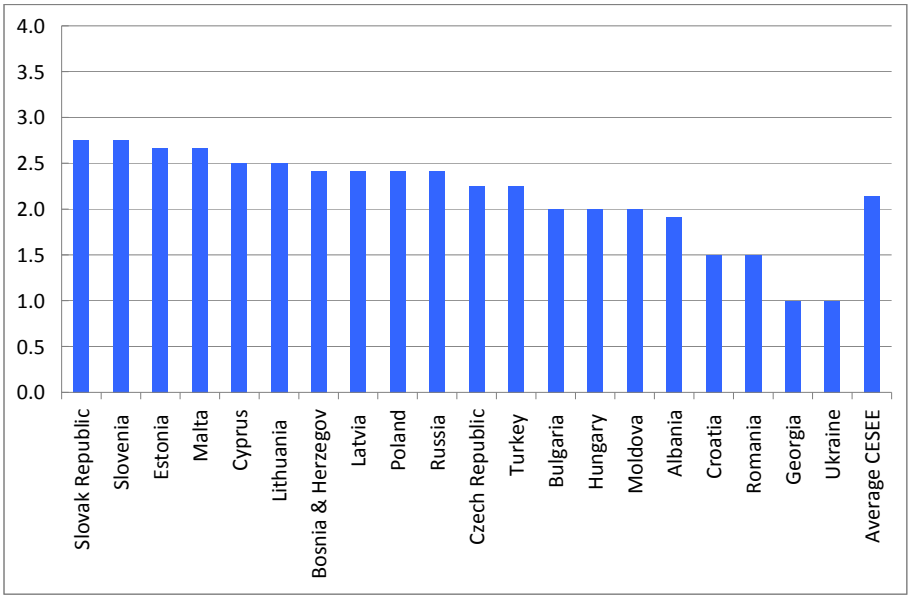
practice and to provide specific policy recommendations, as well as to offer other countries an opportunity to comment on specific budgeting issues in the country under examination ("peer review"). The following countries have been reviewed: Romania and Slovenia in 2005; Croatia, Hungary and Georgia in 2006; Turkey in 2007; Estonia and Russia in 2008; Latvia and Bulgaria in 2009, Lithuania and Moldova in 2010. The reviews look at the budget institutions or the rules of the budget process and the way they function. Therefore they provided the required facts and analyses of institutional features in CESEE countries.
The International Database of Budget Practices and Procedures is a database maintained by the OECD. It contains among other things the results of the 2007 OECD survey of budget practices and procedures in OECD countries and the 2008 World Bank/OECD survey of budget practices and procedures in Asia and other regions. Information on budget institutions from 97 countries is available including the 31 OECD member countries and 66 non-member countries. The data refer to the years 2007 and 2008.

Therefore, the budgetary discipline index calculated in this chapter is a snapshot of the situation between 2007 and 2008. It doesn't reflect emerging trends or reforms occurred since 2008 and the general economic slowdown. For instance, all the progress achieved in such countries as Hungary (introduction of advanced fiscal rules and fiscal council) is not reflected in the present paper.

3.6 Results

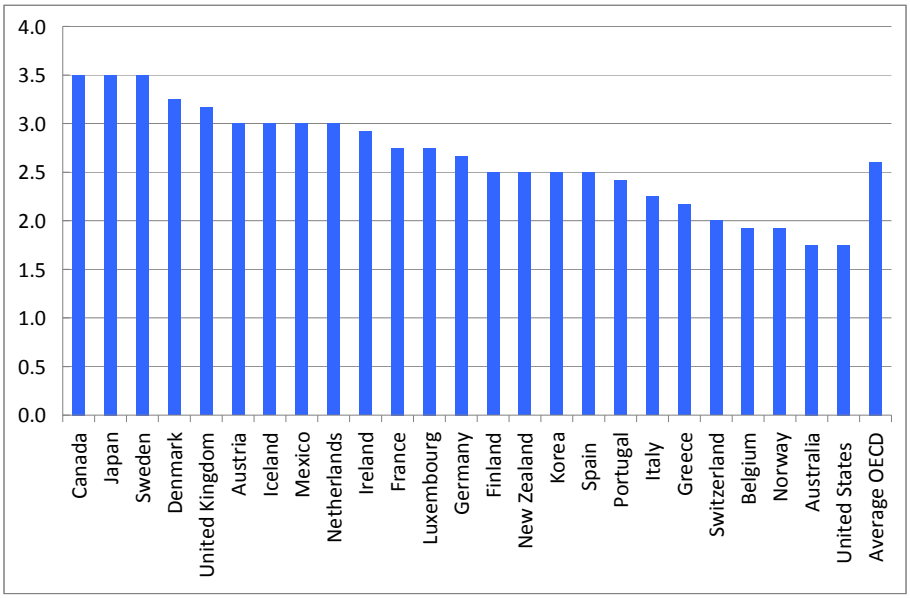
On the basis of the premises and parameters discussed in the previous section, we constructed a quantitative budgetary discipline index for 20 CESEE countries for which data were available: Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Cyprus, Estonia, Georgia, Hungary, Czech Republic, Latvia, Lithuania, Malta, Moldova, Poland, Romania, Russia, the Slovak Republic, Slovenia, Ukraine and Turkey. For comparative reasons we created the same indices for OECD countries. *Figures 7 and 8* show our overall index for CESEE and (other) OECD countries. *Tables 2 and 3* detail the calculations.

Figure 7. Budgetary Discipline Index for CESEE countries (2007/08)



Source: Authors' calculations as described in the main text.

Figure 8. Budgetary Discipline Index for non-CESEE OECD countries (2007/08)



Source: Authors' calculations as described in the main text.

Among CESEE countries, there is a relatively large disparity in terms of scores. Globally, EU member countries have higher scores than non EU members, with a notable exception of Romania scoring relatively low. The Slovak republic, Slovenia, Estonia, Malta and Cyprus have the strongest budgetary institutions at the time. Overall, countries which adopted fiscal rules are leading countries in the rank.

By comparing the indices of CESEE countries with the indices of OECD countries (see chart 2), the OECD indices appear to be generally higher, and the average index among OECD countries (2.6) is significantly higher than the average index in CESEE countries (2.1). However, there is a relatively large heterogeneity among OECD countries as well, and some OECD countries, namely the United States, Australia, Norway, Belgium and Switzerland show relatively low rates.

The low score in OECD countries is mostly due to the "classic" approach we are taking in assessing fiscal rules or expenditure frameworks. In the paper we look at the legal framework of a country at the central level to examine the presence and the nature of fiscal rules or expenditure frameworks, without taking into consideration that some countries (for example, Australia, Norway or the United States) have long standing traditions of political commitments which are not necessarily reflected in the legislation. Therefore, even if these countries have no legal provisions about fiscal self control measures, they may have other strong tools to promote aggregated budgetary control. Moreover, the USA has no fiscal rules at the national level, but the states separately can impose strict fiscal rules at the sub-national level; this is often the case.

However, it is important to mention that a high (or low) index does not imply a priori good or bad fiscal outcomes, and that exceptions are possible due to specific circumstances. However, the hypothesis that in absence of robust budgetary institutions, it is difficult for a country to sustain a good outcome in terms of balance is corroborated.

Table 2. Budgetary Discipline Index for CESEE countries

			Albania	Bosnia & Herzegov	Bulgaria	Croatia	Cyprus	Estonia	Georgia	Hungary	Czech Republic	Latvia	Lithuania	Malta	Moldova	Poland	Romania	Russia	Slovak Republic	Slovenia	Ukraine	Turkey	Average CESEE
Budget preparation	**0.50**																						
Fiscal rules	0.50																						
Expenditure and debt rules		4.00			1		1				1		1						1	1			
Budget nominal balance and debt rules		2.67	1	1				1				1		1		1		1					
Debt rule		1.33																					
None		0.00				1			1	1					1		1				1	1	
Score			2.67	2.67	4.00	0.00	4.00	2.67	0.00	0.00	4.00	2.67	4.00	2.67	0.00	2.67	0.00	2.67	4.00	4.00	0.00	0.00	**2.13**
Medium Term Expenditure Framework	0.25																						
Binding ceilings are decided at the start of budget		4.00		1	1	1	1	1	1	1	1		1	1	1		1		1	1		1	
No framework or ceilings are not binding during budget preparation ("targets")		0.00	1									1				1		1			1		
Score			0.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	0.00	4.00	4.00	4.00	0.00	4.00	0.00	4.00	4.00	0.00	4.00	**3.00**
Multi-annual expenditure estimates	0.25																						
Multi-annual line item estimates based on current policy are updated several times per year		4.00								1				1		1			1				
Multi-annual line item estimates based on current policy are available at the start of the budget preparation		2.00			1	1	1	1	1		1	1	1		1		1	1		1		1	
There are no multi-annual line item estimates based on		0.00	1	1																	1		
Score			0.00	0.00	2.00	2.00	2.00	2.00	2.00	4.00	2.00	2.00	2.00	4.00	2.00	4.00	2.00	2.00	4.00	2.00	0.00	2.00	**2.10**
Score for budget preparation			1.34	2.34	3.50	1.50	3.50	2.84	1.50	2.00	3.50	1.84	3.50	3.34	1.50	2.34	1.50	1.84	4.00	3.50	0.00	1.50	**2.34**
Legislation	**0.25**																						
Constraint on Parliament to amend the budget bill	0.50																						
Amendments leading to spending increases or decreases of tax revenue are required to be offset by savings or tax increases		4.00	1	1		1	1	1			1	1	1		1	1	1	1		1	1	1	
No restrictions		0.00			1				1	1				1					1				
Score			4.00	4.00	0.00	4.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00	0.00	4.00	4.00	4.00	4.00	0.00	4.00	4.00	4.00	**3.00**
Fiscal Counsil	0.50																						
There is a fiscal council to assess fiscal policies independently		4.00																					
No fiscal council		0.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Score			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Score for budget legislation			2.00	2.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	**1.50**
Implementation	**0.25**																						
Carryover of unused funds to next fiscal year	0.50																						
Allowed within certain limits with authorisation of the MoF		4.00								1		1		1				1		1		1	
Not permitted or allowed within certain limits without authorisation of the MoF		2.00	1	1	1	1	1	1	1				1		1	1	1		1				
Unlimited		0.00									1										1		
Score			2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.00	0.00	4.00	2.00	4.00	2.00	2.00	2.00	4.00	2.00	4.00	0.00	4.00	**2.40**
Quality of external audit	0.50																						
Financial and performance audit with detailed scrutiny completed by strong mechanisms for follow up measures		4.00	1	1				1		1		1		1	1	1		1	1		1	1	
Focus on finacial audit and/or insufficient use of audit reports		0.00			1	1	1		1		1						1			1			
Score			4.00	4.00	0.00	0.00	0.00	4.00	0.00	4.00	0.00	4.00	0.00	4.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	**2.40**
Score for budget execution			3.00	3	1	1	1	3	1	4	0	4	1	4	3	3	1	4	3	2	2	4	**2.40**
Overall index			**1.92**	**2.42**	**2.00**	**1.50**	**2.50**	**2.67**	**1.00**	**2.00**	**2.25**	**2.42**	**2.50**	**2.67**	**2.00**	**2.42**	**1.50**	**2.42**	**2.75**	**2.75**	**1.00**	**2.25**	**2.15**

Source: Authors' calculations as described in the main text.

Table 3. Budgetary Discipline Index for non-CESEE OECD countries

			Australia	Austria	Belgium	Canada	Denmark	Finland	France	Germany	Greece	Iceland	Ireland	Italy	Japan	Luxembourg	Mexico	Netherlands	New Zealand	Norway	Portugal	Korea	Spain	Sweden	Switzerland	United Kingdom	United States	Average non-CESEE OECD
Budget preparation	**0.50**																											
Fiscal rules	0.50																											
Expenditure and debt rules		4.00		1		1	1	1	1			1		1	1	1	1	1					1	1	1			
Budget nominal balance and debt rules		2.67			1					1	1		1							1	1					1		
Debt rule		1.33																										
None		0.00	1																1			1					1	
Score			0.00	4.00	2.67	4.00	4.00	4.00	4.00	2.67	2.67	4.00	2.67	4.00	4.00	4.00	4.00	4.00	0.00	2.67	2.67	0.00	4.00	4.00	4.00	2.67	0.00	**2.99**
Medium Term Expenditure Framework	0.25																											
Binding ceilings are decided at the start of budget		4.00		1			1	1	1	1		1	1		1	1	1	1	1			1		1	1	1		
No framework or ceilings are not binding during budget preparation ("targets")		0.00	1		1	1					1			1						1	1		1				1	
Score			0.00	4.00	0.00	0.00	4.00	4.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	4.00	4.00	4.00	0.00	0.00	4.00	0.00	4.00	4.00	4.00	0.00	**2.56**
Multi-annual expenditure estimates	0.25																											
Multi-annual line item estimates based on current policy are updated several times per year		4.00	1	1	1	1	1			1		1		1	1	1		1	1	1				1		1	1	
Multi-annual line item estimates based on current policy are available at the start of the budget preparation		2.00						1	1		1		1				1				1	1	1		1			
There are no multi-annual line item estimates based on		0.00																										
Score			4.00	4.00	4.00	4.00	4.00	2.00	2.00	4.00	2.00	4.00	2.00	4.00	4.00	4.00	2.00	4.00	4.00	4.00	2.00	2.00	2.00	4.00	2.00	4.00	4.00	**3.28**
Score for budget preparation			1.00	4.00	2.34	3.00	4.00	3.50	3.50	3.34	1.84	4.00	2.84	3.00	4.00	4.00	3.50	4.00	2.00	2.34	1.84	1.50	2.50	4.00	3.50	3.34	1.00	**2.95**
Legislation	**0.25**																											
Constraint on Parliament to amend the budget bill	0.50																											
Amendments leading to spending increases or decreases of tax revenue are required to be offset by savings or tax increases		4.00	1			1			1		1		1		1		1		1			1	1			1		
No restrictions		0.00		1	1		1	1		1		1		1		1		1		1	1			1	1		1	
Score			4.00	0.00	0.00	4.00	0.00	0.00	4.00	0.00	4.00	0.00	4.00	0.00	4.00	0.00	4.00	0.00	4.00	0.00	0.00	4.00	4.00	0.00	0.00	4.00	0.00	**1.76**
Fiscal Counsil	0.50																											
There is a fiscal council to assess fiscal policies independently		4.00			1	1	1										1	1			1	1		1			1	
No fiscal council		0.00	1	1				1	1	1	1	1	1	1	1	1			1	1			1		1	1		
Score			0.00	0.00	4.00	4.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	4.00	0.00	0.00	4.00	4.00	0.00	4.00	0.00	0.00	4.00	**1.44**
Score for budget legislation			2.00	0.00	2.00	4.00	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	4.00	2.00	2.00	0.00	2.00	4.00	2.00	2.00	0.00	2.00	2.00	**1.60**
Implementation	**0.25**																											
Carryover of unused funds to next fiscal year	0.50																											
Allowed within certain limits with authorisation of the MoF		4.00		1		1				1		1	1		1				1		1			1		1		
Not permitted or allowed within certain limits without authorisation of the MoF		2.00	1		1		1	1			1			1		1	1			1		1	1		1		1	
Unlimited		0.00							1									1										
Score			2.00	4.00	2.00	4.00	2.00	2.00	0.00	4.00	2.00	4.00	4.00	2.00	4.00	2.00	2.00	0.00	4.00	2.00	4.00	2.00	2.00	4.00	2.00	4.00	2.00	**2.64**
Quality of external audit	0.50																											
Financial and performance audit with detailed scrutiny completed by strong mechanisms for follow up measures		4.00	1	1		1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1		1	1	
Focus on finacial audit and/or insufficient use of audit reports		0.00			1												1								1			
Score			4.00	4.00	0.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	0.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	0.00	4.00	4.00	**3.52**
Score for budget execution			3.00	4.00	1.00	4.00	3.00	3.00	2.00	4.00	3.00	4.00	4.00	3.00	4.00	3.00	1.00	2.00	4.00	3.00	4.00	3.00	3.00	4.00	1.00	4.00	3.00	**3.08**
Overall index			**1.75**	**3.00**	**1.92**	**3.50**	**3.25**	**2.50**	**2.75**	**2.67**	**2.17**	**3.00**	**2.92**	**2.25**	**3.50**	**2.75**	**3.00**	**3.00**	**2.50**	**1.92**	**2.42**	**2.50**	**2.50**	**3.50**	**2.00**	**3.17**	**1.75**	**2.65**

Source: Authors' calculations as described in the main text.

4. Monetary institutions

We use four measures of monetary institutions:

- Exchange rate regimes,
- Central bank independence,
- Central bank transparency,
- Financial regulation and supervision.

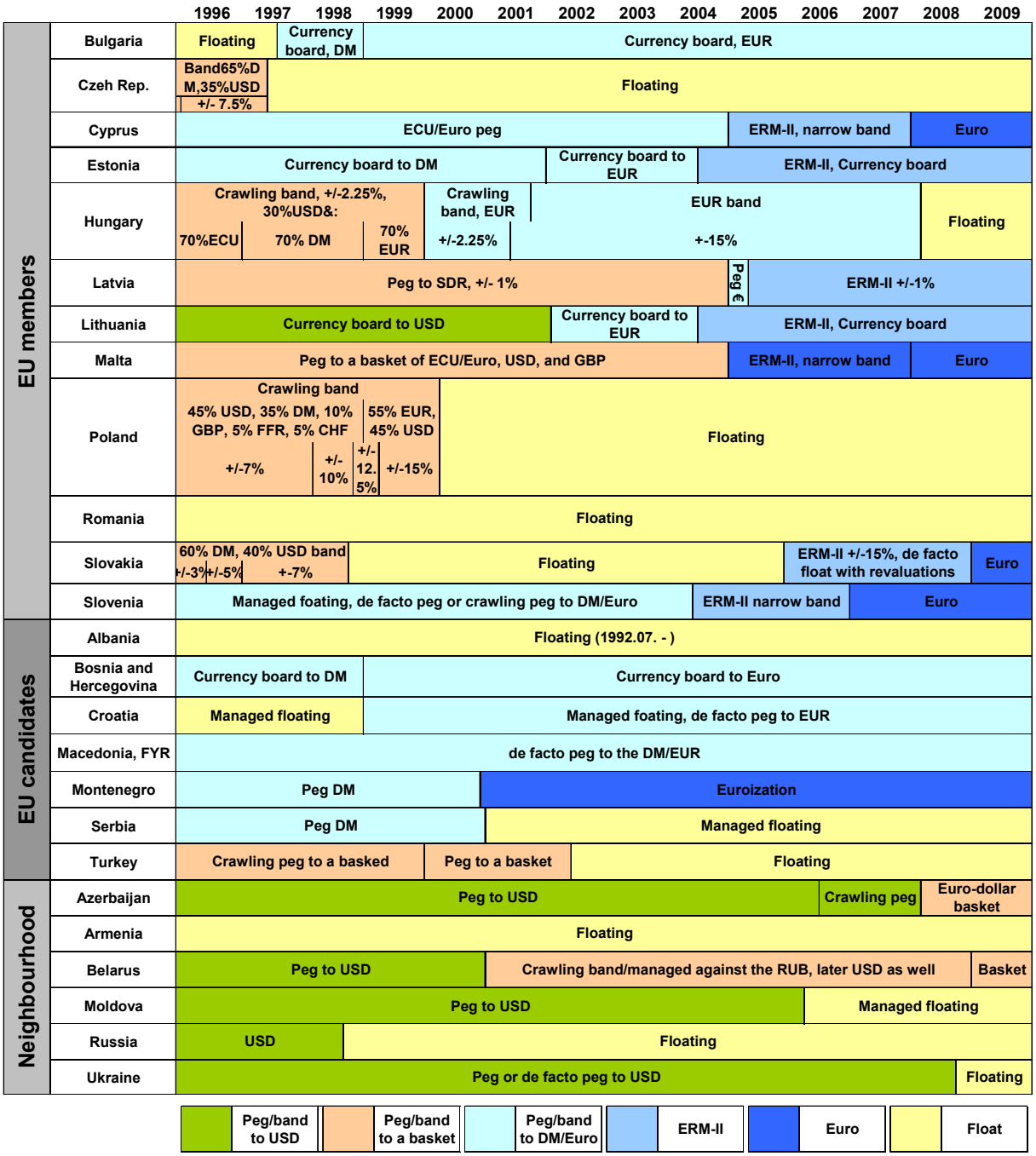
We shall explain the importance of these factors and their relation to monetary institutions in the following subsections.

4.1 Exchange rate regimes

Table 4 indicates a wide diversity of exchange rate regimes, both across countries and over time. It is interesting to observe that sometimes even countries with similar circumstances often opted for different regimes, e.g. the Czech Republic (float) and Slovakia (euro), Romania (float) and Bulgaria (currency boards), or Serbia and Albania (float) and the other four western Balkan countries (various kinds of fixed exchange rates). This suggests that it could be quite difficult to identify the reasons behind exchange rate regime choices, apart from, e.g., market forced exit from pegs, such as the move of the Czech Republic in 1997, Russia in 1998, Turkey in 2002, or Ukraine in late 2008.

Another interesting observation is the disappearance of intermediate regimes. While in the 1990s several countries adopted crawling or horizontal bands, these regimes have passed and there are more countries with either (more or less) freely floating exchange rate regimes, or with currency pegs. This finding is in line with global trends. Yet it is also important to note that while several countries moved from a peg to a float, there were only two countries so far that move the opposite direction (Bulgaria and Slovakia). Finally, it is also interesting to observe that even neighbourhood countries move away from US dollar pegs.

Table 4. Exchange rate arrangements in CESEE countries, 1996-2009



Source: EU member states: updated from Szapáry (2010). Other countries: IMF and central bank reports.

Has exchange rate regimes played a role in macroeconomic developments? *Table 5* presents rough evidence that it may have. Countries with fixed exchange rate regimes had higher macroeconomic volatility, larger current account deficits, higher inflation, faster credit growth, and higher share of finance and real estate sectors in FDI inflows.

For catching-up economies the adoption of fixed exchange rate regimes carries a risk (see, e.g., Darvas and Szapáry, 2008). When the exchange rate is fixed, price level convergence, which accompanies economic catching-up, translates into higher inflation. (In floating exchange rate countries nominal exchange rate appreciation can also accommodate price level convergence.) But when the exchange rate peg is credible, nominal interest rates decline and borrowers are also more

willing to take foreign currency loans, because they do not observe the exchange rate risk. But higher inflation and low interest rates (either domestic currency interest rates, or foreign currency interest rates) fuels credit booms, which can lead to real estate booms and overheating of the economy, which is turn raises inflation above its equilibrium value, leading to a vicious circle. All these factors can lead to a misallocation of capital and labour

Table 5. Exchange rate regimes and main macroeconomic developments

	GDP volatility	CA/GDP (%) 2008	Inflation 2008	Credit/GDP (%) Change from 2004 to 2008	FDI to finance and real estate sectors (% of total FDI), 2007
Floaters	3.7	-7.8	7.8	20	26
Fixers	4.7	-12.3	11.1	36	40

However, it also has to be emphasised that a floating exchange rate regime is not a panacea. For example, Hungary, a floating exchange rate country, was the first to turn to the IMF for help after the collapse of Lehman Brother. Romania and Serbia, two other floating rate countries, also had to rely on an IMF financing programme. Therefore, while the evidence in *Table 5* is telling, other factors should be at work in addition to the exchange rate regime.

4.2 Central bank independence

Central bank independence is an important metric of monetary institutions. In a seminal work Kydland and Prescott (1977) developed a model of the so called time inconsistency problem. Central bankers not isolated from political pressures would have ended up in running inflationary policies without being able to boost the economy, which has probably characterised a couple of central banks in the 1970s, when inflation was high and growth was low in advanced countries. Solutions to the time inconsistency problem were offered by Rogoff (1985) and Walsh (1995): either hiring a central banker strongly adverse to inflation or in giving him incentives to keep inflation as low as possible. Since then a consensus has developed that the central bank's management has to be isolated from the government.

The literature has developed ways to measure central bank independence. We use the index developed by Cukierman, Webb, and Neyapti (1992), which has been updated by Crowe and Meade (2007). Unfortunately, the most recent year for which this index is available is 2003. Figures 9 and 10 show the 2003 value in comparison to the average of 1980-1999 whenever available. CESEE countries rank reasonably well along this metric and most of them have even more independent central banks than non-CESEE OECD countries.

Figure 9. Central bank independence in CESEE countries

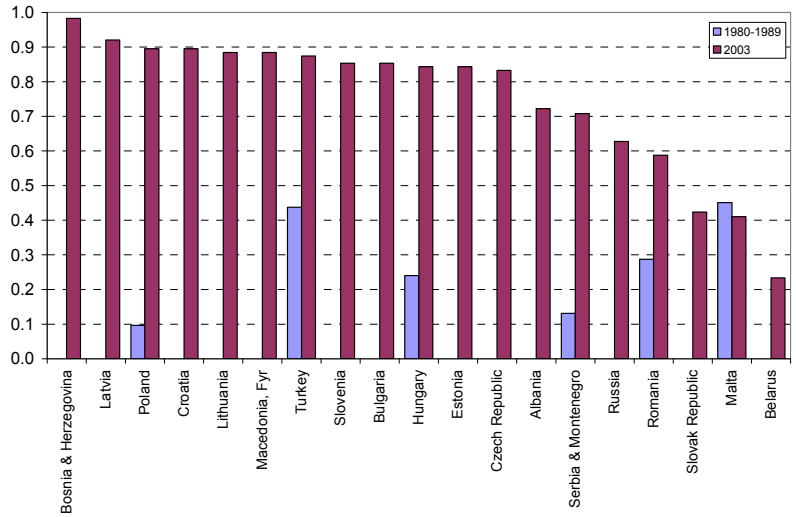
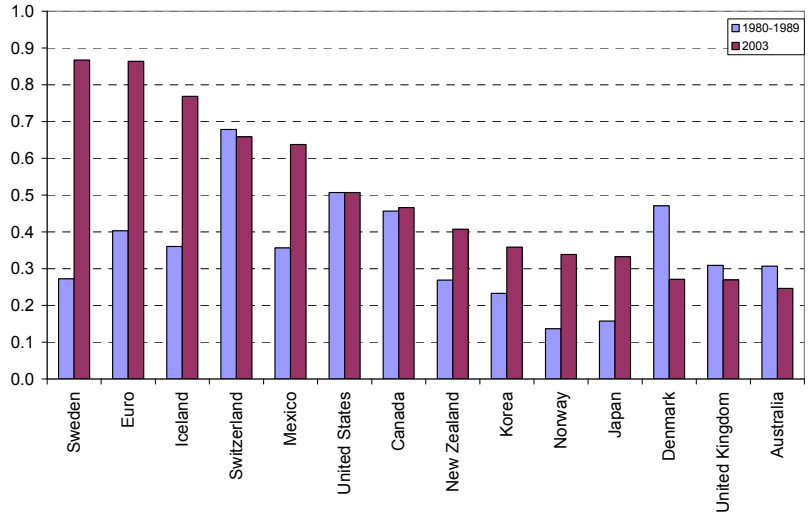


Figure 10. Central bank independence in non-CESEE OECD countries



4.3 Central bank transparency

In addition to central bank independence, central bank transparency has also important role in make monetary policymaking better. A major change in conduct of monetary policy over the last twenty years has been improvements in transparency (Dincer and Eichengreen, 2007, 2009; Geraats, 2006, 2008, 2009). Transparency of monetary policy refers to the absence of information asymmetries between monetary policy makers and the private sector. A higher degree in transparency should allow economic agents to interpret central bank policies and hence to better align their decisions with those of the central bank and forecast more accurately the time path of relevant variables. Dincer and Eichengreen (2007) have shown that a higher degree of transparency seems to be positively correlated with the higher level of stability of a country and with a more advanced stage of financial markets' development.

In our study we use the index developed by Dincer and Eichengreen (2007). *Figure 11* shows the transparency index for 2000 and 2006. We can observe improvements in some CESEE countries, but several of these countries still have a large gap to OECD (*Figure 12*).

Figure 11. Central bank transparency in CESEE countries

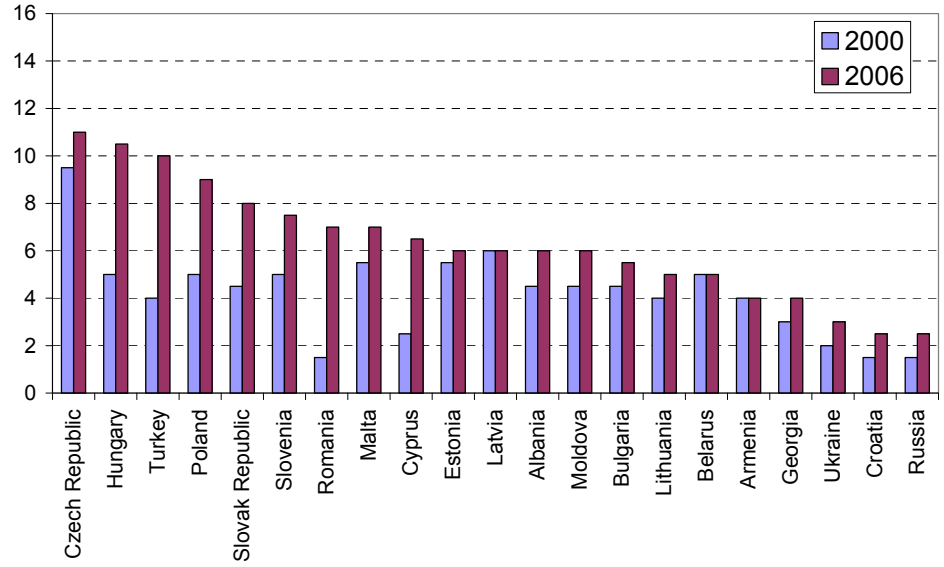
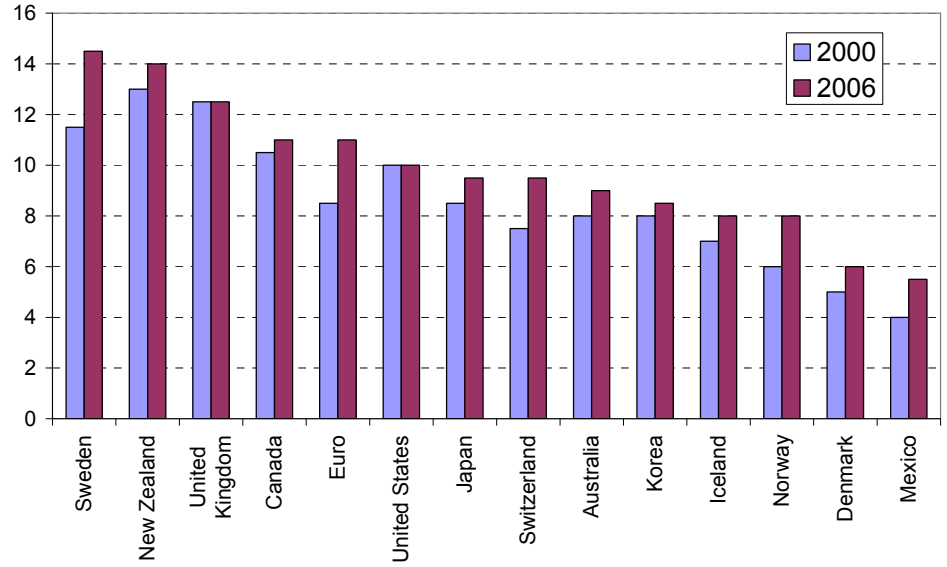


Figure 12. Central bank transparency in non-CESEE OECD countries



Figures 13 and 14 reveal that central bank transparency correlates well both with the 2009 GDP developments and with GDP volatility during 2000-2010.

Figure 13. Central bank transparency versus GDP growth in 2009

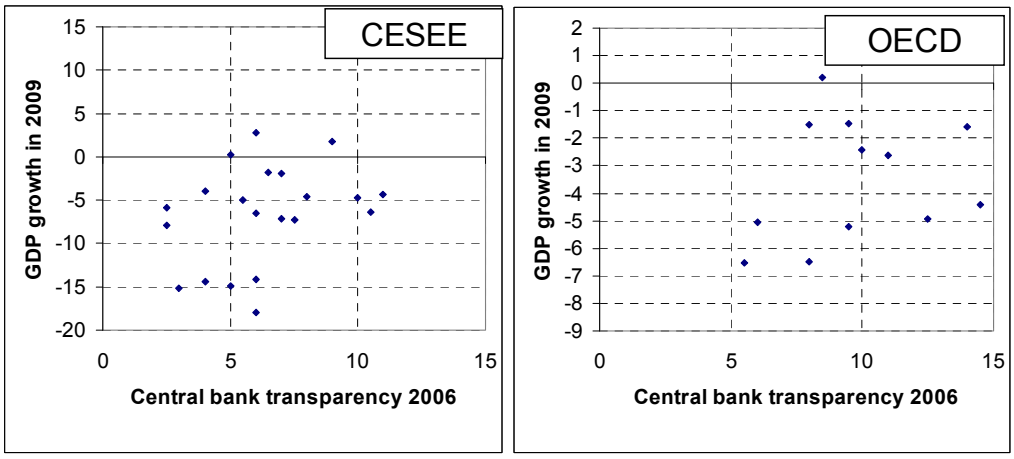
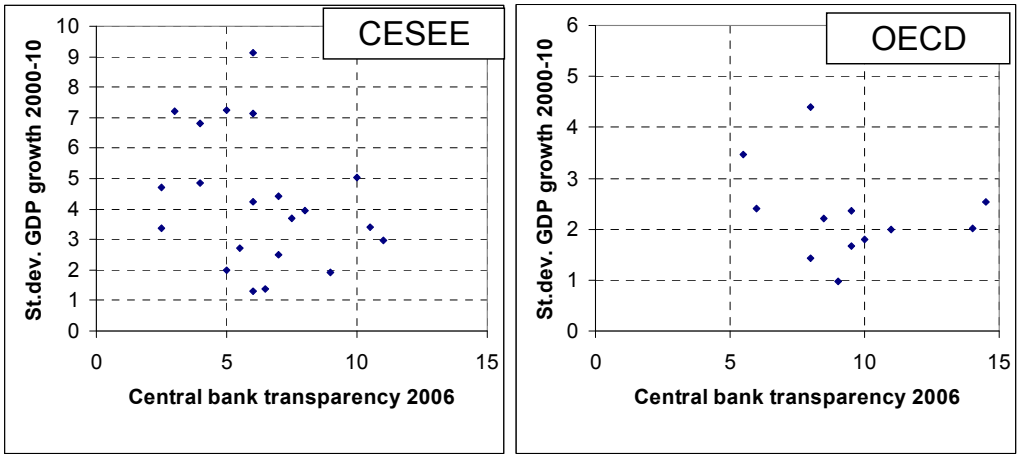


Figure 14. Central bank transparency versus GDP volatility



4.4 Financial regulation and supervision

Financial regulation and supervision are crucial elements of the macroeconomic policy mix and essential complements to monetary policy. The crisis has indicated that the combination of lax monetary policy with lax financial regulation and supervision may lead to financial excesses and unsustainable booms.

Unfortunately, it is extremely difficult to measure the 'quality' of financial regulation, because it has so many dimensions (see e.g. Hilbers et al, 2005). Also, in an integrated market domestic financial regulation may not be very effective after all. On average, 70 percent of the domestic banking systems in CESEE countries are owned by mostly western European banking groups (Berglöf et al, 2009), and under free capital mobility domestic regulations could be circumvented.

A set of indicators to measure regulation and supervision have been developed by Barth, Caprio and Levine (2008). *Figures 15 and 16* report their results. On average, CESEE countries do not lag behind OECD countries considering this indicator, though there is heterogeneity within the region and while some countries improved from 2003 to 2007, others fell behind.

Figure 15. Quality of financial regulation and supervision in CESEE countries

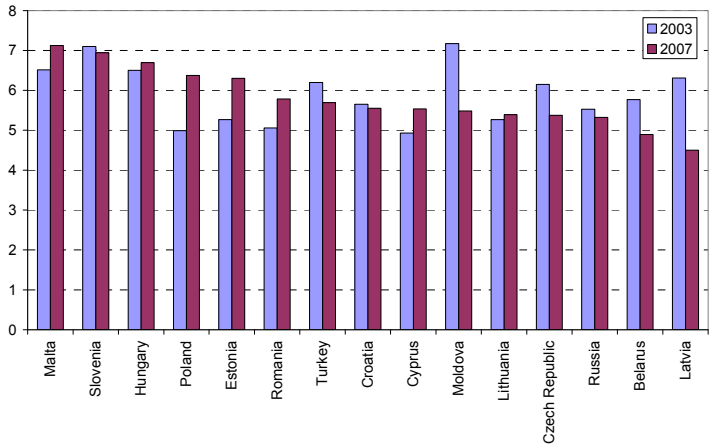
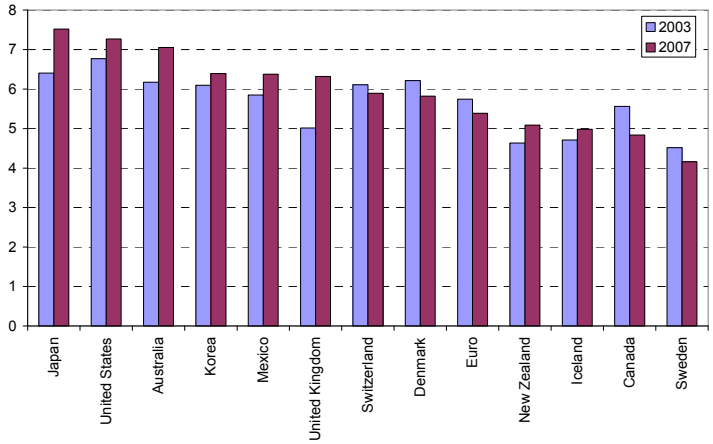


Figure 16. Quality of financial regulation and supervision in non-CESEE OECD countries



However, the assessment of financial regulation and supervision is complicated by the fact that the lack of strict financial regulation has led to unsustainable credit booms in certain countries, but has not led to this in others. These differing outcomes could most likely be explained by the appropriateness of other elements of the macroeconomic policy mix. To put it another way, one cannot claim that the lack of strict regulation and supervision was a policy mistake. One can only claim that it was a likely policy mistake in countries in which credit growth reached extraordinary high levels. Not surprisingly, the pre-crisis speed of credit growth correlates strongly with pre-crisis current account imbalances and also with output falls in 2009 in CESEE countries, as *Figure 15* indicates. The correlation in non-CESEE OECD countries is weaker, but this is not surprising since there were just a few non-CESEE OECD countries that followed a growth model similar to that of CESEE, like the Mediterranean euro-area member states. The correlation of pre-crisis credit growth and GDP volatility reveals a similar relationship (*Figure 16*).

Figure 17. Credit growth in 2004-07 versus GDP growth in 2009

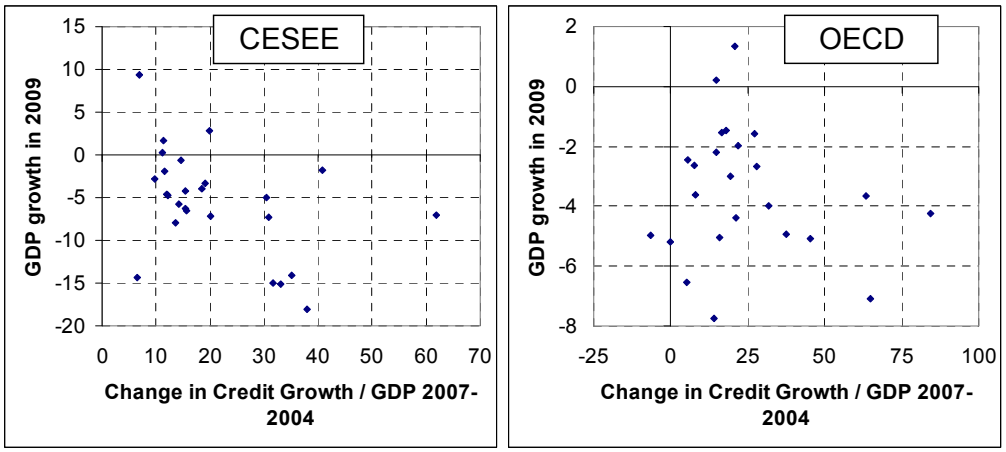
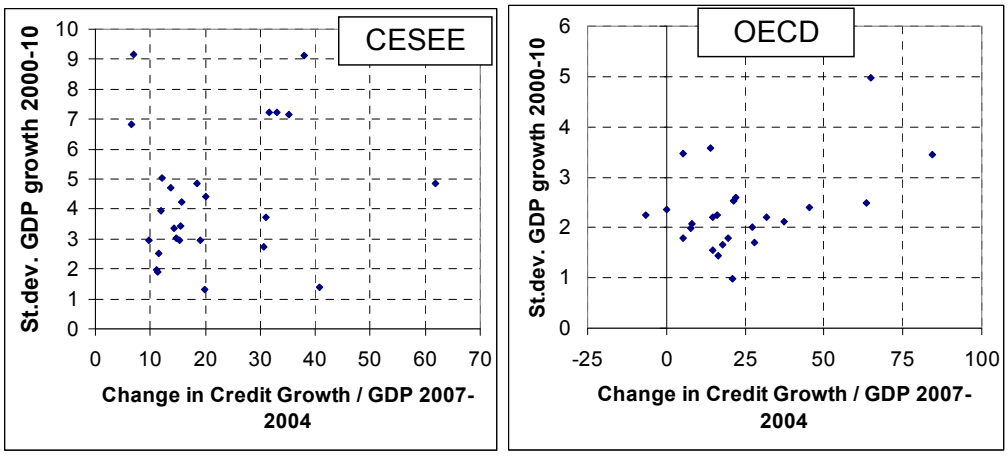


Figure 18. Credit growth in 2004-07 versus GDP volatility



For the reasons discussed in this subsection, we both use the both the index derived by Barth, Caprio and Levine (2008) and actual speed of credit growth from 2003 to 2007 as a proxy of proper regulation and supervision.

5. Econometric analysis

Having established certain measures of fiscal and monetary institutions in the previous sections, this section presents formal econometric models for studying the impact of these institutions on macroeconomic stability and budgetary control. We lay special emphasis on endogeneity, since the decision for a particular monetary or fiscal institution may be the consequence of macroeconomic stability or budgetary outcomes.

5.1 Macro-economic stability

As motivated in Section 2.2, we use two measures of macroeconomic stability for the econometric analysis: volatility of GDP growth rates (that we consider both two periods: 2000-2007 and the 2000-2010) and output decline in 2009. The regression framework we adopt is the following:

(1) $$\log(\sigma_i^y) = \alpha + \beta\, mon.inst_{\cdot i} + \gamma\, fisc.inst_{\cdot i} + \delta' controls_i + \nu_i$$

(2) $$\Delta y_{2009} = \alpha + \beta\, mon.inst._i + \gamma\, fisc.inst._i + \delta' controls_i + \nu_i$$

where $\log(\sigma_i^y)$ denotes the logarithm of GDP volatility (we adopt a logarithmic transformation in order to ensure that the fitted volatility will be positive); Δy_{2009} the real change in GDP in 2009, $mon.inst._i$ a measure of monetary institutions; $fisc.inst._i$ a measure of fiscal institutions; $controls_i$ a set of control variables; and ν_i the error term. Note that we run cross-section regressions and therefore there is no time dimension in the regression.

For fiscal institutions we use our budgetary discipline index. For monetary institutions, we use the four indicators discussed before: (1) exchange rate regime, (2) central bank independence[10], (3) central bank transparency, (4a) financial regulation and supervision, and (4b) credit growth (which we regards as a proxy for financial regulation and supervision). We also use various controls that can impact macroeconomic volatility: volatility of terms of trade, trade openness, GDP per capita, government expenditures/GDP, debt/GDP, pre-crisis speed of credit growth, the overall institutional quality index of the World Economic Forum[11].

We start with some simple OLS estimates. *Table 6* shows our estimation results. The columns of the table correspond to different regressions. The rows of the table indicate the variables included in a particular regression. We present two equations for each indicator: one without controls and one with controlling for GDP per capita (since poorer countries used to show more output volatility) and trade openness (since more open countries used to be more volatile). Other possible control variables did not prove to be significant.

Table 6. OLS regressions for GDP volatility

Panel A: Dependent variable is GDP volatility in 2000-2007

expected sign		A	B	C	B	E	F	G	H	I	J	K	L	M
-	BDI	-0.15	-0.04											
	t-ratio	-1.2	-0.3											
?	FIXED			0.01	-0.21									
	t-ratio			0.0	-1.5									
-	CBI					0.06	-0.25							
	t-ratio					0.1	-0.8							
-	CBT							**-0.049**	0.002					0.007
	t-ratio							**-1.9**	0.1					0.2
-	R&S									-0.049	-0.059			
	t-ratio									-0.6	-0.9			
+	CREDIT											0.0005	0.0012	**0.0016**
	t-ratio											0.5	1.1	**1.9**
-	GDP per Cap		**-0.005**		**-0.009**		**-0.007**		**-0.009**		**-0.006**		**-0.009**	**-0.010**
	t-ratio		**-2.8**		**-3.9**		**-3.6**		**-2.8**		**-2.7**		**-3.9**	**-3.2**
+	Trade open		**0.003**		**0.005**		**0.004**		**-0.001**		**0.003**		**0.004**	-0.001
	t-ratio		**2.2**		**2.8**		**2.8**		**-0.3**		**2.2**		**2.2**	-0.3
	R2bar	0.03	0.20	0.00	0.30	0.00	0.25	0.10	0.32	0.01	0.21	0.00	0.29	0.36
	Nobs	45	44	51	49	43	42	34	33	39	38	51	49	33

[10] For first twelve members of the euro area central bank transparency relates to the ECB. We have left out euro-area countries, because of the large divergences within the euro area in terms of various indicators, including fiscal ones.

[11] We use the 'Quality of Institutions' index of the World Economic Forum. The indicator is the average of 19 sub-indices: Property rights, Intellectual property protection, Diversion of public funds, Public trust of politicians, Judicial independence, Favouritism in decisions of government officials, Wastefulness of government spending, Burden of government regulation, Efficiency of legal framework in settling disputes, Efficiency of legal framework in challenging regulations, Transparency of government policymaking, Business costs of terrorism, Business costs of crime and violence, Organized crime, Reliability of police services, Ethical behaviour of firms, Strength of auditing and reporting standards, Efficacy of corporate boards, and Protection of minority shareholders' interests.

Panel B: Dependent variable is GDP volatility in 2000-2010

expected sign		A	B	C	B	E	F	G	H	I	J	K	L	M
-	BDI	-0.13	0.06											
	t-ratio	-1.2	0.7											
?	FIXED			0.21	0.05									
	t-ratio			1.6	0.4									
-	CBI					**0.61**	0.27							
	t-ratio					**2.2**	1.3							
-	CBT							**-0.091**	**-0.037**					**-0.031**
	t-ratio							**-4.5**	**-2.0**					**-1.7**
-	R&S									-0.116	-0.097			
	t-ratio									-1.3	-1.2			
+	CREDIT											**0.0014**	**0.0022**	**0.0020**
	t-ratio											**2.2**	**6.0**	**7.0**
-	GDP per Cap		**-0.009**		**-0.009**		**-0.007**		**-0.009**		**-0.008**		**-0.010**	**-0.010**
	t-ratio		**-4.8**		**-5.1**		**-4.1**		**-3.2**		**-4.1**		**-5.8**	**-3.9**
+	Trade open		**0.004**		**0.004**		**0.004**		**0.002**		**0.004**		**0.004**	0.001
	t-ratio		**4.0**		**3.5**		**3.8**		**0.9**		**3.4**		**3.5**	0.8
	R2bar	0.03	0.40	0.05	0.41	0.08	0.35	0.30	0.51	0.04	0.41	0.02	0.46	0.56
	Nobs	45	45	51	50	44	44	34	34	39	39	51	50	34

Panel C: Dependent variable is GDP growth in 2009

expected sign		A	B	C	B	E	F	G	H	I	J	K	L	M
+	BDI	0.36	-0.65											
	t-ratio	0.3	-0.6											
?	FIXED			-1.15	-0.70									
	t-ratio			-0.9	-0.6									
+	CBI					**-6.49**	-6.08							
	t-ratio					**-2.0**	-1.6							
+	CBT							**0.50**	**0.44**					**0.40**
	t-ratio							**2.1**	**2.0**					**1.9**
+	R&S									0.462	0.368			
	t-ratio									0.4	0.4			
-	CREDIT											**-0.016**	**-0.016**	**-0.011**
	t-ratio											**-1.9**	**-2.3**	**-2.1**
+	GDP per Cap		**0.048**		0.011		0.004		0.007		0.038		0.018	0.013
	t-ratio		**2.4**		0.5		0.2		0.2		1.3		0.8	0.5
-	Trade open		**-0.024**		-0.010		-0.006		-0.014		-0.016		-0.012	-0.013
	t-ratio		**-2.6**		-1.1		-0.5		-0.6		-1.1		-1.0	-0.6
	R2bar	0.00	0.14	0.01	0.02	0.09	0.10	0.09	0.10	0.01	0.08	0.03	0.04	0.12
	Nobs	45	45	51	50	44	44	34	34	39	39	51	50	34

Note. The dependent variable is the logarithm of the standard deviation of annual GDP growth rates between 2000 and 2010 (Panel A) and between 2000 and 2010 (Panel B); the 2009 real GDP growth rate is the dependent variable in Panel C. BDI: Budgetary discipline index; FIXED: fixed exchange rate (all euro area members are classified as having a fixed exchange rate); CBI: Central bank independence; CBT: Central bank transparency; R&S: Financial regulation and supervision; CREDIT: change in credit/GDP from 2004 to 2008. Constant is also included in the regression; heteroskedasticity robust standard errors are used; the t-ratios are shown below the parameter estimates. Parameter estimates that are statistically significant (at least at the 10 percent level) are in bold.

Considering volatility during the pre-crisis period, practically none of our indicators are significant.[12] However, we have argued in Section 2 that considering the pre-crisis period only is misleading, because the seemingly smooth development of CESEE countries has in fact led to the build-up of various vulnerabilities. It is much more preferable to include the bust phase of the business cycle as well.

Indeed, Panels B and C do indicate that countries with better monetary institutions tended to have less GDP volatility. In particular, lower output volatility is associated with more transparent central banks and lower pre-crisis credit growth, which results is robust to various controls (see columns H and L). Including both variables along with the controls (see column M) does not change much the results: both variables continue to be significant.

[12] The only exception is central bank transparency when controls are not included.

Central bank independence is significant only when other controls are not considered, though this variable is significant at 11 percent level when the 2009 growth is considered. The parameter estimate of financial regulation and supervision is correct, but this variable is not significant (columns I and J). Countries with fixed exchange rates tend to have more volatile business cycles, but the parameter estimate is not significant (columns C and D). Finally, our budgetary discipline index (see columns A and B) does not have a significant parameter estimate and in some cases even the point estimate of the parameter has an incorrect sign.

In terms of explanation power, central bank transparency explains about one-third of the variation in the dependent variable, and when combined with GDP per capita and trade openness, they join explain more than one half of the cross-sectional variation of GDP volatility in 2000-2010.

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5.2 Fiscal outcomes

In this section we study the impact of our Budgetary Discipline Index on fiscal outcomes: on government debt and balance developments. As argued in Section 2.3, we regress the change in the debt/GDP ratio and not the level of the debt/GDP, because current fiscal institutions do not have an impact on the inherited stock of debt, which largely determines the actual level of debt.[13] Of course, we control for the initial level of debt (by including the debt level of 2000), because countries with higher debt/GDP ratios may make more efforts in reducing their debt. We also control for the interest rate/GDP growth rate differential, because we have argued in Section 2.3 that this differential had a significant impact on debt developments. These controls are included in every regression. We also add, one by one, other control variables: overall institutional quality, our four measures of monetary institutions, and GDP volatility. Therefore, the regression has the following form:

$$(3) \qquad \Delta\left(\frac{debt}{DDP}\right)_i = \alpha + \beta_1 BDI_i + \beta_2 (i-g)_i + \beta_3 \left(\frac{debt}{DDP}\right)_{2000,i} + \delta' controls_i + \nu_i$$

The following parameter signs would be in line with our priors: $\beta_1 < 0$ (better fiscal institutions decrease the debt/GDP ratio), $\beta_2 > 0$ (lower interest rate and faster growth reduce the debt/GDP ratio) and $\beta_3 < 0$ (higher initial debt/GDP level may induce efforts to cut decrease ratio). The expected sign of the parameters of controls varies. Negative parameter is expected for the overall institutional quality and monetary institutions (better institutions lead to a fall in debt), while positive parameter is expected for GDP volatility (higher volatility makes it more difficult to reduce the debt). Our key results are shown in *Table 7*.

[13] The historical developments of fiscal institutions likely have an impact on historical debt developments. If fiscal institutions are persistent, then past fiscal institutions can impact both current fiscal institutions and current debt levels. However, even in this case current fiscal institutions likely impacts the change in debt, therefore, our regression is correct in this case. Furthermore, fiscal institutions change in time, which further calls for the analysis of the change in debt and not in the level of debt.

Table 7. Regression of change in Debt/GDP on budgetary discipline index

		Dependent variable: change in debt/GDP from 2000 to 2007				Dependent variable: change in debt/GDP from 2000 to 2010			
expected sign		OECD + CESEE	OECD + CESEE	CESEE only	CESEE only	OECD + CESEE	OECD + CESEE	CESEE only	CESEE only
-	BDI	2.2	2.8	-5.9	-9.2	9.3	10.0	**-20.1**	**-23.4**
	t-ratio	0.3	0.4	-1.1	-1.5	0.8	0.9	**-2.8**	**-3.5**
+	Int.rate - GDP growth	**2.2**	**2.0**	**2.4**	**2.2**	**2.9**	**2.4**	**3.1**	**2.8**
	t-ratio	**5.3**	**4.1**	**6.3**	**5.1**	**2.8**	**1.8**	**5.1**	**3.9**
-	Debt/GDP in 2000	-0.2	-0.1	**-0.6**	**-0.6**	-0.1	-0.1	**-0.8**	**-0.8**
	t-ratio	-0.9	-0.7	**-4.9**	**-3.1**	-0.5	-0.3	**-4.0**	**-3.0**
	Institutional quality		-1.2		6.9		-0.5		6.5
	t-ratio		-0.4		1.2		-0.1		0.8
	R2bar	0.41	0.30	0.83	0.79	0.30	0.22	0.77	0.71
	Nobs	41	40	17	16	41	40	17	16

Note. BDI: Budgetary discipline index. Constant is also included in the regression; heteroskedasticity robust standard errors are used; the t-ratios are shown below the parameter estimates. Parameter estimates that are statistically significant (at least at the 10 percent level) are in bold.

Our Budgetary Discipline Index is not significant for the combined sample of OECD and CESEE countries, but this result is due to OECD countries. When we restrict the sample to CESEE only, the point estimate is negative as expected, and the results are highly significant when considering the 2000-2010 sample. We have already argued that the 2000-2010 sample is preferable to the 2000-2007 sample.

The interest rate/growth rate differential is highly significant with a proper positive coefficient in all regressions, and the initial level of debt is highly significant with a proper negative sign for the CESEE countries.

We have included a couple of additional control variables. First, we controlled for the overall institutional quality, because we have found that countries with better overall institutions tend to have better budgetary institutions as well.[14] However, as *Table 7* reveals, our BDI variable continues to be significant when controlling for the overall institutional quality, while this latter variable is not significant (end even contradictory has a positive point estimate). Second, we controlled for all four measures of monetary institutions (we have added them to the equation one by one) to see whether they have an impact on debt developments: none of the four indicators had a significant parameter estimate. Thirdly, we have also controlled for macroeconomic stability, but again, this variable turned out to be insignificant. Our BDI variable retained its significantly negative estimate (for the CESEE sample) when using any of these additional control variable. Therefore, a higher BDI implies a fall in debt, which results is robust to various controls.

We explain the failure of our index for the OECD with some outliers that are hard to explain. E.g. Japan (highest DBI and debt) and Norway (low BDI and low debt). In some counties, most notably in developed OECD countries the political agreement between political parties can substitute legal budgetary institutions. The literature has established that good institutions are important in countries that have coalition governments, while a strong prime minister is important in single-party governments. Almost all CESEE had coalition governments and political agreements between parties are not pervasive. These may explain why our index works for CESEE countries.

[14] This result holds for both the OECD and the CESEE sample. In a simple bivariate regression of the Budgetary Discipline Index on the overall institutional quality index the t-ratio of the estimated coefficient is 3.5 and the R-squared of the regression is 0.26. That is, countries with better overall institutions tend to have better budgetary institutions as well.

We now turn to the estimates for the average budget balance. Our explanatory variables are identical to the debt regressions:

$$(4) \qquad \left(\frac{balance}{DDP}\right)_i = \alpha + \gamma_1 BDI_i + \gamma_2 (i-g)_i + \gamma_3 \left(\frac{debt}{DDP}\right)_{2000,i} + \delta' controls_i + \nu_i$$

We expect exactly the opposite parameter signs to the debt regressions, that is, $\gamma_1 > 0$, $\gamma_2 < 0$ and $\gamma_3 > 0$; and the expected parameter signs of the control variables are also the opposite. The main results are shown in *Table 8*.

Table 8. Regression of average balance/GDP on budgetary discipline index

		Dependent variable: average balance from 2000 to 2007				Dependent variable: average balance from 2000 to 2010			
expected sign		OECD + CESEE	OECD + CESEE	CESEE only	CESEE only	OECD + CESEE	OECD + CESEE	CESEE only	CESEE only
+	BDI	0.6	-0.6	**3.7**	**3.9**	0.2	-0.8	**3.3**	**3.3**
	t-ratio	0.4	-0.5	**5.2**	**4.0**	0.1	-0.7	**4.6**	**3.8**
-	Int.rate - GDP growth	-0.1	**-0.4**	**-0.4**	**-0.4**	-0.1	**-0.4**	**-0.4**	**-0.4**
	t-ratio	-1.3	**-2.9**	**-11.0**	**-9.8**	-1.3	**-2.5**	**-8.0**	**-8.0**
+	Debt/GDP in 2000	**-0.03**	-0.01	0.01	0.03	**-0.03**	-0.01	0.01	0.02
	t-ratio	**-1.91**	-0.79	0.61	0.95	**-1.97**	-0.98	0.45	0.80
			2.8		0.3		**2.6**		0.5
			3.5		0.4		**3.2**		0.6
	R2bar	0.11	0.47	0.75	0.76	0.10	0.45	0.63	0.66
	Nobs	41	40	17	16	41	40	17	16

Note. BDI: Budgetary discipline index. Constant is also included in the regression; heteroskedasticity robust standard errors are used; the t-ratios are shown below the parameter estimates. Parameter estimates that are statistically significant (at least at the 10 percent level) are in bold.

In general, our results are similar to the results obtained for the debt regression, though there are important differences. Our Budgetary Discipline Index is not significant for the combined sample for the OECD and CESEE, but significant, with a proper sign, for the CESEE sample. The results are now significant for both time periods. The interest rate/growth rate differential significant with a proper parameter sign, but the initial debt level is not significant.

Considering the other controls: (1) overall institutional quality is significant (with a proper positive parameter) for the OECD countries, but not for the CESEE countries; (2) the four monetary institutional variables have properly signed parameter estimates, but are generally not significant (the most significant variable is central bank independence, which is significant at a 10 percent level); (3) GDP growth has the expected negative parameter estimate, but is not significant. When considering the CESEE sample, our Budgetary Discipline Index remained highly significant when adding any of these control variables and therefore these regressions also underline that better fiscal institutions lead to better fiscal outcomes.

6. Conclusions

This paper studied the role of fiscal and monetary institutions in macroeconomic stability and budgetary control. To this end, we have created a new index of budgetary discipline (using available data from 2007/08), which combines rules and procedures for the three main stages of budgeting: the preparation stage, when the budget is drafted, the authorisation stage, when the budget is approved by parliament, and the implementation phase, when the budget is implemented and may

be amended. For monetary institutions we studied four indicators: the type of exchange rate regime, an index of central bank independence, an index of central bank transparency, an index of financial regulation and supervision. Since the latter suffers from deficiencies, we have also used the pre-crisis speed of credit growth as a proxy for proper financial regulation and supervision.

We have studied the impact of these indicators on macroeconomic stability and budgetary control. We have documented that CESEE countries tend to grow faster (at least tended before the crisis) and have more volatile growth than non-CESEE OECD countries. This has implications for macroeconomic management. More volatile output developments lead to more volatile budget revenues, and expenditures (both through automatic stabilisers and possibly through discretionary stimulus) are also expected to be more volatile. In the absence of sound fiscal institutions this could lead to pro-cyclical fiscal policy. Indeed, using structural vector-auto regressions Darvas (2010) found that fiscal policy was pro-cyclical in most CESEE countries (with a few exceptions). This calls for strong fiscal institutions. Yet our budgetary discipline index suggests that fiscal institutions are considerably weaker in several CESEE countries than in non-CESEE OECD countries. Therefore there is a significant room for improvement in most countries.

The recent global financial and economic crisis hit CESEE countries harder than other emerging country regions of the world. Recovery from the crisis is also slower. These developments raise question marks about the pre-crisis development model of the region, which was largely based on institutional, financial and trade integration with the EU and was accompanied by substantial labour mobility. Recent research suggests that the good features of this model should be preserved, but several CESEE countries have to implement significant changes to this economic model in a much less benign domestic and international environment. Economic growth will likely fall substantially behind pre-crisis economic growth trends. We have shown that the general decline in government debt/GDP ratios of most CESEE countries was the consequence a highly favourable relationship between economic growth and the interest rate: economic growth well exceeded the interest rate. Therefore, government debt/GDP ratios fell in CESEE but not in non-CESEE OECD countries, even though the budget balance was better in the non-CESEE OECD group. Since growth will likely slow down and interest rates will rise after the crisis, a less favourable relationship is expected between the growth rate and the interest rate which also calls for enhanced budgetary frameworks.

In the final part of our paper we used econometric models for studying the impact of fiscal and monetary institutions on macroeconomic stability and fiscal outcomes. We have found some evidence that better monetary institutions dampen macroeconomic volatility. When controlling for the difference between interest rate and growth rate and initial level of debt, our Budgetary Discipline Index significantly explains debt and balance developments in CESEE: countries with higher index had a smaller increase in debt/GDP ratio and had better budget balances. This result was robust to the inclusion of several control variables, including an indicator of overall intuitional quality. All of these results call for better budgetary procedures and improved monetary frameworks.

7. References

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