

The Impact of Fiscal Rules on Public Finances:
Theory and Empirical Evidence for the Euro Area

Wim Marneffe
Bas Van Aarle
Wouter Van Der Wielen
Lode Vereeck

CESIFO WORKING PAPER NO. 3303

CATEGORY 6: FISCAL POLICY, MACROECONOMICS AND GROWTH

DECEMBER 2010

An electronic version of the paper may be downloaded

- from the SSRN website: www.SSRN.com
- from the RePEc website: www.RePEc.org
- from the CESifo website: www.CESifo-group.org/wp

The Impact of Fiscal Rules on Public Finances: Theory and Empirical Evidence for the Euro Area

Abstract

This paper presents a review of the most significant fiscal rules policymakers can choose from. The insights from this review are then applied to the current budgetary situation of the European Union. In the European Union, the supranational Stability and Growth Pact (SGP) should provide the necessary guidance in limiting governmental borrowing by member states. In addition to the SGP, European countries are implementing various other fiscal rules that bind central, regional and local governments. We provide empirical estimates of the effect of fiscal rules on fiscal balance, government spending and government revenues, using a Fiscal Rule Index. We find that fiscal rules have some effect on fiscal balances.

JEL-Code: F31, F41, G15.

Keywords: euro area, fiscal policy, policy rules, fiscal sustainability.

Wim Marneffe
Hasselt University
Faculty of Applied Economics
Agoralaan 30, Building D
Belgium – 3590 Diepenbeek
wim.marneffe@uhasselt.be

Wouter Van Der Wielen
Hasselt University
Faculty of Applied Economics
Agoralaan 30, Building D
Belgium – 3590 Diepenbeek
wouter.vanderwielen@uhasselt.be

Bas Van Aarle
Hasselt University
Faculty of Applied Economics
Agoralaan 30, Building D
Belgium – 3590 Diepenbeek
bas.vanaarle@uhasselt.be

Lode Vereeck
Hasselt University
Faculty of Applied Economics
Agoralaan 30, Building D
Belgium – 3590 Diepenbeek
lode.vereeck@uhasselt.be

1 Introduction

In recent decades, oil crises and ensuing recessions, high interest rates, political instability, an over-sized welfare state and structural problems contributed to the deterioration of public finances worldwide. Due to the current economic downturn, budgetary problems are on the agenda once again. The fiscal deficits incurred as a result of the current economic downturn cause the public debt to rise steeply. Yet, in comparison to other industrial countries, the public debt of some EU countries was already at a high level. For instance, public finances become susceptible to interest rate fluctuations as a consequence of a high public debt. In addition, as interest rates increase, advantageous government programs may be postponed, a debt trap may arise, and crowding out may reduce private investments. Moreover, the rates of interest may increase due to the growing risk aversion and the emergence of risk premia on sovereign debt as e.g. the recent case of the Greek and Irish debt crisis illustrates. Furthermore, private saving may be encouraged in the absence of the Ricardian equivalence, hampering economic recovery.¹

In the literature a consensus exists on the necessity of fiscal measures both in the short-run and long-run, to safeguard the stability of public finances which should at the same time not hamper economic recovery. Therefore, a sufficiently stringent fiscal policy is appropriate to avert lapses like those in the mid-1970s and 1980s.

Fiscal rules, whether quantitative or not, indicate the direction in which policymakers aim the public finances to evolve and the public sector's role in macroeconomic processes. The design of efficient and effective fiscal rules has been the centre of economic debate for several decades and rules with different aims and impacts have been suggested. Fiscal rules seek to provide a solution to the deficit bias problem that is caused by the governments' short-sightedness and the common pool problem.²

A fundamental question concerns the need for an adequate framework of fiscal rules. We divide fiscal rules in two categories: (i) fiscal rules that primarily aim at restricting deficits and debt to guarantee fiscal sustainability. The fiscal rules inspired by (neo)- classical principles fall into this category. (ii) Fiscal rules that primarily aim at stabilizing macroeconomic fluctuations. These rules are guided by (new)- Keynesian principles of fiscal management.

The objective of this paper is to present a review of the most significant fiscal rules that have been applied and proposed in the past to give a comprehensive overview of all the basic alternatives policymakers can choose from. The insights from this review are then applied to the current European Union. In the European Union, the supranational Stability and Growth Pact (SGP) should provide the necessary guidance in limiting governmental borrowing by member states. In addition to the SGP, European countries are implementing various other fiscal rules that bind central, regional and local governments. We provide some empirical estimates of the effect of fiscal rules on fiscal balances, government spending and

¹ Peter Saunders and Friedrich Klau, "Budget Deficits and Crowding-out," OECD Economic Studies No. 4 (Paris: Organisation for Economic Co-operation and Development, 1985): 189; Robert J. Barro, "Are Government Bonds Net Wealth?," *Journal of Political Economy* 82, no. 6 (November-December 1974): 1115-1116.

² Xavier Debrun, Laurent Moulin, Alessandro Turrini, Joaquim Ayuso-i-Casals, and Manmohan S. Kumar, "National fiscal rules," *Economic Policy* 23, no. 54 (April 2008): 302-304.

government revenues, using a recently compiled Fiscal Rule Index by the European Commission. We find that fiscal rules have some effect on fiscal balances.

The policy contribution of this paper is to provide policymakers with the main insights from the literature on fiscal rules and recent issues relating to fiscal rules in the EU. This will be helpful when designing further changes in the fiscal framework. For that reason, not only the mechanisms will be set forth, but also the various strengths and shortcomings will be recapitulated. Furthermore, a general framework for future budgetary actions is presented, as well as for the future European fiscal policy. In particular, a solution for a more effective European fiscal policy is presented.

This paper is structured as follows. Sections 2 and 3 present an overview of the most significant fiscal rules, as well as their limitations. Section 4 discusses the setup of the Stability and Growth Pact, its interaction with numerous domestic fiscal rules and considerations for its reform. Section 5 documents new empirical evidence on the effects of fiscal rules on budgetary stances in the Euro Area.

2 Fiscal Rules and sustainability of public finance: Classical principles

2.1 Classical Economics: Balanced Budget and Golden Rule

(Neo)- classical economics assumes that no policy impulses are necessary to increase production and employment -as these would represent efficient market outcomes- and propose that policymakers pursue best a balanced budget strategy. All government expenditures are seen as consumptive and to be financed by tax proceeds approved by the parliament. Financing such consumptive expenditures with public debt would crowd out private investments due to increasing rates of interest. Monetary financing would have an inflationary effect. Although the balanced budget rule is still widely used, it has to be taken into account that a balanced budget not necessarily has a neutral impact on the economy, as shown by the balanced budget multiplier theorem.³ In addition, a budget balance does not only result from discretionary policy, but is also affected by automatic stabilizers and expectations.

Revenues would also have to be tailored to needs; a discretionary (possibly countercyclical) revenue policy to avoid any budget deficit or surplus is, however, not self-evident. For that reason, the Golden Rule seems more advisable. In this case, neoclassical economists argue that it is allowed to use private savings to finance productive public investments, because these investments would recover their costs in the long run. As a result, a stabilizing policy is possible by means of productive investments and a country's (net) public debt would remain constant in the long-term.

Nevertheless, the Golden Rule has not been without criticism either. Firstly, it is not always clear which discount rate has to be used to determine whether investments are productive or not. A private discount rate that orientates on market interest rates or a lower social discount rate of a farsighted government that is able to implement future-oriented policies. It has also been argued that substantial public investment programs can influence the

³ Trygve Haavelmo, "Multiplier Effects of a Balanced Budget," *Econometrica* 13, no. 2 (October 1945): 311-318.

long-term rate of interest.⁴ Secondly, research shows that, although the Golden Rule stimulates economic growth in the short run, this does not necessarily imply increased growth rates in the long run.⁵ Thirdly, the distinction between consumptive and investment expenditures is not always clear. For instance, disagreement exists concerning the expenditure for education. In addition, many useful investment projects will not recover their costs unless the full social benefits are taken into account. Finally, inflation also has to be taken into consideration. Since inflation diminishes the debt burden, a higher budget deficit would be in accordance with the golden rule in case of inflation. Therefore, it is the inflation adjusted budget deficit that cannot exceed public investments.⁶ In spite of all these shortcomings, the Golden Rule is still applied in the United Kingdom and Germany.⁷

Fiscal rules that are designed using (neo)-classical principles, concentrate on securing solvency of the government. The intertemporal budget constraint is inspired by the net present value concept and assesses whether the government will be able to bear the future burden of public debt. In other words, it assesses whether the future primary balances will be sufficiently large to repay the outstanding public debt. Mathematically, this can be expressed as follows,

$$S_t = \sum_{j=t}^n \left[\frac{T_{t+j} - G_{t+j}^P}{(1+i)^j} \right] + \left[\frac{S_{t+n}}{(1+i)^n} \right] \quad (1)$$

where S equals the stock of public debt at period t , G^P , government expenditures excluding the interest burden, T , government revenues and i is the long-term rate of interest. Using this expression, policymakers can determine the most appropriate fiscal policy to equate both sides. The budget is said to be intertemporally sustainable if the current public debt equals the net present value of future primary balances. Consequently, the second term of the right-hand side of the above-mentioned equation will approach zero, i.e. all debt will be redeemed.

In addition to the intertemporal budget constraint, a country's fiscal gap can be determined. The fiscal gap reflects the net present value of future government expenditures, including servicing public debt, and future revenues. In fact, it is a measure of the additional burden that will need to be imposed on future generations to satisfy the intertemporal budget constraint.⁸ Given the ageing population and the corresponding costs, this is seen as an important indicator of the sustainability of a country's public finances by the advocates of generational accounting.

Note that a systematically increasing public debt as a percentage of GDP can still be considered intertemporally sustainable as long as the primary deficit does react to the level of

⁴ European Economic Advisory Group, *Report on the European Economy* (München: Ifo Institute for Economic Research, 2003), 59.

⁵ Alexandru Minea and Patrick Villieu, "Borrowing to Finance Public Investment? The 'Golden Rule of Public Finance' Reconsidered in an Endogenous Growth Setting," *Fiscal Studies* 30, no. 1 (March 2009): 127-128.

⁶ Willem H. Buiter, Giancarlo Corsetti, and Nouriel Roubini, "Maastricht's fiscal rules," *Economic Policy* 8, no. 1 (April 1993): 63; Buiter, Corsetti, and Roubini, 74-75.

⁷ Sugata Ghosh and Iannis A. Mourmouras, "Endogenous growth, welfare and budgetary regimes," *Journal of Macroeconomics* 26, no. 4 (December 2004): 625; Willem H. Buiter, "Notes on 'A Code For Fiscal Stability'," *Oxford Economic Papers* 53, no. 1 (January 2001): 1.

⁸ Alan J. Auerbach, "The U.S Fiscal Problem: Where We Are, How We Got Here, and Where We're Going," in *NBER Macroeconomics Annual*, eds. S. Fischer and J. Rotemberg (Cambridge, MA: National Bureau of Economic Research, 1994), 141-186.

debt. The total budget deficit on the other hand may be held constant. Yet, this reasoning does not allow for the adverse consequences of a high public debt mentioned earlier. Also, the determination of the future rates of interest is not free of problems either. The choice may be arbitrary and, moreover, time-consuming as it has to be repeated for each respective time period in order to discount fluctuations correctly. Furthermore, the assumption that a country's public debt will be redeemed completely is unrealistic and the optimal level of public debt does not necessarily have to be zero.

2.2 Avoiding the debt trap

The (public) debt trap has scourged public finances in many European countries in the past. Therefore, avoiding the debt trap is seen as a standard for fiscal policy. The debt trap can be defined as a vicious circle in which an initial budget deficit has to be funded by public debt, which in turn increases a country's interest burden and consequently its deficit, and thus further increases public debt. A halt to the rise of public debt is needed to break this circle and mitigate the accompanying consequences of a high public debt. In order to realize that, policymakers need to understand the dynamics of public debt. Public debt can be expressed as in

$$S_t = D_t^p + (1+i)S_{t-1} \quad (2)$$

where D^p is the primary deficit and $(1+i)S_{t-1}$ comprises a country's interest burden during period t . Equation (2) can be rewritten as an expression of the change in the debt as a percentage of GDP:

$$s_t - s_{t-1} = \left(\frac{i-g}{1+g} \right) s_{t-1} + d_t^p \cong (i-g)s_{t-1} + d_t^p \quad (3)$$

where s is the ratio of a country's public debt to GDP, g is the growth rate of GDP, and d^p is the primary deficit as a percentage of GDP. Three scenarios are conceivable. First, the public debt as a percentage of GDP will increase if the interest due on current debt exceeds nominal GDP growth ($i > g$), unless a substantial primary surplus counterbalances the deterioration. Nevertheless, a primary deficit will deteriorate a country's position further as debt rises exponentially. Secondly, the debt as a percentage of GDP will decrease if nominal GDP growth exceeds the long-term rate of interest ($i > g$), unless the primary deficit is large enough to compensate the decrease. Third, policymakers can stabilize the level of public debt and concentrate on breaking the vicious circle. For instance, when GDP growth does not surpass the rate of interest public debt can be stabilized at s percent of GDP in the medium-term if the following primary surplus is realized, i.e. a sufficient proportion of the interest burden is covered by tax proceeds:

$$-d_t^p = \left(\frac{i-g}{1+g} \right) s \cong (i-g)s \quad (4)$$

As a result, the debt trap can be stopped depending on three parameters: the primary budget balance as a percentage of GDP, the average rate of interest due on public debt, and the nominal GDP growth rate.

This approach is useful to evaluate severe circumstances, i.e. when the rate of interest is high, nominal GDP growth is low and public debt is already at a high level relative to GDP. Otherwise, there is only a limited precautionary effect. Furthermore, as economic growth and the rate of interest are not straightforward to influence, the primary balance is the only parameter useful to policymakers. In addition, the approach does not take into account the economic consequences of government expenditures and tax revenues, which are the primary policy instruments. Therefore, the approach only strives for a stable position by means of the minimal required measures instead of defining an optimum. Possible structural problems that may be at the base of the budgetary problems are overlooked. In a similar vein, the burden for future generations is ignored by the model. Finally, politicians may hamper an effective application of the rule as they prefer a higher target level of public debt because that would allow them to run a lower primary budget balance.

3 Fiscal Rules and macroeconomic stabilization: (new-) Keynesian principles

3.1 Keynesian Deficit Spending

In the 1930s the Great Depression brought about a shift in economic thought. As Keynesianism won ground, cyclical expenses and revenues on top of a balanced budget were no longer seen as unacceptable. Such automatic stabilizers were deemed desirable in times of recession when a countercyclical policy is preferred to a balanced budget. This would be necessary as market mechanisms are assumed not to be sufficient to restore full employment.⁹ Budgetary stabilization policy consists not only of automatic stabilizers, like progressive tax rates and unemployment benefits, but also of discretionary interventions. More explicit measures (e.g. the full employment budget balance) were designed to make a clear distinction between those expenses that are cyclically justifiable and those of discretionary nature.

In spite of the potential benefits of budgetary stabilization policy, the Keynesian policy principles have displayed some shortcomings in the past. For example, during the 1980s policymakers in many European countries underestimated future debt problems. Moreover, asymmetric applications were often observed. During economic downturns a stabilization policy was applied by raising expenditures and cutting taxes. In case of booms the policy would, however, require cutting expenditures and raising taxes. Politically, this was very difficult to maintain. Besides, downturns were often misused by politicians to fund more expenditures than necessary. The resulting deficit bias implies that eventually also debt repayment issues start to matter as a country is expected to repay her debt eventually. Therefore, there is a limit to both the stabilization possibilities and the lending capacity.

3.2 Cyclical Balance

The distinction between cyclical and structural balance was developed as a way to combine

⁹ An extreme fiscal policy approach based on Keynesian thought is the functional finance introduced by Lerner (1943). The aim of his functional finance is to use fiscal policy as much as possible as a function of the current and expected economic circumstances such as to attain the macroeconomic objectives of price stability and full employment. As a result, the budget balance is only of marginal importance. Abba P. Lerner, "Functional Finance and the Federal Debt," *Social Research* 10, no. 1 (February 1943): 39-41.

the two fundamental approaches outlined above. The structural balance can be used to assess the (neo)-classical perspective with its emphasis on long-run sustainability issues. The cyclical balance can be used to assess the Keynesian aspect of short-run anti-cyclical stabilization. On the one hand, a balanced budget should be reached in the long run. On the other hand, a countercyclical policy is prescribed in the short run. As such, a country can run deficits by increasing expenditures during an economic downturn, as long as those deficits do not surpass the surpluses build up during the preceding economic boom. Consequently, public debt will remain constant in the long run.¹⁰ However, this rule is not precluded from serious limitations. As business cycles are not symmetrical, neither in length nor size, over- and undercompensation can arise. What is more, public choice theory and political economy theory emphasizes that there will be insufficient downward flexibility of expenditures during booms due to political factors.¹¹

3.3 *Cyclically Neutral Budget Balance*

The cyclically neutral budget balance is a fiscal impulse measure developed by the German Council of Economic Experts.¹² The aim of this rule is not to influence the utilization rate of the productive capacity and keep the influence of the fiscal policy constant relative to a base year. Thus, the share of government spending in potential national output (valued at current prices) should be held constant, with potential output defined as the level of GDP in case of complete utilisation of the capital stock, i.e. full employment. Hence, in the long run a trend growth of GDP is intended, while in the short run the yearly budget balance should fit as closely as possible that trend. In particular, a norm supporting the trend growth of the economy at full capacity, similar to the full employment budget balance, is pursued in the long-term. In the short-term, on the other hand, the rule bears a resemblance to the structural budget rule as the actual budgetary results will be compared to a hypothetical path.

To implement the rule, policymakers need to determine the future evolution of potential output, the accompanying private spending, and the desirable level of government expenditures for the chosen period,. In order to achieve this, a base year for which the actual and potential output are roughly the same is chosen. The cyclically neutral budget balance is then derived from the actual budget balance under the assumption that the government's tax proceeds are unit elastic relative to actual income and government expenditures are unit elastic relative to potential output. Although the assumption of a unit elastic budget is not quite realistic, it makes sure that the impact of automatic stabilizers is allocated to the fiscal impulse. For changes on the revenue side of the budget with respect to changes of the actual income a similar reasoning holds, regardless of the source of the change.¹³

¹⁰ Gunnar Myrdal, "Fiscal Policy in the Business Cycle," *The American Economic Review* 21, 1 (March 1939): 187-193.

¹¹ James M. Buchanan and Richard E. Wagner, *Democracy in Deficit* (New York, NY: Academic Press, 1977).

¹² In addition to the full employment budget balance and cyclically neutral budget balance other fiscal impulse measures exist. For example, the impulse analysis introduced by Hansen and adopted by the OECD, the impulse measure introduced by Burger, and Musgrave's measure of fiscal performance.

¹³ Peter S. Heller, Richard D. Haas, and Ahsan S. Mansur, "A Review of the Fiscal Impulse Measure," Occasional Paper No. 44 (Washington, D.C.: International Monetary Fund, 1986): 3.

Consequently, the actual budget balance¹⁴ can be decomposed as follows:

$$B = (t_0 Y^p - g_0 Y^p) - [t_0 (Y^p - Y)] - FIS \quad (6)$$

with $t_0 = \frac{T_0}{Y_0}$ and $g_0 = \frac{G_0}{Y_0}$ where Y is the actual output, Y^p is the potential output, and G are the government expenditures. As shown, the actual budget balance can be subdivided into three components: the budget balance of the base-year (the first term in the equation), the cyclical component (the second term), and the fiscal stance (FIS). The base-year budget balance and the cyclical component define the cyclically neutral budget balance. As a result, the equation mentioned-above can be rewritten as

$$B = (t_0 Y - g_0 Y^p) - FIS = B^n - FIS \quad (7)$$

The change in the fiscal stance (ΔFIS) corresponds to a measure of a policy's fiscal impulse (FI). If a fiscal policy has become more expansionary with respect to the previous year, the fiscal impulse will be positive in sign, and vice versa. However, as the fiscal impulse represents the change in fiscal stance, the stance in any year should be laid down by the output in that year.¹⁵

Although the cyclically neutral budget balance is a significant measure according to the International Monetary Fund (IMF) and it has relatively modest data demands, it also has some shortcomings. Firstly, the fiscal impulse will not only include the effect of changes in fiscal policy, but also the effect of automatic stabilizers as the actual elasticities are not necessarily unitary. Furthermore, it will also include structural changes in the economy as the fiscal impulse is calculated residually. Secondly, the cyclically neutral budget balance suffers from the balanced budget multiplier problem. As a consequence, its neutrality is questioned as a change in public expenditures is assumed to have a larger impact on output than an equivalent tax change. Finally, the method only adjusts the budget balance for deviations of output from its potential level. More accurately would be to include the changes in prices, rates of interest, and the exchange rate. The full employment budget balance presented below also has the latter two shortcomings.¹⁶

3.4 Full Employment Budget Balance

To separate cyclical and structural fiscal policy, a number of alternatives were designed. In order to determine the full employment budget balance (FEBB) both revenues and expenditures need to be adjusted when the actual employment deviates from full employment. This correction is achieved by assuming that the actual employment equals full employment and recalculating the matching budget balance. Losses due to lower employment need to be taken into account to calculate tax proceeds under the assumption of full employment. In case

¹⁴ The fiscal balance is equal to minus the fiscal deficit, $B = -D$.

¹⁵ Ibid, 4.

¹⁶ Peter S. Heller, Richard D. Haas, and Ahsan S. Mansur, "A Review of the Fiscal Impulse Measure," Occasional Paper No. 44 (Washington, D.C.: International Monetary Fund, 1986): 4-5

of the expenditures, unemployment benefits need to be subtracted.¹⁷ Finally, as cyclical effects are no longer present, it is possible to determine whether the implemented policy is expansionary or contractionary. When the full employment deficit is increasing or the full employment surplus is decreasing the policy can be termed expansionary, and vice versa. In that way, a FEBB equal to zero is considered to be desirable as the actual stabilizing budget deficits will disappear when the economy revives. Nevertheless, the FEBB should not be confused with the structural budget balance from which one-off events, such as the privatization of public property, are also eliminated. Furthermore, the potential output that is used to separate the structural budget balance from the cyclical effects does not necessarily involve full employment.

Since tax proceeds in many European countries will increase more than the GDP due to progressive tax rates, the FEBB will increase in case of an economy that grows in the long run even though fiscal policy remains unchanged. This phenomenon is also known as fiscal drag.¹⁸ The use of the FEBB as a percentage of potential GDP has been recommended to prevent such misinterpretation. Yet, the resulting FEBB seems to be plagued by an important deficit bias. Even in the absence of discretionary measures, a FEBB based policy will result in a fiscal expansion due to systematic optimism in growth forecasts. In practice, this would result in an ever increasing public debt and unsustainable public finances in the long run. A sufficiently large full employment budget surplus is therefore desirable.¹⁹ Except for the uncertainty that accompanies projections, cyclical measures are also plagued by political pressure to expect an economic downturn so expenditures may rise. Furthermore, cyclical measures are characterized by their lack of simplicity. For instance, the idealized circumstances necessary to calculate the FEBB are difficult to determine. Therefore, the lack of clarity makes departure from the rule hard to perceive.²⁰

3.5 *Structural Budget Policy*

During the 1960s and first part of the 1970s the Dutch government decided to outline and tie up the evolution of public finances for a few years. Seeing that government expenditures continue to increase, the resulting structural budget rule remains valuable today. The rule is called structural because the structural deficit has to be equal to the actual budget balance in a base year in which full employment holds. For each subsequent year, the annual expenditure margin is deduced from the structural deficit and trend growth of GDP.²¹

As the budget space for a period only encompasses the additional revenues due to taxation of the GDP expansion, the budget space restricts the growth of government. When

ε_Y^T is the income elasticity of tax proceeds, \dot{Y}_r is the estimated real trend growth of the

¹⁷ In many theoretical models further adjustments to the expenditures are expected to counterbalance each other.

¹⁸ Walter W. Heller, *New Dimensions of Political Economy* (Cambridge, MA: Harvard University Press, 1966).

¹⁹ Martin Larch and Matteo Salto, "Fiscal Rules, Inertia and Discretionary Fiscal Policy," *Applied Economics* 37, no. 10 (10 June 2005): 1135-1137.

²⁰ Buchanan and Wagner.

²¹ Dirk-Jan Kraan, "Cutback Management in the Netherlands," *Public Budgeting & Finance* 21, no. 2 (Summer 2001): 50-51.

economy in terms of percentage, and T are the tax proceeds, the real budget space (SBS_r) for the first year of a structural budget policy can be calculated as follows:

$$SBS_r = \varepsilon_Y^T \cdot \dot{Y}_r \cdot T_0 \quad (8)$$

The prior budget spaces need to be added to the tax revenues during the base year to determine the subsequent annual budgets of that period of government. Ultimately, the budget space can be used to increase public expenditures or to lower tax rates. However, if the growth of the expenditures surpasses the outlined budget, this has to be compensated by underspending in other years or alternatively an increase of the tax rates. As the above-mentioned real budget is corrected for inflation, it does not consider expenditure growth that is merely caused by inflation. A nominal budget space has to be added in case of substantial rates of inflation to preclude inflation from ousting other expenditures.

As the expansion of the public sector is limited by this fiscal rule, policymakers are compelled to set priorities. Yet, the budget will have an automatic countercyclical effect. For instance, if the actual GDP growth of the economy is less than the estimated trend growth, then the budget will automatically result in an expansionary impulse. Since the government expenditures in compliance with the constraint are based on the estimated growth (as opposed to tax proceeds), the actual deficit will increase or the actual surplus will decrease.

More recently, two major changes were suggested. Firstly, the budget should henceforth not be calculated based on estimates, but rather by means of historical data. Therefore, the trend growth of the economy (\bar{Y}) and the income elasticity of tax proceeds ($\bar{\varepsilon}_Y^T$) are determined as the arithmetic mean of their values during the years prior to the base year. Secondly, a correction term is added to assure that the budget is in balance over the trend. As a result the budget space can be rewritten as follows:

$$SBS = \Delta \bar{T} - \alpha D_{-2} \quad (9)$$

where $\Delta \bar{T} = T_{-2} (1 + \bar{Y}) \bar{\varepsilon}_Y^T \bar{Y}$ when α is the discretionary constant and D_{-2} represents the budget deficit in the year $t-2$. The correction term of the budget deficit at the end of the base year is multiplied by a discretionary constant ($0 < \alpha < 1$). That way, the budget space will shrink when there was a deficit during the base year and expand when there was a surplus. Consequently, the deficit as a percentage of GDP should tend towards zero over the trend as lengthy imbalances are precluded.

Nevertheless, some problems remain. First of all, it has been argued that the sole focus of fiscal policy on automatic stabilizers could be harmful as the government lacks the power to intervene. However, this assumption only seems to hold in case of extreme deviations as discretionary measures themselves cause excesses. Secondly, practice has shown both arbitrary and asymmetrical implementation. Lastly, the alternative is biased due to the use of a discretionary constant and historical data. Temporary measures may be included in the historical data (e.g. tax cuts), while they will not exist during the actual period of government. However, expectations about the future are not taken into consideration.

4 Fiscal Rules in the EU: the Stability and Growth Pact and beyond

4.1 *Principles of the Stability and Growth Pact*

Despite the initiative of the European Economic Community in 1975 to devise a constraint for fiscal policy, it took another seventeen years until the first binding supranational fiscal rule was introduced by the Treaty of Maastricht in 1992. One of the principal goals of the Treaty was the formation of the European Union. In addition to that other goals were achieved, among which the creation of an internal economic and monetary market. The creation of the Economic and Monetary Union of the European Union (EMU) was divided in three subsequent phases. Admission to the third and final phase implied the introduction of a common currency unit. Member countries had to meet convergence criteria with regard to price stability, exchange rate stability, the long-term rate of interest, and fiscal policy to be admitted. The latter required the absence of excessive budget deficits. Whether a deficit is considered excessive or not is defined by article 104 C §2 of the Treaty and the accompanying Protocol on the Excessive Deficit Procedure. The article states that the annual budget deficit should not be higher than 3 percent of GDP, unless it has been on a decreasing path and by considerable amounts and has reached a level close to the benchmark or is of an exceptional and temporary nature and sufficiently close to the 3 percent benchmark. Also, total public debt should not be larger than 60 percent of GDP, unless it has been on a decreasing path and the benchmark is being approached at a satisfactory rate.²²

Though the convergence criteria of the Treaty of Maastricht have successfully led the way to the EMU, they required considerable efforts in particular if candidate countries were affected by negative shocks to economic activity.²³ Nevertheless, the Treaty provided a preferential treatment for some. While the benchmarks in the Treaty were criticized for being too strict, a loophole for highly indebted countries (i.e. Italy and Belgium) was created as an evolution in the direction of the benchmark was assessed to be acceptable.²⁴ Regardless of the strictness of the convergence criteria, more technical shortcomings were put forward. For instance, the benchmark values of the fiscal rules were deemed to be arbitrary and insufficiently theoretically underpinned. The Treaty briefly referred to the mean budget deficit as a percentage of GDP and the mean debt as a percentage of GDP of the member states of the European Community in 1991, respectively 4.3 and 61.7 percent. However, there is no reason why these means would have been optimal for the Union as a whole, let alone for divergent candidate countries.²⁵ Whereas the average public investments within the European Community were equal to 3 percent of GDP during the period between 1974 and 1991, the golden rule has also been associated with the fiscal benchmarks. Nevertheless, that explanation would not be sound in case of inflation.²⁶ Furthermore, the countercyclical possibilities under the Treaty were judged to be ambiguous if not inadequate. Deficits could temporarily exceed 3 percent of GDP in extraordinary circumstances. Yet, the assessment of circumstances as extraordinary was not always clear upfront. Therefore, measures could be

²³ Buiter, Corsetti, and Roubini, 75-76.

²⁴ Ibid, 61.

²⁵ Ibid, 62.

²⁶ Ibid, 63.

delayed. However, the strict compliance with the rule during a downturn could have resulted in pro-cyclical effects, because expenditures need to be cut as tax proceeds automatically decrease. Lastly, the Treaty did not provide a contextual approach adapted to each country's debt level, although countries with a higher debt as a percentage of GDP pose a higher threat to the Union's stability. Eventually, the debt rule has been complemented by a contextual medium-term rule in 2005. Nevertheless, research has shown that a budget balance rule expressed as a (linear) function of public debt instead of a constant benchmark results in more satisfactory results.^{27 28}

Fiscal discipline is crucial for the well-functioning of a common currency. The unified money market, poses the threat that increasing deficits in one or more countries could threaten the stability of the Union as a whole. For instance, the borrowing due to such a deficit could increase demand in the unified money market and as a result the rate of interest for all member countries. Furthermore, some member countries feared that the European Central Bank would be put under pressure to mitigate the increase of the rate of interest by relaxing its monetary policy. This would be inconsistent with its price stability policy and damage the institution's independence. Consequently, the convergence criteria and Excessive Deficit procedure became also the foundation of the Stability and Growth Pact as a part of the Treaty of Amsterdam. Moreover, the Pact further concretizes the original exceptions. As well as natural disasters, a decline of GDP by 2 percent or more is explicitly specified to be an exceptional circumstance. Furthermore, when a country's GDP declines by less than 2 percent but more than 0,75 percent it can still be assessed exceptional by the Economic and Financial Affairs Council (ECOFIN) of the Council of the European Union. Since the inception of the Pact, member countries are also compelled to submit their Stability Programs to the European Commission to enhance multilateral supervision.²⁹ Lastly, as the severe penalty of the Treaty of Maastricht (i.e. exclusion from the monetary union) is practically not appropriate anymore, a system of warnings, interest-free deposits and fines has been implemented.

In response to broad international criticism the Pact was revised in 2005. Firstly, the changes lead to a more contextual consideration of a member country's circumstances. Henceforth, member countries with a relatively low public debt (i.e. less than 60 percent of GDP) could pursue a structural deficit of 1 percent of GDP in the medium-term, while countries with a higher debt should pursue a balanced budget or small surplus. Each year countries should move a half percent of GDP into the direction of their medium-term objective. When economic growth is higher than projected this should be more than a half percent to allow reduced efforts during an economic downturn. Consequently, in the long run public debt as a percentage of GDP will decrease and ultimately approach zero. Secondly, since the revision of the Pact not only the decline of economic growth is taken into account, but also the duration of the economic downturn. Thirdly, the time span in which excessive

²⁷ It has been argued that the insufficient contextual approach can be partially remedied by the use of the net public debt (i.e. the gross public debt minus the government's financial assets). That way a country with a superior solvency will not be wrongfully assigned a higher debt level. Yet, empirical research has shown that the change to the relative positions of the EMU countries would be little.

²⁸ Erdem Basci, Mehmet F. Ekinci, and Murat Yulek, "On Fixed and Variable Fiscal Surplus Rules," *Emerging Markets Finance and Trade* 43, no. 3 (May-June 2007): 6.

²⁹ Martin Heipertz and Amy Verdun, "The dog that would never bite? What we can learn from the origins of the Stability and Growth Pact," *Journal of European Public Policy* 11, no. 5 (October 2004): 768.

deficits need to be corrected was broadened from one to two years.

As any fiscal rule, the Stability and Growth Pact is also plagued by shortcomings. The numerical values of its benchmarks remain arbitrary and are possibly counterproductive from the perspective of countercyclical fiscal stabilization policy. Furthermore, substantial doubt exists whether the Pact is able to deliver fiscal sustainability as well. The current fiscal climate has only increased this doubt as fiscal prudence appears to be slipping. One of the main targets of criticism concerns the Pact's penalties. Their impact is only limited in comparison to the threat of exclusion from the monetary union. Moreover, they are not imposed automatically, but are subject to a lengthy discretionary decision process in which the infringing countries take part themselves. The effectiveness of the penalties is impeded further as peer pressure on larger member countries is in general smaller and the threat of political conflicts may exist.³⁰ In addition, the imposition of a fine may turn out to have a procyclical effect and worsen a country's situation. A second aspect of the criticism is the increased flexibility of the revised Pact. As a considerable series of factors need to be taken into consideration to judge whether a deficit is excessive, loopholes exist and judgment is complicated. As a result, the fiscal rule is assessed to be less transparent and simple. Thus, the increased flexibility also has considerable disadvantages.³¹ Besides, with regard to public debt the Pact is clearly a step backwards in comparison to the Treaty of Maastricht as, in addition to the limited contextual approach, the Pact does not provide a clear penalty for infringement of the debt benchmark.³² Note, however also that doubt exists whether a supranational coordinating mechanism is in fact necessary. One may argue that international co-ordination already exists by means of various disciplining mechanisms exerted through financial markets.³³

4.2 *Reforming the fiscal framework in the European Union*

Using also the insights on fiscal rules obtained so far, the remainder of this section sets out the most important principles that seem to emerge from academic research and practical experience. The current framework of fiscal rules in the EU countries is being evaluated and potential reforms that could improve the efficiency and effectiveness are being considered.

First of all, some fundamental requirements need to be taken into consideration. George Kopits and Steven Symansky (1998) formulated eight basic properties for an "ideal" fiscal rule.³⁴ A fiscal rule must be well-defined, transparent, simple, flexible, adequate,

³⁰ Jakob de Haan, Helge Berger, and David-Jan Jansen, "The End of the Stability and Growth Pact?," CESifo Working Paper No. 1093 (München: Ifo Institute for Economic Research, 2003): 13-15; European Economic Advisory Group, 57.

³¹ Marco Buti, "Will the New Stability and Growth Pact Succeed? An Economic and Political Perspective," Economic Papers No. 241 (Brussels: Directorate-General for Economic and Financial Affairs European Commission, 2006): 16-17; Rui H. Alves and Oscar Afonso, "The "New" Stability and Growth Pact: More Flexible, Less Stupid?," *Intereconomics* 42, no. 4 (July 2007): 224; Antimo Verde, "The Old and the New Stability and Growth Pact along with the Main Proposals for Its Reform: An Assessment," *Transition Studies Review* 13, no. 3 (October 2006): 484; Verde, 493.

³² de Haan, Berger, and Jansen, 13.

³³ Buiter, Corsetti, and Roubini, 82.

³⁴ Willem H. Buiter also formulated such requirements specifically for the EMU. See Willem H. Buiter, "Ten Commandments for a Fiscal Rule in the E(M)U," *Oxford Review of Economic Policy* 19, no. 1 (2003).

enforceable, consistent, and efficient.³⁵ However, as public budgeting and finance is an economic matter, some specific economic requirements are also necessary to enhance a rule's effectiveness. Therefore, we have deduced the following conclusions from the above-mentioned rules and their shortcomings:

- A *relative measure* to preclude fiscal drag is advisable. In addition to that, a relative measure will also improve a fiscal rule's effectiveness by facilitating comparison over time as well as between countries.
- Comparability is enhanced when there is a *correction for inflation*. Although the formation of the EMU restricts the consequences of inflation, it would be improper not to adjust the rule to consider inflation. Otherwise, the necessary measures will be overestimated.³⁶
- A budgetary constraint should *not only refer to the balance* to avoid potential adverse effects on the underlying components of the budget balance (e.g., undesirable tax increases to compensate for structural problems on the expenditure side of the balance). Therefore, government expenditures and revenues also need to be included in the design of fiscal discipline.³⁷
- Effectiveness will also be enhanced when the rule supports a *medium term* (instead of a short term) approach. That way, policymakers are compelled to pursue a more sustainable fiscal policy since the future consequences of short term measures must be taken into consideration. Furthermore, possible manipulation concerning the timing of expenses and revenues in order to change the stock and/or composition of government debt over time is discouraged. Moreover, fiscal policy becomes more predictable which enhances public confidence. However, a budget window that is too long will contain periods for which current measures do not matter. As a result, the policymakers' focus on periods that do matter would decrease and the constraint's effectiveness would be diminished.³⁸
- Since the standard budget balance is insufficient to assess the *stance of fiscal policy*, taking into consideration cyclical effects seems appropriate. By enriching the fiscal disciplinary system like that, the actual policy can be assessed objectively irrespective of automatic stabilizers. However, the allowed degree of stabilization policy depends on the actual fiscal rule.

This overview shows that there are serious shortcomings in the Stability and Growth Pact. Therefore, numerous adaptations of the Pact have been proposed. Some include the simple proposal of a well-known approach, such as the golden rule or the adoption of a

³⁵ George Kopitz and Steven Symansky, "Fiscal Policy Rules," Occasional Paper No. 162 (Washington, D.C.: International Monetary Fund, 1998): 18-19.

³⁶ Buiter, Corsetti, and Roubini, 74; Vito Tanzi, Mario I. Blejer, and Mario O. Teijeiro, "Effects of Inflation on Measurement of Fiscal Deficits: Conventional Versus Operational Measures," in *How To Measure the Fiscal Deficit*, eds. M.I. Blejer and A. Cheasty (Washington D.C.: International Monetary Fund, 1993), 175-204.

³⁷ This requirement is also underpinned by authors who claim that fiscal constraints with respect to the growth rate of public expenditures are the most cost-effective. See Michael U. Dothan and Fred Thompson, "A better budget rule," *Journal of Policy Analysis and Management* 28, no.3 (Summer 2009).

³⁸ Alan J. Auerbach, "Budget windows, sunsets, and fiscal control," *Journal of Public Economics* 90, no. 1-2 (January 2006): 88.

cyclically adjusted budget balance rule. Others present a more complex adjustment of the Pact, such as the trail-blazing system of tradable deficit permits.³⁹ According to the economic requirements formulated above, the Pact's effectiveness remains doubtful. The Pact contains relative measures for the budget deficit and the public debt. Furthermore, it is a more medium-term oriented approach and incorporates a structural measure. However, nothing has been laid down with respect to the cyclical portion of the budget balance. Moreover, the Pact does not pay attention to the underlying parts of the budget balance, nor does it take into consideration the rate of inflation. The necessity of reform is further emphasized when the Pact is assessed according to the fundamental requirements of an ideal fiscal rule. Although its simplicity has been widely acknowledged, the enforceability of the Pact seemed to be the principal problem both before and after the 2005 reform.⁴⁰ This is in accordance with the above-mentioned lack of sufficient and effective penalties.

As a result, member countries of the European Union are employing and prolonging the application of domestic alternative rules. One may argue that this is simply to comply with the fiscal rules of the Pact. However, it seems more appropriate to conclude that the domestic rules are a means to achieve a more prudent fiscal policy given the shortcomings of the Pact and the stringent nature of those domestic rules. The abundance and stringency of the complementary rules is illustrated by the data that are compiled below. The data are based on the results of two rounds of surveys conducted by the Directorate-General for Economic and Financial Affairs (DG ECFIN) of the European Commission in 2006 and 2008 in order to map out the fiscal governance in EU member states. The questionnaires of these surveys requested information on the description and definition of the fiscal rules and their coverage, their statutory base, monitoring and enforcement mechanisms, as well as experience with respect to the rules directly from the EU Member States.⁴¹

Table 1: Domestic fiscal policy rules in effect since 2008

EU Member State	Budget Balance Rule	Expenditure Rule	Revenue Rule	Debt Rule
Austria	1			
Belgium	3	1		
Bulgaria		1		1
Cyprus				
Czech Republic		1		
Germany	3	1		1
Denmark	1	1	1	
Estonia	1			1
Greece				

³⁹ Jonas Fischer, Lars Jonung, and Martin Larch, "101 Proposals to reform the Stability and Growth Pact. Why so many? A survey," Economic Papers No. 267 (Brussels: Directorate-General for Economic and Financial Affairs European Commission, 2006): 4-21.

⁴⁰ Alves and Afonso, 221-224; Marco Buti, Sylvester Eijffinger, and Daniele Franco, "Revisiting EMU's Stability Pact: A Pragmatic Way Forward," *Oxford Review of Economic Policy* 19, no.1 (March 2003): 100-111; Jérôme Creel, "Ranking Fiscal Policy Rules: the Golden Rule of Public Finance versus the Stability and Growth Pact," Documents de Travail de l'OFCE No. 2003-2004 (Paris: Observatoire Français des Conjonctures Économiques, 2003): 3-12.

⁴¹ The original data are made publicly available at http://ec.europa.eu/economy_finance/db_indicators/fiscal_governance/documents/1-db_fiscal_rules_en.xls

Spain	2			3
Finland	2	1	1	
France	1	2	1	1
Hungary	1			1
Ireland	1	2		
Italy	2	2		
Lithuania	1	1	1	1
Luxembourg	1	1		1
Latvia			1	1
Malta				
Netherlands		1	1	
Poland				1
Portugal	2			2
Romania	1			1
Sweden	2	1		
Slovenia				2
Slovakia		1		1
United Kingdom	1			1
<i>Total</i>	<i>26</i>	<i>17</i>	<i>6</i>	<i>19</i>

Source: Based on own calculations from data from DG for Economic and Financial Affairs of the European Commission

A full description of each individual fiscal rule is included in Appendix A. For instance, Estonia and Portugal apply a balanced budget rule. Some member states apply more stringent rules than the Pact. For example, the neo-classical golden rule applies in the United Kingdom and Germany, Denmark targets strict structural surpluses, and Spain expects its general government to reach a budget surplus of 1 percent of GDP over the business cycle. Only three countries had not introduced their own fiscal rules when the survey was last conducted in 2008 (i.e. Cyprus, Greece, and Malta). Furthermore, Table 1 shows that the amount of domestic fiscal rules has increased since 2006.

The Stability and Growth Pact has established supranational directives with regard to fiscal policy. Yet, member countries maintain a lot of freedom in achieving them. The data show that this eventually leads to a broad set of different domestic rules. Furthermore, those numerous rules prove to be not all effective.⁴² In addition, most lack independent monitoring and have poor enforcement mechanisms in case of non-compliance. It is clear that uniformity is missing with regard to fiscal policy rules in the EU.

As a consequence, policymakers are facing a dilemma. On the one hand, the Pact seems to be insufficient to reach its economic objectives, establish uniformity, and could seem rather redundant considering the numerous (more stringent) domestic rules. On the other hand, a large portion of those domestic rules is not effective enough to devolve all fiscal power on member states. There are several possibilities to solve this problem. A first possible solution would be to use the current structure of simple supranational rules complemented by domestic rules to reach the most desirable fiscal policy. For instance, it could be made the responsibility of the member states to regulate the revenues and expenditures underlying the

⁴² Directorate-General for Economic and Financial Affairs European Commission, "Public finances in EMU – 2009," European Economy No. 5 (Brussels: Directorate-General for Economic and Financial Affairs European Commission, 2009): 89-93.

budget balance. However, as mentioned above, there exists a large difference between the effectiveness of the currently implemented domestic fiscal rules. Therefore, it would be necessary to co-ordinate the national responsibilities. For example, supranational policymakers could use the above-mentioned requirements as guidelines for the rules implemented by member states' authorities.

A second solution would be to profoundly reform the Pact once again. As mentioned above there have been an innumerable amount of proposals to revamp the Pact. Therefore, it would be difficult to agree upon the most appropriate reform that would remedy the Pact's shortcomings. For example, there exist both advocates and opponents of more supervision of the national fiscal policy by independent economic committees or institutions. Moreover, an unanimous decision of the member states would be necessary as a reform requires the alteration of the regulation of the Council of the European Union. Consequently, this solution seems fairly unlikely to occur, although it would enhance the European uniformity and make domestic fiscal rules superfluous.

5 Effects of fiscal rules on the fiscal stance in the Euro Area: empirical evidence

5.1 Overview of fiscal positions and fiscal rules in the euro area

Just as countries differ in their national fiscal rules, they differ in their fiscal positions and fiscal adjustments over time. To obtain an overview on the average fiscal position and the development over time, Figure 1, plots a number of relevant variables for the euro area aggregate for the period 1995-2010.

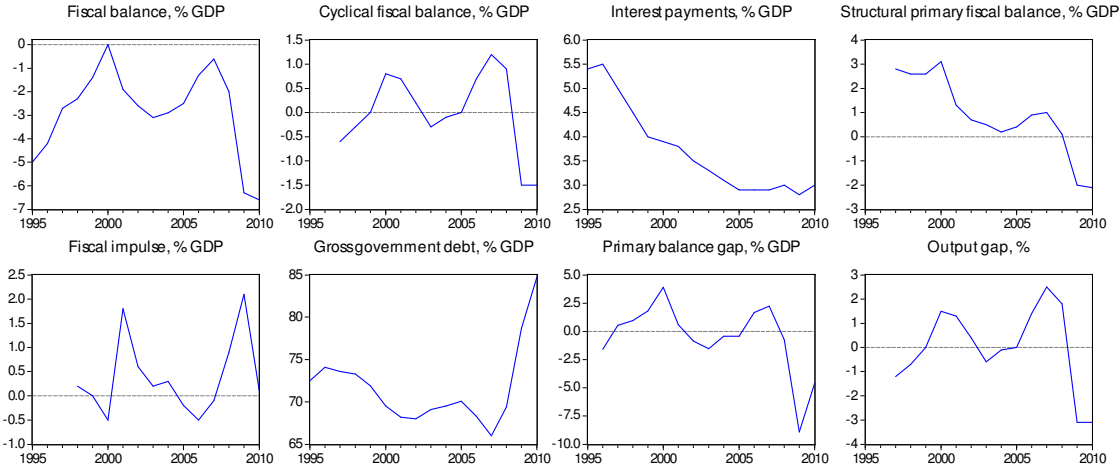


Figure 1: Fiscal adjustment, euro area aggregate, 1995-2010.
 Source: calculations with Eurostat and EU Commission data.

During the period 1999-2007, the euro area as whole essentially managed to satisfy the 3% norm for the total deficit. Also debt dynamics must be considered sustainable, helped also by a generally favourable business cycle and interest rates. Due to the financial crisis that started in 2008 and the protracted economic slowdown that follows –witnessed in the negative output gap–, fiscal balance have become much less favourable recently. The fiscal impulse, which is defined as the first difference of the structural balance, increases sharply reflecting the fiscal

stimulus package that have been adopted to counteract the effects from the financial crisis. The primary fiscal balance gap, which measures the difference between the current primary balance and the primary balance that would stabilize government debt at its current level, turns sharply negative, suggesting that fiscal sustainability is under stress.

These aggregate euro area fiscal dynamics are seen also in the individual country fiscal variables, even if in some cases more pronounced than others. One reason could of course be that course are not all hit to the same degree by the financial crisis. Another reason could be that countries differ in initial fiscal positions and the degree to which their fiscal rules are effective in restricting fiscal balances.

To capture the influence of the institutional features that foster the effective implementation of fiscal rules, DG ECFIN has constructed indexes of strength of fiscal rules, using information on (i) the statutory base of the rule, (ii) the body in charge of monitoring the respect of the rule, (iii) the body in charge of enforcement of the rule, and (iv) the enforcement mechanisms relating to the rule. Based on the strength index for each rule, a comprehensive time-varying Fiscal Rule Index (FRI) for each Member State was constructed. This FRI is calculated by summing up all fiscal rule strength indices in force in the respective Member State, weighted by the coverage of general government finances by the respective rule (to into account that e.g. a fiscal rule that applies to a local or regional government may not be relevant at a national level). Figure 2 displays this Fiscal Rule Index for the Euro area countries.

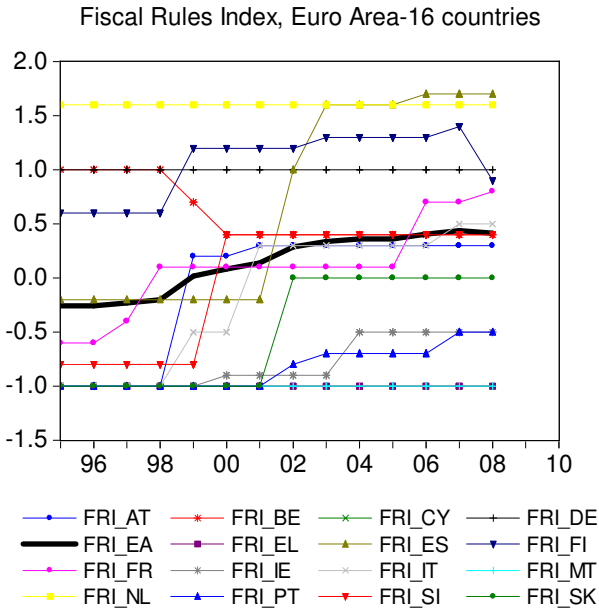


Figure 2: Fiscal Rules Index, Euro Area 1995-2008. Source: European Commission.

Countries in the euro area continue to display considerable variation in the characteristics of their fiscal rules, possibly more than one would expect in a common currency area. Over time, a small increase in the euro area average fiscal rule index is observed, suggesting an increasing importance of the fiscal rules in the euro area fiscal management. An interesting use of the fiscal rule index could be set as a benchmark/target for the domestic rules. Rules scoring low/not meeting requirements at all should be improved in their effectiveness during

the next periods. The advantage of such an approach seems obvious. National policymakers would maintain the freedom to design a fiscal policy that is effective on the one hand and suits national circumstances and preferences on the other hand. However, European uniformity as well as possible undesirable effects of one country's policy on another member state would be partially overlooked.

5.2 *Effects of fiscal rules: panel estimations for the euro area*

To analyse the effects of fiscal rules on the fiscal stance, we estimated panel-regressions for the 16 euro area countries for the period 1995-2008. We estimate the impact of the fiscal rule index on (1) the fiscal balance, (2) the primary fiscal balance, (3) government spending, (4) government revenue, (5) the structural primary balance, (6) the cyclical fiscal balance (7) the fiscal impulse, (8) the primary fiscal balance gap.

To do so, we add the Fiscal Rule Index to otherwise fairly standard estimations of eight different budgetary reaction functions that include the lagged dependent variable, the output gap, and the debt level. This approach enables to consider the essence of both the classical and the Keynesian aspects of fiscal policy rules as outlined in Section 2 and 3. The presence of the output gap reflects the importance of cyclical factors in fiscal variables, the presence of the debt level the impact from fiscal sustainability considerations. We include a constant and/or trend if they improve the estimation results further. Country-specific fixed or random effects were included in some case but are not reported.

Table 2: Panel estimation of the effects on fiscal rules on fiscal stance

Dependent variable	(1) Fiscal balance ^a	(2) Primary balance ^b	(3) Total government spending ^c	(4) Total government revenue ^d	(5) Structural primary balance ^e	(6) Cyclical fiscal balance ^f	(7) Fiscal impulse ^g	(8) Primary fiscal balance gap ^h
Constant	-		3.00*** (0.80)	8.10*** (1.81)	-0.32 (0.28)	0.16** (0.08)		-0.24 (0.64)
Lagged dependent variable	0.64*** (0.05)	0.71*** (0.05)	0.93*** (0.02)	0.79*** (0.05)	-0.76*** (0.05)	0.39 (0.05)	-0.15** (0.07)	
Output gap ⁱ	0.08 (0.06)	0.07 (0.06)	0.05 (0.06)	0.06 (0.05)	-0.12* (0.06)	0.26*** (0.02)	0.12** (0.06)	0.53*** (0.13)
Lagged debt ^j	-0.008** (0.003)	0.01** (0.005)	0.002 (0.004)	0.02* (0.01)	0.01** (0.003)	-0.001 (0.001)	0.001 (0.002)	0.01 (0.01)
Fiscal Rules Index ^k	0.41*** (0.13)	0.32** (0.15)	-0.24* (0.12)	-0.32 (0.22)	0.28** (0.13)	-0.005 (0.03)	-0.001 (0.12)	0.93*** (0.27)
Time trend	-	-0.0001 (0.0001)						

Adjusted R2	0.65	0.59	0.95	0.97	0.68	0.74	0.13	0.17
S.E. regression	1.70	1.67	1.36	0.99	1.57	0.44	1.62	3.00
Log likelihood	-384.38	-366.17	-332.7950	-262.34	-365.83	-122.24	-389.35	-403.47
Durbin Watson	1.50	1.63	1.87	1.94	2.03	1.66	1.99	1.49
Mean dependent variable	-1.42	1.68	44.84	43.39	1.32	0.20	0.12	0.35
No. Obs.	198	191	198	198	197	206	206	161

Notes: ***: significant at a 1% level. **: significant at a 5% level. *: significant at the 10% level.

^a Net lending /Net borrowing (-) as a % of GDP under the Excessive Deficit Procedure, source Eurostat.

^b Primary fiscal balance as a % of GDP, source Eurostat.

^c Total general government expenditure as a % of GDP, source Eurostat

^d Total general government revenue as a % of GDP, source Eurostat

^e Structural primary fiscal balance as a % of GDP, source: European Commission data.

^f Source: European Commission data

^g Fiscal impuls = $-\Delta$ (structural primary balance/GDP).

^h Source: own calculations

ⁱ Source: European Commission data

^j General government consolidated gross debt as a % of GDP, source Eurostat

^k Fiscal Rules Index compiled by the EU Commission.

The regression results in most cases confirm the existing literature: the effects of the output gap and lagged debt on the fiscal variables are similar to those found in other empirical estimations of fiscal balance equations (see e.g. Claeys (2008) and Ballabriga and Martinez-Mongay (2003))⁴³. An increase in debt contributes to a lower total balance (column (1)) - reflecting the interest burden- but also to a higher primary balance -reflecting a stabilizing mechanism as a high debt level increases the (perceived) need to improve the primary fiscal balance. The Fiscal Rules Index has in most cases a significant positive effect on the fiscal balance (both on the total fiscal balance and the primary fiscal balance (column (2))). This suggests that fiscal rules have had a deficit reducing effect and are in that sense important for the workings of fiscal policy in the euro area: stronger fiscal rules in a country and over time contribute to a lower deficit. Fiscal rules tend to have a negative effect on government spending (column (3)), while no significant effect on government revenues (column (4)).

In column (5), the reaction function for the structural primary fiscal balance is estimated, a measure that is closely linked to the fiscal stance and to the long-run fiscal sustainability. It is found that a stronger Fiscal Rule Index improves the structural primary fiscal balance, a finding that confirms the results of the European Commission (2010) for the sample of all EU countries.⁴⁴ A higher debt level also increases the structural primary fiscal

⁴³ Claeys, P. (2008), Rules, and their effects on fiscal policy in Sweden, Swedish economic policy review, 15, p.7-47. Ballabriga F, Martinez-Mongay, C., (2003), Has EMU shifted monetary and fiscal policies? In: Buti, M. (ed) Monetary and fiscal policies in EMU: interactions and coordination. Cambridge University Press, Cambridge

⁴⁴ See European Commission (2010), Public Finances in EMU 2009. We also estimated (1)-(8) for the entire sample of EU countries. In that case, results are in several cases consistent with Table 2.

balance indicating -as in column (2)- a stabilizing effect from high debt on the primary structural deficit. An increase in the output gap reduces the structural primary fiscal balance suggesting some pro-cyclicality in this discretionary part of the fiscal balance. In the literature, some studies find pro-cyclicality in the structural primary balance, while in others evidence for the more desirable property of anti-cyclicality is found. In the estimation for the cyclical fiscal balance, column (7), the output gap plays an important role, reflecting the role of automatic stabilizers; the Fiscal Rule Index does not seem to have an effect on the cyclical deficit. Column (8) displays the estimation results for the fiscal rule for the fiscal impulse. An increase of the output gap increases the fiscal impulse, implying again a pro-cyclical bias in discretionary fiscal policy. A higher fiscal rule index may reduce somewhat the fiscal impulse even if the coefficient is not estimated precisely.

To estimate the effect of the fiscal rules on the fiscal balance more specifically, we can also use the regression results in a more precise manner: if we put the coefficient on the fiscal rule index to zero in the estimated fiscal balance equation estimated in column (1) of Table 2, we would obtain an estimate of the fiscal balance in case there would not be any effect from fiscal rules on fiscal discipline and therefore on fiscal balances.

Figure 2 gives for the case of Belgium, and the estimated impact of fiscal rules on the fiscal balance as the difference between FBAL_BE_1 (blue line, deficit if no effect fiscal rules) and FBAL_BE_2 (red line, deficit with effect fiscal rules according panel estimation (1)). As one sees, the estimated impact of fiscal rules is not negligible. We can take the analysis even one step further by re-estimating panel estimation (1) and allowing country-specific slope coefficients for the fiscal rule index variable. In that case we allow for the possibility that countries differ in the way fiscal rules impact on fiscal variables; in the panel estimations earlier such country-specific elasticities for the Fiscal Rules Index were not considered. In the case of Belgium, this increases even further the estimated effect of fiscal rules, FBAL_BE_2 vs FBAL_BE_3 (green line, deficit with effect fiscal rules according panel estimation with country-specific FRI-slopes): the estimated coefficient is more than double in size as the original panel estimation that assumes equal slopes across the euro area countries. In the case of Belgium, the estimated difference is the largest of all countries. In other countries the difference with the first panel estimation without country-specific slopes is smaller. According to this estimation, the deficit moderating effect of fiscal rules can improve the fiscal balance by as much as 1%.

In a similar vein, we find in case of Austria that the effect of the fiscal rules is much smaller. In the case of Spain the effect of fiscal rules on the fiscal deficit is initially also small, but increases consistently over time. Also in the case of the Netherlands, the fiscal rules have some impact on moderating fiscal deficits and in this case there is no distinguishable difference between the panel estimation without and the estimation with country-specific slopes on the fiscal rules index. In the case of Germany, the effect of the fiscal rules index disappears in the panel regression with country-specific slopes on this variable. Greece forms a special case in the sense that its fiscal rule index reached the lowest (and negative) score of all countries. Given a positive coefficient in the panel estimation without and with country-specific slope on the FRI, this would imply that fiscal rules in the case of Greece actually contribute to a lower fiscal balance (higher fiscal deficit if one likes). Or more provocative: a reduction in fiscal rules would induce an improvement in the fiscal balance in the case of

Greece.

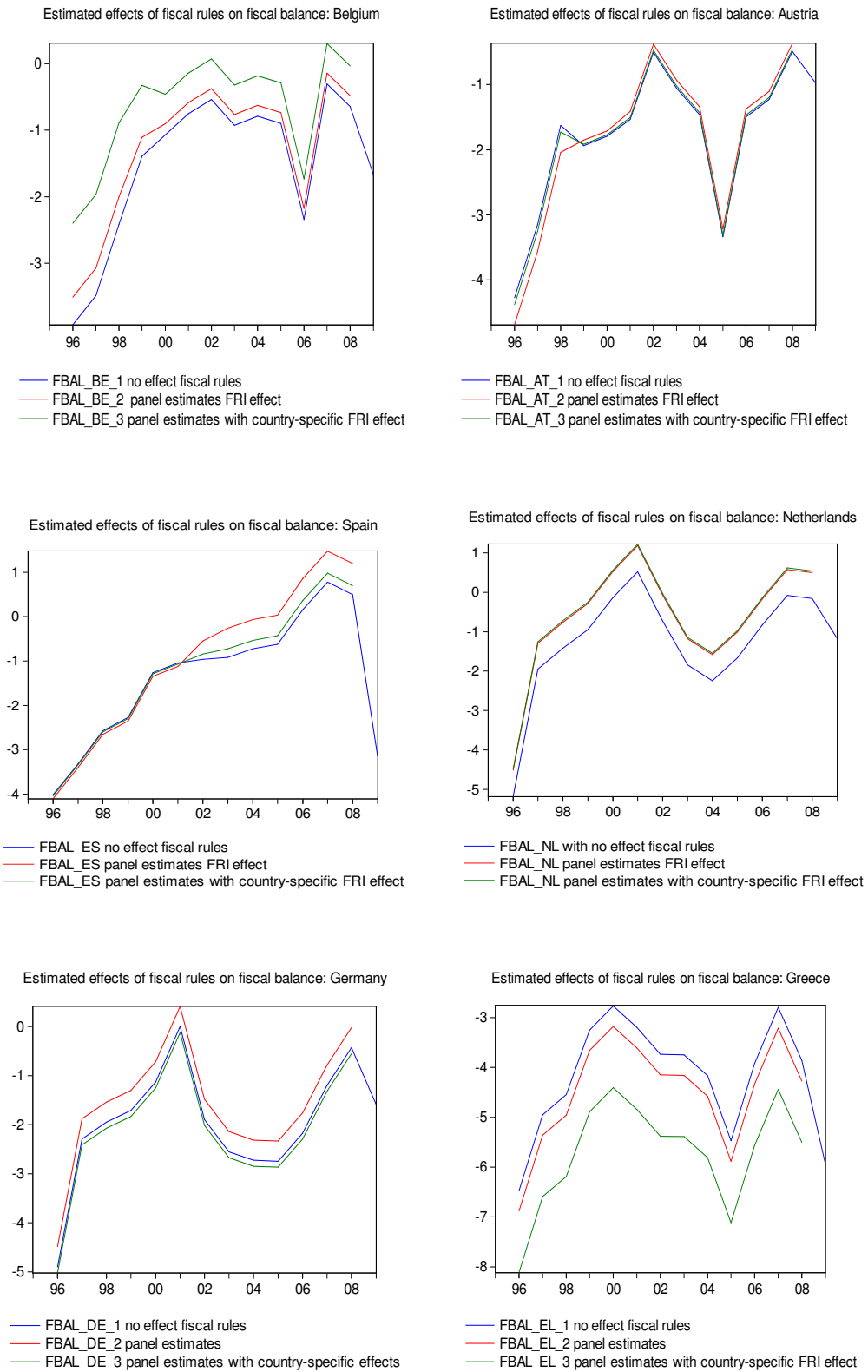


Figure 3: Estimated effects of fiscal rules: Belgium (BE), Austria (AT), Spain (ES), the Netherlands (NL), Germany (DE) and Greece (EL).

Taken together, these findings suggest that fiscal rules exert a non-negligible effect on fiscal balances in the euro area, even if the effects may have differed somewhat between countries and over time reflecting the idiosyncrasies in macroeconomic conditions, fiscal management and regulatory frameworks of the individual countries.

6 Conclusion

Although the amount of proposals of fiscal rules is extensive, the most significant fiscal rules that have been proposed and implemented, were briefly discussed in this paper. At the base of those rules is the decades-old contrast between a Keynesian stabilization policy requiring deficit spending and the more prudent (neo)classical approach. Some fiscal rules tried to reconcile both lines of thought (e.g. the cyclical balance and the structural budget policy). Others arose from their extremes (e.g. the functional finance). As learning from the past is a preparation for the future, the shortcomings of each fiscal rule were clearly presented in our overview. Finally, we can conclude from the overview that no fiscal rule is without shortcomings.

In addition to the fundamental requirements presented by Kopits and Symansky (1998), we also deducted requirements for an effective fiscal rule from the previous analysis. The presented economic requirements make up a framework for the future on which researchers and policymakers can base their decisions. The framework consists of the following five requirements: a fiscal rule should (1) comprise a relative measure, (2) correct for inflation, (3) refer to the underlying components of the budget balance, (4) embrace a medium term approach, and (5) take into account the stance of fiscal policy.

As the Stability and Growth Pact does not achieve satisfactory results in practice and in comparison to the handful of requirements provided, many European countries are implementing and prolonging the application of (sub)national alternatives (i.e. domestic fiscal rules). However policymakers are faced with a dilemma. On the one hand, the Pact seems to be insufficient and rather redundant considering the numerous domestic rules. On the other hand, a large portion of those domestic rules is not effective enough to devolve all fiscal power on member states. Nevertheless, since change is perceived necessary and another reform of the Pact improbable in the short run, the only solution to the problem is to maintain the Pact's fiscal constraints, but to complement them with better co-ordinated national responsibilities.

Our empirical estimates indicate that the existing framework of fiscal rules in the euro area –notwithstanding the inconsistencies in design, implementation and enforcement- did exert a non-negligible effect on fiscal balances in the euro area, even if the effects may have differed somewhat between countries and over time reflecting the idiosyncrasies in the macroeconomic conditions, fiscal management and regulatory frameworks of the individual countries.

Appendix A Description domestic fiscal policy rule in effect 2008

Country	Description	Type
AT	* Budget balance as % of GDP: Deficit targets for the CG, RG, and LG contained in a National Stability Pact within a multiannual budgetary setting.	BBR
BE	* Balanced budget rule for LG: mandatory balance of budgetary accounts. * Regional governments must register a surplus or, at least, a balanced budget by 2010 at latest. * Balanced budget rule for SS sector.	BBR
	* Real growth of health care expenditure must be equal or lower than a pre-established figure.	ER
BG	* Ceiling on the size of the government sector: 40% of GDP.	ER
	* Outstanding portion of the consolidated government debt at the end of each year may not exceed the previous year, as a ratio to the projected GDP.	DR
CY,MT,EL	* No information	
CZ	* Inserted in a medium term expenditure framework (MTEF), covers 2 years beyond the budget year. Expenditure limits are set to achieve a pre-defined deficit target.	ER
DE	* Golden rule: public borrowing is only allowed if it does not exceed public investment. Exceptions allowed for stabilisation purposes only. * Balanced budget rule for LG ('administrative' and capital accounts). * Golden rule: the credit volume must not exceed the investment volume, except for dealing with adverse macroeconomic developments.	BBR
	* Until a balanced structural budget is reached, the growth rate of expenditures must be lower than the growth rate of overall revenues.	ER
	* Raising credits by the communes requires authorisation by the supervisory agencies and must only be used to finance investments. Numerical limits and ceilings.	DR
DK	* Structural budget surpluses in the interval 0.75 - 1.75% of GDP in the years towards 2010, surpluses or at least balance up to 2011-2015.	BBR
	* Real public consumption on a national account basis must not increase by more than certain amounts per year. Besides, total ceiling of 26.5% of cyclically adjusted GDP in 2015.	ER
	* Direct and indirect taxes cannot be raised.	RR
EE	* Balanced budget rule for GG.	BBR
	* Limited issuance of new debt: (1) From 2004 the debt ceiling is 60%. (2) From 1994: annual repayment must not exceed 20% of budgeted revenues.	DR
ES	* The budgetary objectives take into account the economy's cyclical position, allowing budget deficits in periods of slow growth but requiring surpluses in periods of high growth. The overall deficit during downturns must not exceed 1% of GDP. In addition, a deficit of up to 0,5% of GDP is allowed to finance public investment under certain conditions. * LG must register a balanced budget or a surplus.	BBR
	* Total LG debt cannot exceed 110% of current revenues and must register positive savings. * Restrictions on possible loans. * For each RG, indebtedness must be the same (nominal terms) at the beginning and at the end of each year.	DR
	* Target of structural surplus of 1% by the end of the parliamentary term. Cyclical or other short-term deviations allowed, if they do not jeopardise the reduction of the CG debt ratio. CG deficit must not exceed 2,5% of total output. * Local Government Act. Regulates municipalities in bringing their budgets in balance. Contains provisions on budget and financial plans, financial statements, reporting on operations, and financial supervision. * At the beginning of the electoral period, CG sets a ceiling for expenditure over this period.	ER
FR	* Counter-cyclical regulation of unemployment security contributions and earnings-related pension contributions using so-called EMU-buffer funds that exist in the unemployment insurance fund in the private sector pension scheme.	RR
	* Golden rule: voted budgets must be in balance; ex post deficits cannot exceed 5% of current revenues (10% for small municipalities).	BBR
	* Targeted increase of CG expenditure in real terms. * Annual vote of the NP on the national ceiling for health expenditure in terms of volume.	ER
	* CG to define the allocation of higher than expected tax revenues ex ante. * Each increase in the SS debt has to be matched by an increase in revenues. Thus, the repayment of the SS debt should not be prolonged.	DR
HU	* Government presents a budget bill to the NP that ensures the primary balance, in the Maastricht sense, being in surplus.	BBR
	* The annual ceiling of the debt-creating commitments of LG (borrowing and related charges, bond issues, etc.) is set in proportion to the capacity to repay debt.	DR
IE	* For any given year, LG must have a net total deficit of no more than a fixed nominal amount. In addition, the Health Service Executive, which is part of CG, is prohibited from borrowing or running a deficit.	BBR
	* 1% of GNP is set aside from government expenditure and automatically paid into the National Pension Reserve Fund for investment on behalf of the State.	ER
	* Rolling 5-year multi-annual capital envelopes set out capital investment by Ministerial Group for each year	

	in the 5 year period. The envelopes are based on a commitment to keep capital investment around 5% of GNP.	
IT	* According to article no. 119 of Italian constitution, Local and Regional bodies are allowed to carry on deficit only for financing investments. * Healthcare pact. Agreement to regulate transfers from government to regions to finance the National Health Care System. The level of the transfers is subject to the fulfilment of certain conditions.	BBR
	* Expenditure ceiling for pharmaceutical products: 16.4% (14% territorial, 2.4% hospital) of the financing level for the National Health Service contributed by the State. * Internal Stability Pact provides LG with measures to limit expenditure. Expenditure evolution depends on kind of entities (regions, municipalities, provinces) and year to which it refers.	ER
LT	* LG must approve balanced budgets.	BBR
	* If the GG budgets showed a deficit on average over the past 5 calendar years, then the annual growth rate of the planned State budget appropriations may not exceed 0,5% of the average growth rate of the State budget revenue of those 5 years.	ER
	* The deficit of the approved State budget shall be reduced by excess revenue of the current year.	RR
	* Limits set on CG net borrowing.	DR
LU	* Annual budget balance rule with constitution of reserve funds for healthcare, long-term healthcare and pension private sector schemes.	BBR
	* In the course of the legislative period, public expenditure growth is maintained at a rate compatible with the medium term economic growth prospects (no formal quantified target, but implicit).	ER
	* CG maintains public debt at a low level. New public debt can be issued to finance rail infrastructure projects. No formal quantified target, but implicit.	DR
LV	* The CG and SS budgets are divided into base and special budgets. The latter must be fully financed by earmarked revenues. Special budgets are devoted to social needs, mainly pension payments.	RR
	* LG can only increase borrowing and loan guaranties up to certain limits set by CG.	DR
NL	* Any setbacks against the expenditure ceilings must be compensated within the sector; windfalls have first to be used to compensate for setbacks within that sector. Windfalls can be used for new expenditure as long as total expenditure is below the ceiling.	ER
	* At the beginning of the electoral period, coalition agrees on the desired development of the tax base. This multi-year path is adhered to during the period. Additional tax increases are compensated through tax relief and vice versa. Only changes in statutory tariffs are taken into account. Increases in the tax income due to economic developments are not considered. The rule obliges the government to preallocate higher than expected revenues.	RR
PL	* Public debt must not exceed 60% of GDP. If the debt exceeds 60% of GDP any government borrowing is forbidden in the subsequent year, which means that public accounts should be in balance or surplus.	DR
PT	* Budgets of services with financial and administrative autonomy must be in balance or positive. * The target is a nominal budget balance.	BBR
	* Net indebtedness for LG capped at 125% of previous year's revenues, a ceiling for medium and long term loans (100%) and short-term loans (10%). Net debt growth ceiling for LG capped at 0%.	DR
	* Net indebtedness ceilings for autonomous RG are defined annually in the State budget.	
RO	* Budget balance rule for LG.	BBR
	* LG cannot contract or guarantee loans if their annual public debt service (principal payment, interest, commissions) including the loan they want to contract, is higher than 30% of their own revenue.	DR
SE	* Local Government Act: LG are obliged to balance their budgets. * A surplus for the GG in terms of 1% of GDP over the cycle targeted.	BBR
	* Nominal expenditure ceiling for CG and extra-budgetary old-age pension system targeted.	ER
SI	* The debt/GDP ratio of GG and non-financial public entities (classified outside GG) cannot exceed 40% of GDP. * The total payment of principal and interest in each year must not exceed 8% of revenues of the previous year. LG cannot borrow abroad. Any LG borrowing needs approval of the ministry of finance.	DR
	* Expenditure not considered in the State budget law can only be executed if its total amount does not exceed 1% of total expenditure approved in the budget law and the deficit is not increased. Allows increasing expenditure in good times. Initially, the rule set a limit of 15%.	ER
SK	* Borrowing limits for RG and LG: (1) Total debt cannot exceed 60% of current revenue in the previous budget year in nominal terms (i.e. capital revenues and revenues from financial transactions are excluded). (2) Annual instalments to reimburse debt cannot exceed 25 % of revenue in the previous budget year in nominal terms.	DR
	* Golden rule: GG borrowing only allowed for investment, not to fund current spending. Performance against the rule is measured by the average surplus on the current budget as % of GDP over the economic cycle.	BBR
UK	* Sustainable investment rule: public sector net debt as a proportion of GDP will be held at a stable and prudent level over the economic cycle. Other things equal, net debt will be maintained below 40% of GDP over the economic cycle.	DR

Note: BBR: Budget balance rule, ER: Expenditure rule, RR: Revenue rule, DR: Debt rule, GG: General government (includes CG, RG, LG, and SS), CG: Central government, RG: Regional government, LG: Local government, SS: Social security, NP: National parliament

Source: Directorate-General for Economic and Financial Affairs of the European Commission