Fiscal sustainability in EU and current financial/ economic crisis

Primož Dolenc* and Igor Stubelj

Faculty of Management Koper,
University of Primorska,
Koper, SI-6000, Slovenia
E-mail: primoz.dolenc@fm-kp.si
E-mail: igor.stubelj@fm-kp.si
*Corresponding author

Abstract: This paper tackles the question of fiscal sustainability in current times of fiscal and economic crisis. We analyse how much space do fiscal policies have in EU member states for battling the crisis under the assumption that they want to remain fiscally sustainable. We use a derivative from Pasinetti's approach – a derivative indicates using cyclically adjusted data for budget balance in order to avoid pro-cyclical bias of Pasinetti's approach. We have confirmed our hypothesis and found that most EU member states have been fiscally sustainable in past (from 2000 onwards). Further, we have found that sustainable budget balance in these countries is moderate deficit. And last, we estimate that more than half EU member states still have some manoeuvre in public spending to tackle the economic crisis, and still remain fiscally sustainable.

Keywords: public finance; sustainability; budget balance; deficit; public debt.

JEL Classification Codes: E62, H72, H74.

Reference to this paper should be made as follows: Dolenc, P. and Stubelj, I. (2010) 'Fiscal sustainability in EU and current financial/economic crisis', *Int. J. Sustainable Economy*, Vol. 2, No. 1, pp.80–91.

Biographical notes: Primož Dolenc graduated from University of Ljubljana, Faculty of Economics with a Doctorate in Finance. His expertise is corporate and public finance with a special research interest in financial markets and labour market economics. He is an Assistant Professor on the Faculty of Management, responsible for Corporate Finance, Financial Management and Financial Economics. He was the head of money market operations at the State Treasury, executive director for finance in a larger corporation and director of treasury department in a bank.

Igor Stubelj graduated from University of Primorska, Faculty of Management Koper with a Master in Financial Management. His expertise is corporate finance with a research interest in the fields of company valuation, cost of capital and financial markets. He is a Lecturer of Corporate Finance and a Doctorate student on the Faculty of Management. He was an Executive Director in a family-owned company and he has work experience in finance operations in private-owned companies.

1 Introduction

In recent financial crisis, economies are forced to undertake necessary policy actions to overcome effects of financial crisis. Lately, most of the EU policy makers (besides policies in the USA and other economies) already adopted some policy measures that usually involve massive use of public funds, used directly or indirectly in their economies aiming to boost economic growth, tackle liquidity problems of banking sector, etc. The use of public funds resulted in many academic and professional debates; not only on the effectiveness of such policy actions, but also because of fears in fiscal sustainability of such actions.

It is a serious academic and practical question, what is a sustainability of fiscal stance. Many theories have been developed and several empirical solutions[1]. In EU and EMU so called Maastricht criteria have been accepted as a standard for fiscal limitations in EMU member states and candidates. However, Maastricht criteria have been subject to many critics and changes since their adoption. Nowadays, current Stability and Growth Pact requires countries to have their cyclically adjusted balances close to zero. But also this interpretation raises several practical questions, one being long-run horizon and how to measure it technically. Models have been developed for long-run sustainability assessment, but they are rather unpopular in their practical use; at least because there is no clear cut such as – for example – 3% and 60% of GDP for budget balance and public debt, respectively.

This article tries to focus on measurable limitations for fiscal policy in EU member states in next two years. Our main hypothesis is the following:

> "Most EU member states have a relatively large manoeuvre for adjustment of their fiscal policy in 2009 and 2010, and still remain in line with sustainability conditions for fiscal stance".

We have confirmed the above hypotheses and found that:

1 most EU member states have been fiscally sustainable in past (from 2000 onwards)

2 their sustainable budget balance is moderate deficit

3 more than half of them still have some manoeuvre in public spending to tackle the economic crisis and still remain fiscally sustainable.

The article is organised as follows. Section 2 reviews some theories and empirical studies on fiscal sustainability and introduces the underlying theory of our empirical analysis. In Section 3, data and methodology is described. Section 4 with three subsections concentrates to results of the analysis and offers discussion on these results. We sum up with concluding remarks and some policy implications.

2 On fiscal sustainability

Academic studies on fiscal sustainability can be divided in two main groups:

1 Studies that focus on (long term) cointegration between public revenues and consumption.

2 Studies that analyse the sustainability of fiscal stance thought the perspective of (if simplified) sustainable (growth of) public debt on condition of some macroeconomic parameters.

The first group of studies focuses on cointegration between public revenues and consumption. There are basically four types of empirical solutions:

1 Hamilton and Flavin (1986) and Wilcox (1989).

2 Trehan and Walsh (1988).

3 Ahmed and Rogers (1995), Hakkio and Rush (1991) and Quintos (1995).

4 Bohn (1998).

These analyses all start from partial equilibrium model and assume no future changes in structural form of the economy, they all use some kind of autocorrelation and cointegration tests and in fact analyse if public revenues follow adequately public consumption (and vice versa) on long run. But even though these analyses might be most reliable in determining the long-run fiscal sustainability in EU economies, none of these solutions help in determining the simplified (i.e. numerically determined) limit in public spending of economic policy under current macroeconomic conditions and in attempt to find what d.f. in current policy actions are.

The second group of studies take as an underlying assumption (if simplified) that developments in public debt are crucial for estimation of fiscal sustainability – these studies usually seek for the optimal level of public debt. Economic theory finds the fiscal sustainability in the level of budget deficit that does not change (significantly) public debt–budget income ratio (Easterly et al., 1995). According to Collignon and Mundschenk (1999), such a definition relates not only to solvency of public finances (that is the capability of the country to service its public debt's obligations) but also primarily on its willingness to fulfil these obligations. If a country allows a constant growth of public debt, it can be eventually trapped into so-called *Ponzi trap*, which can at the end cause the inability to service its public debt's obligations. McCallum (1984) argues that is still better for a country to finance its budget deficit with borrowing and not inflationary (with money printing). In his analysis McCallum has not explicitly suggested what the optimal level of public debt is, but has proved, that long-term sustainable growth of public debt-to-GDP ratio should not exceed the average level of (nominal) interest rate, paid on public debt.

Several analyses[2] have tried to determine the proper fiscal constraints with one of the basic macroeconomic identities – so called (dynamic) budget constraint:

$$\frac{\mathrm{d}B}{\mathrm{d}s} = G + H - T + i \cdot B, \tag{1}$$

where dB/dS, increase (+) or decrease (–) of public debt; G, budget consumption (without interests payments on public debt); H, transfer payments; T, collected taxes; $i \cdot B$, interests payments on public debt and s, time (years).

Blanchard et al. (1990) argue that the question of fiscal sustainability is mostly the question whether a country's long-term trend of public debt accumulation goes over limit; the best indicator is, therefore, public debt-to-GDP ratio. Public debt-to-GDP ratio is a function of two factors. The first is primary balance; it shows current budget spending, transfer payments and tax policy. The other factor – product of accumulated public debt (relative to GDP) and the difference between real interest rate and growth of

GDP – shows past evolution of public finances. If the real interest rate exceeds the growth of GDP, a country needs primary surplus to keep the level of public debt-to-GDP ratio constant. Authors explain the fiscal policy as a complex of rules (on public spending, transfer payments, taxes, etc.) and inherited public debt (relative to GDP). Sustainable fiscal policy is considered as policy, which enables the public debt-to-GDP ratio to converge into its initial level.

There is also Passineti's approach (Pasinetti 1998)[3] which is based on Blanchard's definition of fiscal sustainability, yet it is improved in a way to offer a clearer cut in defining sustainability of fiscal stance. To simplify, he defined two conditions of fiscal sustainability:

$$\frac{D}{Y} \geq -\theta_n \cdot \frac{B}{Y} \tag{2}$$

and

$$\frac{D_{\mathrm{p}}}{Y} \geq \left(i - \theta_n\right) \cdot \frac{B}{Y}, \tag{3}$$

where $D = -\mathrm{d}B$, total (yearly) budget balance (this defines the change of public debt in one year); D_{p}, (yearly) primary budget balance; $B > 0$, public debt; Y, nominal GDP; θ_n, yearly nominal growth of GDP; i, (yearly) nominal interest rate on public debt.

Public finance's sustainability can, therefore, be defined with a connection to:

1 total budget balance ((2) and Figure 1)

2 primary budget balance ((3) and Figure 2).

Figure 1 Fiscal sustainability in relation to total budget balance

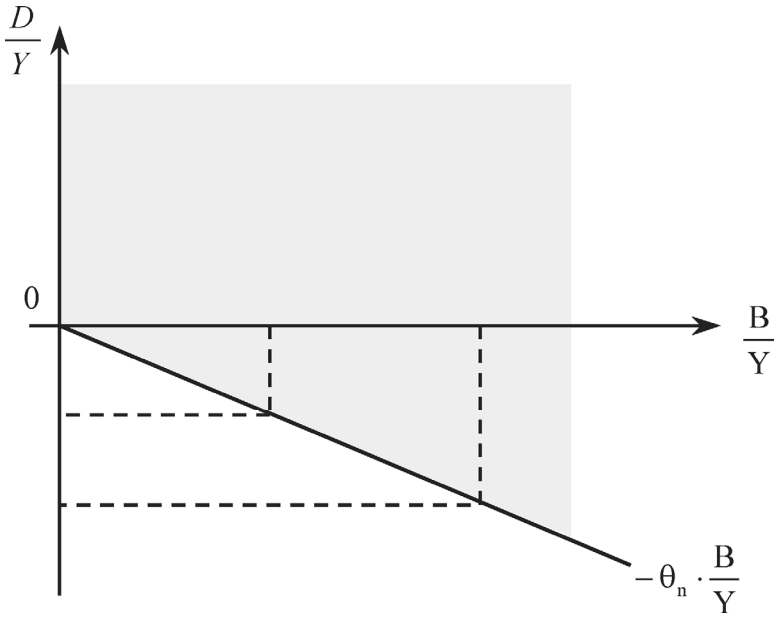
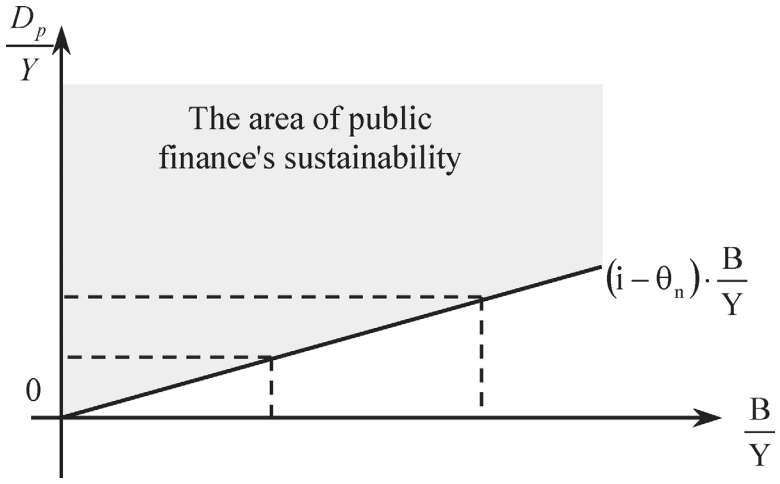


Figure 2 Fiscal sustainability in relation to primary budget balance



The core of Pasinetti's analysis is therefore the following: public debt-to-GDP ratio and budget balance-to-GDP ratio are connected with well-defined relation. At a given economic growth, higher public debt-to-GDP ratio corresponds to higher total budget balance-to-GDP ratio. At the same time, a country should have – in order to stay in the area of fiscal policy's sustainability and if a nominal interest rate on public debt exceeds economic growth – higher primary budget surplus if it has higher public debt-to-GDP ratio.

Note that Passinetti's solution offers a good (and in fact simple) analytical tool in determining the flexibility of policy measures in recent times of expected expansion of public expenses used to ease the effects of financial and economic crises. We need only to take into consideration condition from (2) and (3) in recent years and – of course – predictions for immediate future period.

3 Data and methodology

In order to find as broad insight in fiscal position of EU zone as possible, we included in our analysis all EU member states.

We use Passineti's (1998) approach, explained above. The analysis is based on yearly data for the period from 2000 until 2010[4] and the variables included are those, needed to calculate Equations (2) and (3):

1 total and primary budget balance

2 gross public debt

3 cost of public debt

4 yearly economic (i.e. GDP) growth.

Definitions of total and primary budget balance, and gross public debt are in accordance to ESA95 standards. This data was obtained from European Commission (2009)

databases. The implicit interest rate (cost of debt) is estimated by European Commission as actual interest payments as percentage of gross debt at end of t–1.

In order to avoid pro-cyclical bias, which occurs when using the selected methodology and original data, cyclically adjusted data on budget balance was taken into consideration in 2nd phase of analysis. European Commission estimate cyclical adjustment of government budget balances with two methods:

1 Based on production function (potential GDP), this constitutes the reference method when assessing the stability and convergence programmes.

2 Hodrick–Prescott filter (trend GDP) which is used as a backup method (European Commission 2009). In our analysis, we used data that is cyclical adjusted with the first method. In this case, the data for primary budget balance and public debt (which is not cyclically adjusted by European Commission) was corrected for the effect of changed total budget balance. It is logical – for example – that higher (cyclically adjusted) budget deficit caused higher current public debt and is accompanied with higher primary budget deficit. For cyclically adjusted public debt, the difference between cyclically adjusted and original budget balance was subtracted from current public debt. For cyclically adjusted primary budget balance, the difference between cyclically adjusted and original budget balance was added to current primary budget balance.

To simulate possible flexibility of policy makers in 2009 and 2010, the following procedure was used:

1 Current total budget balances in years 2009 and 2010 were estimated so that condition from Equation (2) holds, i.e.:

$$\frac{D}{Y} + \theta_n \cdot \frac{B}{Y} = 0. \tag{4}$$

2 Public debt-to-GDP and primary budget balance was simulated under new estimates for current total budget balances from step 1.

3 The validity of condition from Equation (3) was tested under new estimates for public debt-to-GDP and primary budget balance; if the condition does not hold, current total budget balance was simulated until both conditions from Equations (2) and (3) hold.

4 Results and discussion

Past data shows that most EU member states were in line with sustainability criteria we used for analysing fiscal stance. Ignoring the countries that 'violated' sustainability criteria one or two times, 10 (out of 27) now EU member states had serious problems in fulfilling the selected criteria for fiscal stance. Tables 1 and 2 show cross-country estimates of fiscal sustainability under the two criteria (using cyclically adjusted data).

Czech Republic had negative values for sustainability criteria in the whole period, except in years 2004 and 2007. Simulations for 2009 and 2010 show negative figures as well. France, Germany, Greece, Hungary Malta and UK had negative values for both

criteria almost the whole period. Estimates for Germany reflect better performance in 2009 and 2010, while other countries in this group are exposed to negative figures in 2009 and 2010 unless they change their fiscal policy. Other countries with negative past values for sustainability conditions have mixed periods with negative values.

To sum up, we might say that selected economies enter year 2009 (and onwards) fiscally sound. But how many d.f. do they have for tackling unexpected situation, like current financial and economic crisis? How much of GDP can they afford for policy measures and still sustain positive fiscal stance?

Table 1 First sustainability measure: sum of total budget balance-to-GDP ratio and economic growth times public debt-to-GDP ratio

	2000	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Austria	0.2	1.0	1.0	0.4	*–1.4*	1.4	0.8	1.4	1.2
Belgium	2.7	1.9	2.1	2.0	2.9	0.1	3.0	2.0	1.6
Bulgaria	13.5	12.1	8.4	6.2	12.3	10.3	15.5	11.8	17.2
Czech republic	0.8	0.3	*–2.9*	*–3.1*	1.8	*–1.3*	*–1.0*	*0.0*	*–0.5*
Cyprus	1.9	0.5	*–3.4*	*–2.3*	0.5	1.6	3.2	8.0	6.0
Denmark	1.7	*–4.9*	1.0	1.4	3.7	6.5	5.5	4.5	3.9
Estonia	6.4	4.8	4.0	5.1	4.5	4.7	5.6	4.5	0.5
Finland	9.3	2.6	5.5	3.8	4.7	4.8	6.3	7.2	6.5
France	0.6	0.7	*–1.5*	*–2.1*	*–1.1*	*–0.4*	0.3	*–0.1*	*–0.9*
Germany	2.1	*–1.8*	*–2.7*	*–2.7*	*–1.6*	*–1.5*	0.7	2.0	1.1
Greece	2.6	*–0.4*	*–0.8*	*–1.0*	*–3.7*	*–2.4*	*–0.3*	*–1.9*	*–1.3*
Hungary	*–1.4*	*–2.5*	*–6.7*	*–5.4*	*–5.3*	*–7.4*	*–9.1*	*–4.9*	*–3.4*
Ireland	12.2	6.4	5.2	4.2	5.3	6.8	8.2	4.0	*–6.4*
Italy	4.3	0.4	0.5	*–0.3*	0.4	*–1.7*	0.0	1.7	0.7
Latvia	10.5	8.8	8.9	9.9	15.5	21.5	22.6	23.5	11.3
Lithuania	*–1.4*	*–2.0*	*–0.6*	*–0.4*	*–0.6*	0.6	0.3	*–0.6*	*–1.7*
Luxemburg	5.7	5.6	2.6	2.6	0.4	2.0	2.9	3.2	2.8
Malta	*–5.8*	*–6.0*	*–4.8*	*–8.7*	*–3.3*	*–1.6*	*–1.2*	*–1.2*	*–3.0*
Netherlands	4.4	*–2.0*	0.4	*–0.4*	1.2	3.6	3.9	2.6	2.6
Poland	0.9	*–3.2*	*–2.8*	*–3.8*	*–1.3*	*–1.1*	*–0.2*	2.4	1.2
Portugal	*–0.4*	*–1.2*	*–0.8*	*–1.1*	*–0.6*	*–3.4*	*–0.8*	0.5	*–0.2*
Romania	7.1	9.4	6.3	5.7	3.2	1.4	*–0.6*	*–1.1*	*–1.4*
Slovenia	*–0.9*	*–0.7*	1.1	0.4	0.6	0.7	0.8	2.2	1.0
Slovakia	*–5.7*	*–1.2*	*–3.6*	2.4	3.2	1.0	0.3	0.8	0.2
Spain	2.8	2.5	2.5	3.2	3.2	4.5	5.3	4.7	0.2
Sweden	5.9	3.4	1.1	1.7	2.9	4.0	3.9	4.9	3.0
UK	5.1	2.2	*–0.1*	*–1.2*	*–1.5*	*–1.8*	*–0.6*	*–0.8*	*–2.5*

Note: negative (i.e. unsustainable) values are in italics.

Table 2 Second sustainability measure: difference between primary budget balance-to-GDP ratio and interest rate spread over economic growth times public debt-to-GDP ratio

	2000	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Austria	0.6	1.5	1.4	0.7	*–1.5*	1.4	0.8	1.5	1.1
Belgium	2.2	1.1	1.7	1.5	2.7	0.0	3.0	2.0	1.6
Bulgaria	13.9	12.5	10.2	7.6	12.9	10.2	14.8	11.2	16.2
Czech republic	0.7	*–0.3*	*–3.6*	*–3.3*	1.8	*–1.0*	*–0.8*	0.1	*–0.6*
Cyprus	3.8	1.9	*–2.1*	*–1.4*	2.0	2.7	4.2	9.1	6.7
Denmark	1.6	*–5.6*	0.9	1.2	3.6	6.7	5.5	4.4	4.0
Estonia	6.7	5.3	3.8	5.2	4.3	4.5	5.3	4.4	0.3
Finland	9.0	2.0	5.7	4.2	5.1	5.2	6.6	7.4	6.8
France	0.5	0.5	*–1.8*	*–2.5*	*–1.4*	*–0.6*	0.3	*–0.2*	*–1.1*
Germany	2.4	*–1.7*	*–2.7*	*–2.6*	*–1.4*	*–1.0*	0.8	1.9	1.6
Greece	1.6	*–0.7*	*–0.7*	*–1.2*	*–4.3*	*–2.8*	*–0.5*	*–2.0*	*–1.2*
Hungary	*–2.0*	*–3.1*	*–7.8*	*–6.4*	*–6.3*	*–8.3*	*–10.1*	*–5.5*	*–3.8*
Ireland	12.5	6.8	5.6	4.5	5.8	7.2	8.7	4.1	*–6.7*
Italy	5.7	0.7	0.7	*–0.1*	0.8	*–1.8*	*–0.3*	1.4	0.0
Latvia	7.2	6.3	8.4	9.2	14.3	21.2	22.1	22.5	9.8
Lithuania	*–1.3*	*–2.1*	*–0.6*	*–0.6*	*–0.7*	0.6	0.2	*–0.8*	*–1.8*
Luxemburg	6.5	6.4	3.1	3.2	0.8	2.3	3.1	3.4	2.9
Malta	*–6.9*	*–6.9*	*–5.3*	*–9.4*	*–3.5*	*–1.8*	*–1.5*	*–1.6*	*–3.9*
Netherlands	4.9	*–2.6*	0.8	*–0.2*	1.5	4.2	4.7	3.1	3.0
Poland	0.7	*–3.5*	*–3.2*	*–4.2*	*–1.4*	*–1.3*	*–0.4*	2.3	1.0
Portugal	*–0.7*	*–1.6*	*–1.1*	*–1.2*	*–0.7*	*–3.7*	*–1.0*	0.4	*–0.2*
Romania	4.2	8.0	5.9	5.5	3.1	1.4	*–0.6*	*–1.3*	*–1.7*
Slovenia	*–1.5*	*–1.0*	0.9	0.4	0.5	0.6	0.7	2.2	0.8
Slovakia	*–6.2*	*–1.3*	*–3.4*	2.2	3.1	1.2	0.3	0.6	0.0
Spain	2.6	2.5	2.2	2.6	2.6	4.2	5.0	4.5	0.0
Sweden	6.3	3.3	1.2	1.6	2.8	3.9	4.0	5.0	3.3
UK	5.1	2.4	*–0.2*	*–1.4*	*–1.8*	*–2.0*	*–0.7*	*–1.0*	*–2.9*

Note: negative (i.e. unsustainable) values are in italics.

Our main preoccupation for the analysis is in fact not the past, but the future. Policy makers (and academics) have been debating largely lately on policy measures that have to be undertaken in order to battle current financial and economic crisis. Usually, large economic programmes are argued and accepted (such as in the USA, France, UK, Germany, etc.), involving mass of fiscal budget funds for direct and indirect support of the economy, nationalisation of banks, etc. These policy measures account couple of percentage of GDP and usually end-up in expansion of budget deficit or significantly lowering budget surplus. Our aim here is not to judge and analyse the potential effect of such policy measures, but strictly offer a plain technical solution answering the question, how much space a country has for funding these policy measures and still sustain fiscal sustainability.

The answer offered is two-sided. First, we calculate for each selected country, what total budget balance is sustainable in 2009 and 2010 (under our sustainability set of criteria). Second, we calculate the difference in budget balance in 2009 and 2010, respectively, against estimated cyclically adjusted figures for 2009 and 2010 (estimates by European Commission). We even believe that these figures are more useful: these figures namely show how many percentage of GDP these countries can really spend on crisis policy measures keeping in mind cyclically adjusted movements of fiscal policy.

Figure 3 shows estimated sustainable total budget balance-to-GDP ratio in 2009 and 2010. We can see that in most countries the maximum budget deficit would be up to 2%. Some countries (e.g. Bulgaria, Cyprus and Poland) have more space which is mostly due to low public debt, high economic growth and low interest rate on public debt[5]. Hungary, Latvia and Ireland are most vulnerable (probably due to relatively low expected economic growth).

On the other side, we are mostly interested, how much d.f. have these countries for tackling economic crisis. Because the estimated figures by European Commission are from 2nd half of 2008, it is very likely to expect that these estimates have not fully taken into consideration countries' responses to crisis. The figure below shows how countries can change their (cyclically adjusted) budget balance (i.e. how much more they can spend) and still remain fiscally sustainable according to our criteria. The negative values signify that a country could increase its budget spending (i.e. lower the budget surplus or increase its budget deficit) with respect to estimates for (cyclically adjusted) budget balance before fully taken into consideration responses to crisis. Bulgaria, Finland and Cyprus have more than 5% open space (Bulgaria as much as 10%). We find most critical these countries that would have to decrease public spending in order to stay fiscally sustainable. Most vulnerable in this respect are UK, Latvia and Ireland with about 5% required decrease in public spending in order to achieve fiscal sustainability according to these criteria (Figure 4).

Figure 3 Estimated sustainable total budget balance (as % of GDP) in 2009 and 2010 (see online version for colours)

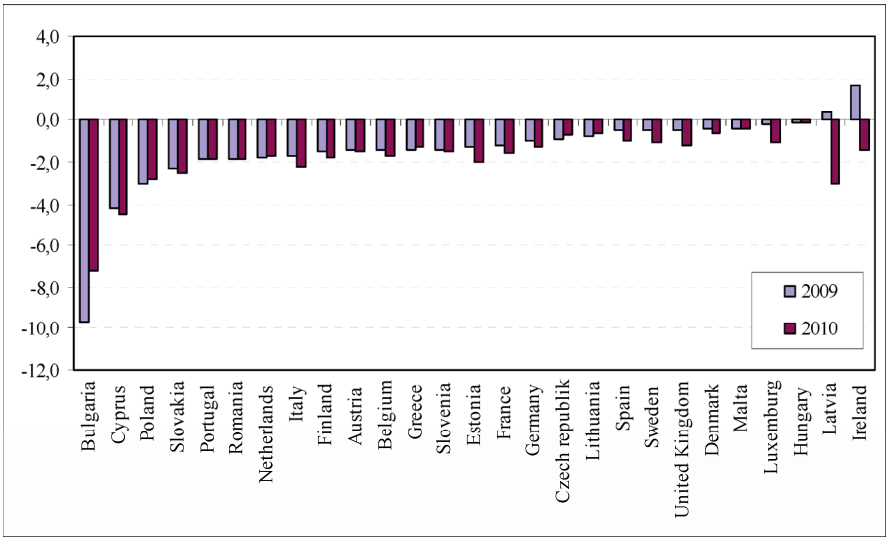
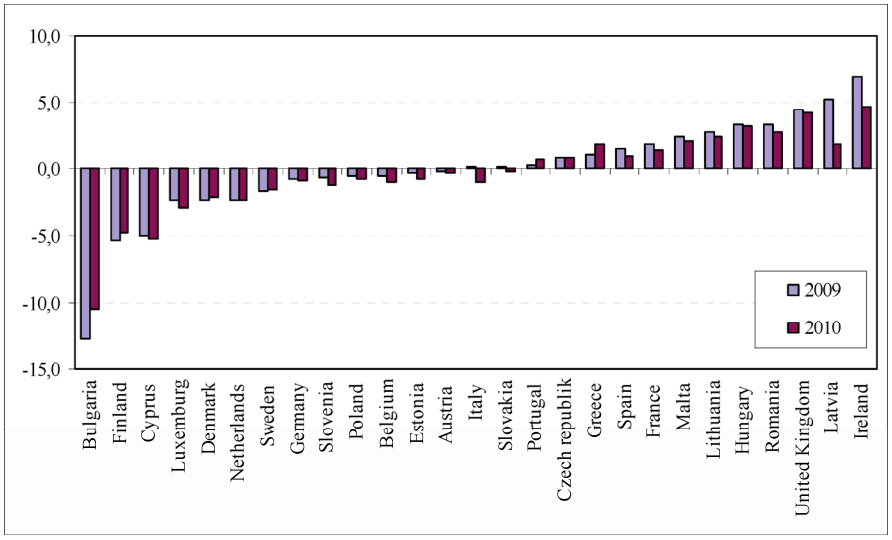


Figure 4 Estimated sustainable change in total budget balance (as % of GDP) in 2009 and 2010 with respect to estimates of actual total budget balance in these years (see online version for colours)



The above analysis allows us to confirm our hypothesis. First, we have proved that most EU member states have been fiscally sustainable in past (from 2000 onwards). Second, we have found that sustainable budget balance in these countries is moderate deficit. And third, we estimate that more than half EU member states still have some manoeuvre in public spending to tackle the economic crisis, and still remain fiscally sustainable.

5 Summary and policy recommendations

The main idea of the presented article was to look deeply into fiscal sustainability matters of EU member states. In recent times of financial and economic crisis, all EU member states (and most other economies) tackle with necessary policy measures that have to taken in order to preserve the economy before negative effects of the crisis. However, these steps usually cost money, and this money is usually public money. Therefore, obvious question arises: will these policy measures be fiscally sustainable.

When talking about fiscal sustainability we do not consider Maastricht fiscal criteria, which are continuously used lately for this purpose. We rather take into account a set of criteria for fiscal sustainability, derived from Pasinetti's approach, that take into account relevant macroeconomic performances of the selected economies (i.e. total and primary budget balance, interest rate of public debt and public debt as such and economic growth). In order to avoid pro-cyclical balance, that might occur when using Pasinetti's approach, we used cyclically adjusted data for budget balance.

In our main hypothesis, we assumed that most EU member states have a relatively large manoeuvre for adjustment of their fiscal policy in 2009 and 2010, and still remain in line with sustainability conditions for fiscal stance.

Our analysis allows us to confirm this hypothesis. First, we have proved that most EU member states have been fiscally sustainable in past (from 2000 onwards). Czech

Republic had negative values for sustainability criteria in the whole period, except in years 2004 and 2007. Simulations for 2009 and 2010 show negative figures as well. France, Germany, Greece, Hungary Malta and UK had negative values for both criteria almost the whole period. Estimates for Germany reflect better performance in 2009 and 2010, while other countries in this group are exposed to negative figures in 2009 and 2010 unless they change their fiscal policy.

Second, we have found that sustainable budget balance in these countries is moderate deficit. Some countries (e.g. Bulgaria, Cyprus and Poland) have more space which is mostly due to low public debt, high economic growth and low interest rate on public debt. Hungary, Latvia and Ireland are most vulnerable (probably due to relatively low expected economic growth).

And third, we estimate that more than half EU member states still have some manoeuvre in public spending to tackle the economic crisis, and still remain fiscally sustainable. Bulgaria, Finland and Cyprus have more than 5% open space (Bulgaria as much as 10%). We find most critical these countries that would have to decrease public spending in order to stay fiscally sustainable. Most vulnerable in this respect are UK, Latvia and Ireland with about 5% required decrease in public spending in order to achieve fiscal sustainability according to these criteria.

As a policy recommendation, we can clearly state that – to our view – all the necessary steps for tackling the current financial and economic crisis should be taken in order to avoid negative effects of the crisis. However, when deciding on the public funds used for such measures, fiscal sustainability has to be taken into consideration most carefully. We believe that even in times of crisis fiscal policy should stay sustainable and should not exceed sustainability limits – one possible set of such rules being presented (theoretically and analytically in our article). Extended public consumption – even in times of crisis – might be risky for future attempt in trying to make fiscal stance of the economy sustainable again.

References

Ahmed, S. and John H.R. (1995) 'Government budget deficits and trade deficits. Are present value constraints satisfied in long-term data', *Journal of Monetary Economics*, Vol. 36, No. 2, pp.351–374.

Blanchard, O., Chouraqui, J-C., Hagemann, R.P. and Sartor N. (1990) 'The sustainability of fiscal policy: new answers to an old question', *OECD Economic Studies No. 15.* Paris: Organisation for Economic Co-operation and Development.

Bohn, H. (1998) 'The behavior of US debt and deficits', *Quarterly Journal of Economics,* Vol. 113, No. 3, pp.949–963.

Collignon, S. and Mundschenk, S. (1999) 'The sustainability of public debt in Europe', *Economia Internazionale,* Vol. 1, pp.101–159.

De Haan, J. and Sierman C.L.J. (1993) The intertemporal government budget constraint: an application for the Netherlands', *Public Finance,* Vol. 48, No. 2, pp.243–249.

Easterly, W., Rodriguez, C.A. and Schmidt-Hebbel, K. (1995) *Public Sector Deficits and Macroeconomics Performance*. Washington DC: The World Bank.

Eichengreen, B. and Wyplosz, C. (1998) 'The stability pact: more than a minor nuisance?', *Economic Policy,* Vol. 1, No. 26, pp.65–119.

European Commission (2009) General Government Data. Available at: http://ec.europa.eu/economy_finance/db_indicators/db_indicators9241_en.htm (accessed 15/2/2009).

Fatás, A. and Mihov, I. (2003) 'On constraining fiscal policy discretion in EMU', *Oxford Review of Economic Policy,* Vol. 19, No. 1, pp.112–131.

Hakkio, C.S. and Rush, M. (1991) 'Is the budget deficit 'too large'?', *Economic Inquiry,* Vol. 29, No. 3, pp.104–118.

Hamilton, J.D. and Flavin, M.A. (1986) 'On the limitations of government borrowing: a framework for empirical testing', *The American Economic Review,* Vol. 76, No. 4, pp.808–819.

Heinemann, F. (1993) 'The sustainability of national debt in Europe', *Intereconomics*, Vol. 28, No. 2, pp.61–68.

Herring, B. (1995) 'The sustainability of budget deficits in a stochastic economy', *Journal of Money, Credit and Banking,* Vol. 27, No. 1, pp.257–271.

Mac Donald, R. and Speight, A.E.H. (1990) 'The intertemporal budget constraint in the UK, 1961–1986', *The Manchaster School,* Vol. 63, No. 4, pp.329–347.

McCallum, B.T. (1984) 'Are bond-financed deficits inflationary? A Ricardian analysis', *Journal of Political Economy,* Vol. 92, No. 2, pp.123–135.

Papadopoulos, A.P. and Sidiropoulos, M.G. (1999) 'The sustainability of fiscal policies in the European Union', *International Advances in Economic Research,* Vol. 5, No. 3, pp.289–307.

Pasinetti, L.L. (1998) 'The myth (of Folly) of the 3% deficit/GDP Maastricht 'parameter', *Cambridge Journal of Economics*, Vol. 22, No. 1, pp.103–116.

Quintos, C.E. (1995) 'Sustainability of the deficit process with structural shifts', *Journal of Business and Economic Statistics*, Vol. 13, No. 4, pp.409–417.

Trehan, B. and Walsh, C.E. (1988) 'Common trends, the government's budget constraint, and revenue smoothing', *Journal of Economics Dynamics and Control,* Vol. 12, No. 2/3, pp.425–444.

Uctum, M. and Wickens, M. (1997) 'Debt and deficit ceilings, and sustainability of fiscal policies: an intertemporal analysis', *CEPR Discussion Papers No. 1612*, London, Centre for Economic Policy Research.

Wilcox D.W. (1989) 'The sustainability of government deficits: implications of the present-value borrowing constraint', *Journal of Money, Credit and Banking,* Vol. 21, No. 3, pp.291–306.

Žižmond, E. and Novak, M. (2007) 'Controversies of technology convergence within the European Union', *Industrial Management and Data Systems*, Vol. 107, No. 5, pp.618–635.

Notes

[1]For example, Fatás and Mihov (2003), Eichengreen and Wyplosz (1998), Papadopoulos and Sidiropoulos (1999), Pasinetti (1998) and others.

[2]For example, Blanchard et al. (1990), De Haan and Sierman (1993), Heinemann (1993), Herring (1995), Mac Donald and Speight (1990), Papadopoulos and Sidiropoulos (1999), Uctum and Wickens (1997) and others.

[3]His approach is developed as a critic on 'the Myth (or Folly) of Maastricht criteria', because it was developed soon after first version of the later were adopted. Despite the fact that his critic is currently already out of date (due to later changes of interpretations of Maastricht criteria), his empirical solution is still useful in determining the numerical orientation for fiscal policy.

[4]Data for years 2008–2010 are forecasts by the Commission Services (Directorate General Economic and Financial Affairs) in autumn 2008.

[5]In Bulgaria and Cyprus, low interest rates are probably due to Euro adoption (Cyprus) or currency board on Euro (Bulgaria). For Slovenia the relevant evolution of macroeconomic performance is presented by Žižmond and Novak (2007).