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Fiscal, Economic and Financial Vulnerabilities – Implications for the Euro Area Surveillance Framework

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Abstract

Sound public finances are a prerequisite for the functioning and economic prosperity of a common currency union. The financial, economic and European sovereign debt crises revealed that also financial stability and economic growth serve as prerequisites and that all three interact in this respect. This made clear that capturing related vulnerabilities and risks in order to effectively prevent serious crises is just too complex to be addressed properly by the current Euro area’s institutional framework. Substantial institutional shortcomings are now being addressed by reforms. However, in this paper we argue that further institutional reforms are needed in order to integrate vulnerability and risk analyses into surveillance processes. Above all, we propose to set up an independent expert council that is charged with the mere evaluation of all surveillance processes.

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I. Introduction

The financial, economic and European sovereign debt crises have revealed a lack of understanding of the deeper causes of fiscal, financial and real economic vulnerabilities and risks. As a result, international institutions as well as academics are developing methods to better capture such vulnerabilities and risks¹ (i.a. EC 2011; ECB 2012; IMF 2010; van Roye 2011). European Union and especially Euro area decision makers are looking for a comprehensive macro-prudential surveillance framework that also includes fiscal and economic aspects. Sustainable public finances and financial market stability regarding their resilience to risks can be seen as vital pre-conditions for growth (Baum, Checherita-Westphal and Rother 2012; Kumar and Woo 2012). Existing EU surveillance processes were – conceptually and institutionally – not capable of detecting risks and reducing vulnerabilities at an early stage. The recently implemented mechanisms to cope with the crises are supposed to respond in an ad hoc manner to the current challenges when risks have already materialised, and seek to correct severe institutional flaws at the same time.

To begin with, in order to prevent future crises, ‘financial stability’² is considered to be at the centre of surveillance processes, also since it is supposed to be the basis for any economic and fiscal actions, as the ECB puts it: ‘systemic risk’ is “the risk that financial instability becomes so widespread that it impairs the functioning of a financial system to the point where economic growth and welfare suffer materially” (ECB 2010: 138). Hence, monitoring focuses on the financial system as a whole at a macro-level, with respect to micro-level financial supervision and macro-economic developments. The goal is to integrate all these aspects in a macro-prudential surveillance mechanism capturing ‘systemic risks’ (cf. Jácome and Nier 2012; BIS, FSB and IMF 2011:4). Additionally, we argue that public finances need to be considered, too, with respect to the financial stability’s and real economy’s implications on public finances. In this respect, risks and vulnerabilities have different natures. The ECB points to three main sources of systemic risk: contagion, imbalances, and symmetric shocks. Macro-prudential surveillance need to consider them all. The ECB (2010: 138ff.) categorises macro-prudential tools in four different approaches: (1) early-warning models use current data to display the built-up of risks; (2) macro-stress-testing models simulate extreme, symmetric shocks affecting the whole system in a specific region; (3) contagion models capture spill-over effects between actors or markets and possibly resulting

¹ We use the term ‘vulnerability’ to describe a characteristic shortcoming of an institution, actor or situation which may be inherent or self-made. A bank having disproportionately many sovereign bonds of country X is vulnerable to X’s financial situation. However, as long as this country runs sustainable public finances, the bank’s liquidity and solvency risks would still be low. Hence, as the IMF summarises, a vulnerability is a “necessary, but not a sufficient, condition for a crisis” (IMF 2010: 8). A risk then describes the extent to which a vulnerability may materialise under specific conditions, as e.g. X’s public finances sustainability decreases (cf. ECB 2010: 139).

² As the ECB, we use the term ‘financial stability’ to describe a “condition in which the financial system – which comprises financial intermediaries, markets and market infrastructures – is capable of withstanding shocks and the unravelling of financial imbalances” (European Central Bank 2012: 5).

instabilities; (4) financial stability indicators disclose the “current state of systemic instability” (ECB 2010: 138) and thereby define the existence of a crisis.

International institutions (IMF, FSB, BIS) have started to develop different tools to sharpen their analytical perceptions. Also, some institutional steps have been taken, as for example the strengthening of the Financial Stability Board (FSB), the establishment of the European Systemic Risk Board (ESRB) and the fostering of European fiscal and macro-economic surveillance. However, so far an integrated framework analysing fiscal, financial and real economic vulnerabilities and risks comprehensively for the Euro area is missing. This paper addresses this gap by proposing some institutional reforms. An integration of some form of vulnerability and risk analysis into the Euro area’s surveillance framework plus further institutional reforms could build a better protection for crises, ideally some kind of ‘fortress’. We aim at detecting to what extent vulnerabilities and risks are already considered and what flaws need to be addressed by further institutional reforms in the Euro area. Specifically, we ask to what extent vulnerability and risk concepts could be integrated in the Euro area surveillance framework to improve it.

The remainder of this paper is organised as follows: First, we review the approaches and methods to detect vulnerabilities and risks that the IMF, the EC and the ECB currently use or consider to use. Second, we present an overview of the current fiscal, macro-economic, and macro-prudential surveillance processes in the Euro area focussing on gaps in the monitoring of vulnerabilities and risks. Finally, we develop ideas on how to integrate vulnerability and risk analyses into the Euro area surveillance framework with a special focus on the framework’s institutional design. Since the assessment of vulnerabilities and risks has become increasingly important also for the political sphere, we derive our assessments and proposals from the point of view of a finance ministry, which is necessarily more practical and political economy oriented than an academic one.

II. Vulnerability concepts and indicators

II.A The IMF’s contribution to the IMF-FSB-Early Warning Exercise

In reaction to the 2008/2009 financial crisis and on request by the G20, the IMF and FSB created an Early Warning Exercise (EWE; IMF 2010). The EWE’s main objective is “to identify underlying vulnerabilities and imminent tail risks that predispose a system to a crisis, so that corrective policies can be implemented and contingency plans put in place ahead of time.” (IMF 2010: 5). It is carried out jointly by the IMF and the FSB: The IMF heads

the work on macro-economic and macro-financial vulnerabilities, while the FSB focuses on vulnerabilities and regulatory challenges in the financial sector.³

The IMF's contribution to the EWE is based on both qualitative and quantitative analyses. In its quantitative analyses, the IMF uses a variety of variables, indicators, and models to measure macro-economic and financial vulnerabilities and risks in individual countries. The IMF divides its vulnerability analyses into three parts: (1) vulnerabilities in a sector (external, fiscal, nonfinancial corporate, real estate, financial markets, macro risks), (2) the probability that a country will be hit by a crisis and/or the potential costs of a crisis for a country (country risk models), and (3) contagion and spill-over risks. Table 1 displays the variables, indicators and models used.

[Insert Table 1]

In order to reach an overall assessment of a country's vulnerabilities, the IMF uses the so called 'signalling approach' (Kaminsky et al. 1998, Kaminsky and Reinhart 1999). The idea behind this approach is to use historical data to determine threshold values for a set of variables that have in the past been linked to the lead-up of a crisis situation (cf. EC 2011: 7). By comparing these threshold values with actual values, vulnerabilities can be identified. The methodology consists of three steps: First, past crisis episodes are identified by applying a set of predefined criteria. These criteria vary depending on the type of crisis that is the scope of the analysis.⁴ Additionally, a number of variables and indicators are selected that are deemed to be relevant for the identification of this particular crisis. Second, threshold values for these indicators are determined. Two possible ways to identify these thresholds are used in the literature: one is to minimise total misclassified errors, i.e. the weighted sum of false positive crisis signals (type I errors) and false negative crisis signals (type II errors). Another possibility is to maximise the signal-to-noise-ratio, i.e. the ratio of the percentage of true positive signals (1 – type II errors) to the percentage of false positive signals (type I errors) (cf. Baldacci et al. 2011b). Third, by comparing threshold values to actual values, every variable gets a 'ranking' (high, medium, low vulnerability). An aggregated indicator is calculated for each country for every sector, and finally an overall country vulnerability indicator.

Since the EWE tries to cover as many of the IMF's members as possible, data limitations restrict the choice of variables and indicators to analyse vulnerabilities and risks in individual sectors. The EWE is also still at an early stage and will be further developed. An example of how the IMF further deepens its analyses outside the EWE is its work on fiscal vulnerabilities. The IMF first developed a comprehensive approach to identify the

³ In the following we focus on the IMF's contribution to the EWE since the IMF's methodology is comparatively well documented.

⁴ For example, in order to identify a fiscal crisis in advanced economies, Baldacci et al. (2011) take into account four criteria: a high yearly inflation rate, the occurrence of public debt default or restructuring, the realisation of a large-scale IMF-supported programme and a large deviation of sovereign bond yield spreads.

risks to fiscal sustainability in 2011 (Cottarelli 2011). The so-called 'Risk Octagon' comprises eight risk 'dimensions' in three categories, by which the most important factors to identify fiscal risks are supposed to be covered.

[Insert Figure 1 and Table 2]

This 'Risk Octagon' was further operationalized in following works of the IMF.⁵ One strand of work focused on the selection of suitable variables and indicators. For example, Baldacci, McHugh and Petrova (2011b) have extended the list of basic fiscal variables and then identified 13 suitable ones (for a list of variables see Table 3 in the appendix). Schaechter et al. (2012) have added further variables and indicators from other dimensions of the Risk Octagon. In particular, they also consider macro-economic shocks vis-à-vis the baseline scenario and they include market-based risk variables and indicators as well as indicators for spill-over risks (for a list of the variables and indicators used by Schaechter et al. (2012) see Table 4 in the appendix).⁶ Another strand of work focussed on assessing the overall vulnerability of a country. In particular Baldacci et al. (2011b) propose the signalling approach as an appropriate method, not least because it is relatively easy to handle compared to the multivariate regression approach also considered in the EWS literature.⁷

Summing up, the IMF has developed a number of potentially useful tools that could also be used for vulnerability and risk assessments in the Euro area. In particular, the signalling approach could serve as a methodological framework of a Euro area Early Warning System. A major advantage of this approach is that its methodology is advanced, internationally practiced, easy to handle and can be used flexibly. Depending on the chosen crisis criteria and indicators, it allows identifying potential vulnerabilities across many different fields of analysis. However, there are also a number of methodological drawbacks. First, it is neither possible to test individual variables for their conditional statistical significance nor to account for correlations between variables (cf. Baldacci et al. 2011b, EC 2011). Another weakness is related to the fact that the analysis is based on historical data. A future crisis may be preceded by different developments than the ones observed in the onset of previous crises. Some of the relevant variables might therefore not be considered. While it can therefore very effectively serve as a first 'screening' in a surveillance process, it should always be accompanied by further surveillance tools.

II.B The EC's report on Public Finances in EMU

The EC has also recently analysed possible tools to strengthen its capacity to detect fiscal distress in member states at an early stage and to therefore complement its well-established long-term fiscal sustainability analysis

⁵ Cottarelli's (2011) approach has also been used in the IMF Fiscal Monitors as of 2011; due to data limitations, however, this approach has been applied so far only to country groups, not individual countries.

⁶ The IMF plans to extend this 'toolkit' to include the investor basis, the currency in which debt is denominated and contingent liabilities.

⁷ For a detailed description of the univariate signalling approach to identify fiscal sustainability risks, refer to Baldacci et al. (2011b). Compared to earlier works, Baldacci, McHugh and Petrova (2011b) use the broader definition of fiscal crises introduced by Cottarelli (2011); the list of indicators is taken from Baldacci, McHugh and Petrova (2011b).

(cf. EC 2009). In its 2011 report on Public Finances in EMU (EC 2011), the EC presents four possible approaches: (1) a model that investigates the potential impact of the balance situation of banks on public finances based on a value-at-risk analysis; (2) an early warning tool which determines thresholds of fiscal distress for a set of fiscal and financial-competitiveness variables based on the signalling approach; (3) an estimation of country-level fiscal reaction functions in order to evaluate the feasibility of fiscal consolidation programmes; (4) a general equilibrium approach that identifies governments' maximally collectable tax revenue by taking into account the feedback effects between consolidation measures on the revenue side and the economy. The first two are already used or concretely intended to be used by the EC for vulnerability assessment and will therefore be discussed in more detail in this work.

The first approach, which analyses the potential impact of the balance situation of banks on public finances, is based on the SYMBOL model (SYstemic Model of Banking Originated Losses)⁸. SYMBOL was developed by the EC and a team of academic experts on banking regulation and is already used to assess the impact of regulation policy proposals aimed at increasing financial market stability (Campolongo et al. 2011). SYMBOL follows a bottom-up approach: Based on the estimation of default risks of bank obligors, the default probability of individual banks and subsequently the probability of aggregate individual bank losses are determined for each country. Once the probability distribution of losses of a country's banking system as a whole has been estimated, possible risks to public finances deriving from these losses are deducted. This is carried out under the assumption that the government would cover all losses that neither the banks' capital, nor in a second step the existing tools of the financial safety net, such as Deposit Guarantee Schemes (DGSs) and Bank Resolution Funds (BRFs), are able to absorb. Calculations are carried out for different regulatory framework scenarios.⁹

Three sustainability indicators are calculated. The first indicator is the probability that banking losses negatively affect public finances.¹⁰ The second indicator quantifies the losses countries would face under the current regulatory scheme with a given probability. The third indicator links this approach to the long-term fiscal sustainability methodology used by the EC in its Sustainability Reports (cf. EC 2009). It is the probability that a country's long-term S2 indicator¹¹ exceeds 6% of GDP due to losses in the banking system and therefore classifies as high risk (EC 2011).

⁸ Details on the methodology are laid out in De Lisa et al. (2010).

⁹ The regulatory framework scenarios vary with respect to the underlying capital requirements, with respect to whether deposit guarantee schemes and bank resolution funds are in place to absorb banking losses, whether there exists a bail-in rule of bondholders and non-covered depositors, and whether contagion effects are taken into account (cf. EC 2011).

¹⁰ This first indicator has to be interpreted very carefully with regard to the sustainability context as its results do not allow conclusions about the riskiness of a country: e.g. good regulatory systems tend to cover small but more probable losses (cf. EC 2011).

¹¹ The S2-Indicator expresses the "permanent adjustment in the primary balance necessary to meet the intertemporal budget constraint over an infinite horizon" (EC 2009: 34).

Overall, the SYMBOL model could be a useful tool to complement the EC's traditional debt sustainability assessment with a focus on a specific risk area, i.e. the financial sector. This seems all the more important as risks stemming from the financial sector were not accounted for in EU fiscal sustainability assessments ahead of the recent financial crisis, but proved to have a substantial negative impact on public finances once they materialized. One of its benefits is that its results can directly feed into the long-term sustainability analysis already carried out by the EC. However, a number of drawbacks should be addressed when enhancing the concept. For example, the coverage of the underlying data is so far not extensive enough for all EU member states. Some of the data input is based on how national regulators assess obligor's losses and is therefore very reliant on these estimates. Another aspect is the timeliness of the data: the analyses suffer from a time-lag of at least a year. Furthermore, the report does not consider the impact of different macro-economic scenarios and some simplifications, such as the assumption that all bank assets are loans, weaken the strength of the results (cf. EC 2011).

The second approach that the EC outlines in its 2011 public finance report is a fiscal crisis risk model based on the signalling approach. The EC considers including this approach in its upcoming Sustainability Report in order to assess risks for short-term fiscal sustainability.

The methodology is closely linked to the IMF's recent work on the assessment of fiscal stress (Baldacci et al. 2011b), but is modified and adapted to the European context. Analogously to the IMF's approach, the EC also chooses a number of fiscal variables, but takes on a broader perspective by also looking at macro-financial variables. The authors acknowledge that if a fiscal stress model is to be applied in a surveillance framework, the set of variables should be as comprehensive as possible. When calculating optimal thresholds, they take the same four criteria to identify an episode of fiscal distress into account as Baldacci et al. (2011b), which are a threshold of the yearly inflation rate, the occurrence of public debt default, the realisation of a large-scale IMF-supported programme and a threshold value for the deviation of sovereign bond yield spreads.¹² Ultimately, the authors calculate cross-country results for the individual indicators, for thematic composite indicators (fiscal vs. financial-competitiveness) and a composite indicator of all variables (see Table 5 in the Appendix). Overall, the EC's considerations show that the signalling approach can be used flexibly when setting up an early warning system, can be adapted to specific contexts and allows for setting different analytical priorities.

II.C The ECB's Financial Stability Review

The ECB intensely works on "developing tools and models which can be used to monitor, identify and assess potential threats to the stability of the financial system" (ECB 2011a: 141; see also ECB 2011b: 149ff.). For this

¹² Some minor differences exist in the application of these criteria as the IMF approach sets different thresholds for emerging and for developed economies with regard to the inflation rate, while the EC approach applies only the criterion of developed economies.

paper, we have exclusively looked at the ECB's Financial Stability Review as one of the few publically available macro-prudential studies. In this biannual Review the ECB analyses the current state of the euro area's financial stability and its impact on real economic developments. In contrast to the presented methods of the IMF and the EC, the ECB mainly looks at descriptive statistics and only uses some indicators and simulations¹³. The ECB rather focuses on tracing a detailed picture of the financial stability's stance in the euro area than summarising it in a composite indicator. In doing so, the ECB follows a deductive approach, starting from the global perspective and broad analyses and ending up in profound analyses of financial market actors in the euro area.

In a first step, the report analyses "macro risks" (ECB 2012: 15ff.), such as international financial spillovers and geographical risk accumulations as well as oil prices. The focus lies on assessing trends and tracing a broad picture of the general global financial situation. In order to assess macro risks, the ECB employs two models. The first model looks in particular at CDS spreads; these are decomposed into "global risks" ("risk aversion, illiquidity or contagion risk") and "country-specific components" using factor analysis in order to discern sources of risks and related spill-over effects to other countries (ECB 2012: 24). The second model looks at equity prices as a proxy for inflation expectations and thus financial market stress and the development of bubbles. The model aims at detecting a country's or a region's contribution to global financial market stress.

In a second step, the ECB analyses "credit risks" (ECB 2012: 27ff.) at the global level in more detail. These are supposed to disclose trends in the overall economic situation and its probable development. Credit demand and supply for households and the corporate sector as well as public finances and the related macro-economic outlook are at the core of the analysis. Here again, the global perspective prevails, while keeping an eye on specific regions and countries.

Based on this general information, the ECB analyses the financial system in more detail, specifically with regard to the Euro area. First, the report looks at financial markets (money, government and corporate bond markets). Additionally, the report analyses the profitability and growth of global Large and Complex Banking Groups (LCBG) and of Hedge Funds to assess their development as a complement to the market analysis because of their large potential impact on them.

After having traced this broad picture, the report analyses financial institutions in the Euro area in more detail. Here, the focus is on financial institutions, especially on the profitability, liquidity and funding structure of LCBGs, banks and insurance companies. Moreover, their inter-linkages with each other as well as sovereign and real economy funding is considered, in order to assess the related sectoral and regional resilience of these

¹³ A table with detailed information on the variables used can be found in the Appendix (Table 6).

financial institutions and possible regional, sectoral, or spill-over effects within the financial sector. Therefore, the volume and structure of deposits, reserves and holdings as well as the regional dispersion of capital flows are at the core of the analysis. Simulations are conducted to reveal information on the resilience of Euro area banks and insurance companies and to assess the probability of joint defaults¹⁴.

The ECB's report focusses on financial market actors and only considers public finances and the real economy with regard to their impact on them. In this respect, the analysis of markets and products also serves the assessment of financial market actors' performance. A more detailed analysis at least of specific products, especially with regard to their volume, regional and financial sector related dispersion might be helpful to get a broad view on financial stability.

Each of the three presented concepts follows a different of the ECB's categorised four main approaches. While the IMF considers a broad range of variables in order to draw early-warning recommendations in its contribution to the EWE, the EC specifically looks at different fiscal vulnerability assessment tools. The ECB, in contrast, focuses on financial stability while using some macro-stress-testing models and financial stability indicators. What is missing so far are substantive contagion models and a deeper integration of real economy and public finances developments into the analyses. Also the BIS, FSB and IMF stress in their report, that "there are still important limitations in the analytical toolkit [...] current models do not adequately link real and financial sectors and significant data gaps remain" (2011: 5). Moreover, there are still difficulties to determine the definition of a crisis – no matter of what nature. Apart from that, these approaches should be made use of in surveillance processes to actually prevent vulnerabilities and risks to increase and to materialise in a crisis.

III. Fiscal, macro-economic and macro-prudential surveillance processes in the Euro area

The previous section has shown that the EC and the ECB are currently developing or are already carrying out vulnerability assessments relevant for the Euro area. To our understanding, it is wishful to integrate these concepts into surveillance processes and thereby formally back them by an institutional mandate. Although fiscal, financial and real economic developments are already subject to supervision, to us their surveillance seems not as comprehensive as necessary to prevent crises. Most importantly, the different branches are not yet considered together and integrated in a broader and interconnected framework. In the following section we take stock of the current fiscal, macro-economic and macro-prudential surveillance processes in the EU and the Euro area focusing on gaps regarding the identification of vulnerabilities and risks. The core processes are:

¹⁴ The first simulation draws on different scenarios considering the impact of sovereign risks, bank deleveraging and the economic situation on banks. The second model simulates the effects of price shocks of different assets for insurances. Another indicator measures the probability of a simultaneous default of some LCBGs with the help of CDS with different maturities.

- First, fiscal surveillance by the Stability and Growth Pact (SGP) including the corresponding sustainability analyses, the European Semester and the Fiscal Compact,
- second, economic surveillance institutionalised in the Macroeconomic Imbalance Procedure (MIP), and
- third, macro-prudential surveillance by the European Systemic Risk Board (ESRB).

[Insert Figure 2]

Figure 2 illustrates these processes. Important steps to improve governance in Europe and the Euro area have been taken in the last two years.¹⁵ Economic co-operation has been fostered, the surveillance of public finances has been strengthened, surveillance of financial markets has been improved and a macro-prudential supervisory body has been established. The Euro-Plus-Pact and the Europe 2020 Strategy will not be considered here although one might also make use of these less institutionalised processes to improve surveillance of vulnerabilities and risks. Moreover, we do not consider micro-prudential supervisory agencies and the FSB as it is not part of the Euro area level institutional setting. Also, we do not consider financial support programme agencies as they are clearly supposed to be temporary. In the following, we analyse the SGP, the MIP and the ESRB in more detail and identify elements that need to be improved.

III.A The reformed SGP

When assessing the current reform package labelled ‘SGP 3.0’¹⁶ we concentrate on institutional gaps with respect to the monitoring of vulnerabilities and risks. We postulate that these have not been closed by the reform, not even by the Fiscal Compact signed in March 2012 by the heads of states as an international treaty.

[Insert Figure 3]

Compared to the SGP 1.0 and 2.0, the public debt reference value is now transparent and its compliance is backed by sanctions. It will not only be obligatory to comply with the Maastricht deficit limit of 3.0% of the GDP (and the country specific MTO) but also to keep public debt below 60% of the GDP. Countries with a debt level above that threshold need to reduce the difference between the actual debt level and the 60%-reference by 1/20 per year. This requirement is backed by the Fiscal Compact obliging the member states to implement it in their national laws. This strengthens the SGP requirements as national laws can be appealed at a court and are not subject to political log-rolling the ECOFIN Council only. The principle of a balanced budget has become compulsory and will be backed by sanctions over the medium term. A violation of the reference value or an

¹⁵ For an overview and general assessment of the recent reform packages see Kastrop and Ebert (2009, 2012).

¹⁶ ‘Six-Pack’: Regulation (EU) No 1173/2011; Regulation (EU) No 1174/2011; Regulation (EU) No 1175/2011; Regulation (EU) No 1176/2011; Council Regulation (EU) No 1177/2011; Council Directive 2011/85/EU; ‘Fiscal Compact’: Treaty on Stability, Coordination and Governance; ‘European Semester’: ECOFIN-Council Press Release 13161/10, 07/09/2010, For a detailed assessment see Kastrop and Ebert (2012).

insufficient reduction of the debt level leads to an Excessive Deficit Procedure (EDP) and, under the new regime, more easily to sanctions.

Besides political economic amendments supposed to improve compliance with the SGP, the question is in which respect the criteria for sound public finances and the assessment by the EC and the Council incorporates enough elements to capture vulnerabilities and risks. Public debt and public deficit are deterministic indicators by nature, accounted by the EU member states (MS) and assessed by the EC. Public debt can be perceived as a past related concept that sums up historical deficits and in that respect the indicator reveals the vulnerability of public finances against the development of interest rates in the financial markets. That aspect has been stressed by the IMF (Schaechter et al. 2012) and can be seen daily recognized in the public finances of high-debt countries of the Euro area.

Public deficit as a dynamic concept indicates the short-term public finance record of an MS in the current and near future and in that respect it captures public finance risks only to a limited extent. However, the monitoring of the Maastricht reference values of 3 and 60% of the GDP per se are not sufficient to avoid crises, i.e. the materialisation of risks, for two reasons: First, evidently it is in principle not possible to capture all risks for public finances in the public budgets and fiscal plans. There is an inherent element of uncertainty in projecting public deficits. In consequence, the submitted deficit and debt schedules by the MS only partially incorporate risks, explicitly or implicitly, e.g. risks stemming from the economy, financial markets or public finances. And one has to notice that they are rarely calculated in a prudent manner, e.g. with respect to possible negative spillover effects from the real economy. This conceptual lack is not limited to the national budgets of the single member states but is also valid for the projections of the EC. Neither the MS nor the EC show a high degree of prudence when calculating GDP figures or public deficits. The absence of a prudent conservative calculation necessarily leads to an increase of the public finances' vulnerability against negative shocks. Public budgets lack safety margins and therefore adequate scope for manoeuvre in case risks materialise. Not only regarding the deficit, but also debt levels could be evaluated using safety margins depending on the country's individual context. For example, the 60%-reference value could be extended by a safety margin of 30 – 40%.

The second aspect is a political economy argument. Experiences revealed severe institutional weaknesses: the obligation to make risks explicit is not well established in the surveillance framework. Budgetary surveillance lacks any clear incentive to calculate 'prudently'. Although the European Semester with a clear streamlining of processes brought some progress by giving the EC more indicative power in the national budgetary calculations, it is far from clear in which respect risk for public finances of the individual MS have to be made explicit

or how large the possible safety margins have to be calculated in the projections. As the overruling power of the Council has to a certain extent been reduced by the new voting requirement of a reversed qualified majority; it is the EC who is in charge to fulfil this task. That means that the preventive monitoring of national budget policies must be enhanced noticeably by the EC. This goes so far as to enable that institution to ask a member state to resubmit a budget.

In the SGP'S corrective arm (EDP) member states are to commit to detailed consolidation and adjustment measures, e.g. as part of a partnership programme, which may contain more aspects of prudence against risks, with compliance monitored by the EC and Council. As sanctions imposed on member states for exceeding the 3% deficit threshold will be triggered in a more 'automated' way, the new institutional setup should substantially limit the leeway for generous interpretation of the provisions. Nevertheless, a similar binding and biting procedure in an early stage, where the risk of a negative fiscal track record can be avoided, is still missing.

This is one reason why the European heads of state and government launched the Fiscal Compact: in order to build an institutional 'fortress' against political economy problems. The Fiscal Compact represents an important step forward towards a fiscal union in the spirit of a stability union. Based on the model of Germany's constitutional 'debt brake', the Euro countries committed to implement arrangements for balanced budgets in their national laws. In future, the annual cyclically adjusted deficit is not allowed to exceed 0.5% of the GDP. In the long-term, this should ensure that budgets are kept close to balance over the business cycle, while fiscal policy can act counter-cyclical and by that reduce economic vulnerabilities.

In a long-term view, the monitoring of risks for fiscal sustainability are partly covered in the EU processes. There is a detailed reporting framework developed by the Economic Policy Committee (EPC) of the EU together with the EC, and the ageing aspect has been introduced into the MTO framework (EC 2009). The upward pressure on public finances is additionally triggered by a no-containing effect in the economic upswing. What was conceptually healed in Germany by the introduction of a cyclically adjusted MTO¹⁷ is unfortunately not implemented in Europe in a real credible manner and should be translated into the set-up of the MTOs and the enforcement of the MTOs over the cycle.

III.B The Integrated Macroeconomic Surveillance

Experiences with unsustainable economic developments in some countries of the Euro area, combined with unsustainable fiscal positions made clear that economic governance in Europe cannot solely rely on fiscal monitoring. Therefore, as part of the so-called 'Six-pack', the Council together with the EC developed a new process

¹⁷ There are still open issues, see Ebert (2012).

for preventing and correcting macro-economic imbalances, taking up institutional elements of the SGP (concerning the design of the MIP). Not all new elements of that process can be reviewed here (cf. EC 2012; Ebert 2011), therefore we focus on the elements capturing risks and vulnerability.

[Insert Figure 4]

The new surveillance and enforcement mechanism MIP is based on Art. 121.6 of the Treaty on the Functioning of the European Union. The process is framed and triggered by the so-called 'alert mechanism' which should detect possibly harmful imbalances and if preventive or corrective actions need to be taken. The preventive arm of the MIP gives the EC and the Council the possibility to adopt recommendations at an early stage, before imbalances become excessive. The Excessive Imbalances Procedure as the corrective arm copes with excessive imbalances. An Alert Mechanism Report is to be discussed in the Eurogroup or in the Council. The country specific in-depth reviews developed by the EC are one part of the integrated economic surveillance under the European semester. At the core of the new procedure is a scoreboard of indicators developed by the EPC together with the EC to indicate internal and external economic problems. The initial scoreboard consists of a set of ten indicators with thresholds (see Table 7). Two indicators aim at monitoring external positions, three capture economic competitiveness and the subsequent five indicators reflect internal imbalances (EC 2012). Based on the average of past data an in-depth analysis reveals if imbalances are present or likely to occur.

[Insert Table 7]

It is well known that the MIP, the scoreboard and in particular the issue of current account surplus had been discussed vividly among politicians. In the context of this paper, the flaws of these processes can be seen, first, in the fact that, like the SGP, the macro-economic surveillance is by definition backward looking. There is no explicit future oriented view on macro-economic developments although the alert mechanism is supposed to detect imbalances which have a clear long-term dimension early enough to counteract.

Second, while the scoreboard covers fiscal and financial sector developments, the spill-overs between the three spheres are mostly neglected. One way to capture spill-overs would be the extension of the scoreboard with financial market indicators. Up to now, there is no common understanding that the link between financial and macro-economic issues should be addressed by surveillance processes.

Third, it should be noted that, despite the severe economic turbulences in the Euro area, in its first year, the MIP did not classify one country as having excessive imbalances. One can seriously ask if the MIP framework is a biting one if already at the start of the Procedure political pressure is more than weak.

III.C Macro-prudential Surveillance - The Role of the ESRB

According to the regulation establishing the European Systemic Risk Board (ESRB),

“[t]he ESRB’s task should be to monitor and assess systemic risk in normal times for the purpose of mitigating the exposure of the system to the risk of failure of systemic components and enhancing the financial system’s resilience to shocks.” (Regulation (EU) No 1092/2010, Whereas (10))

Therefore, the ESRB is supposed to analyse the current macro-financial situation and give advices to European and national bodies on how to foster financial stability in the EU. The Board considers public finances and real economic aspects for this purpose as well as negative effects of the financial system on the real economy. The ESRB is the EU’s macro-prudential supervisory body. It gathers European and national supervisory authorities, central banks, the EC, the ESAs and the Economic and Financial Committee (EFC). The ECB’s president is also the Chair of the ESRB. The General Board is the central decision making body comprising 65 members. The Steering Committee only comprises 14 members, thereof the Chair and the first Vice-Chair of the ESRB, the Vice-President of the ECB, four representatives of the national central banks¹⁸, a representative from the EC, the Chairs of the ESAs, the President of the EFC and the Chairs of the two advisory committees to the ESRB. The Committee prepares the General Board’s meetings and monitors the daily work. The Advisory Technical Committee, where the directors on financial stability of the national supervisory authorities or central banks meet, and the Advisory Scientific Committee, where independent experts on financial stability issues meet, advise the General Board. A secretariat supports the ESRB administratively. The ECB plays a strong role within the ESRB, although the ESRB is supposed to consider not only the Euro area but the whole EU. Apart from personnel linkages, the ECB offers logistical and technical support.

The ESRB is supposed to work independently, thus must not demand or take on orders. The ESRB provides the ESAs with relevant macro-prudential information and gets its information as aggregated data¹⁹ from the European and national supervisory authorities. Beyond that, the ESRB collects macro-level data on regional and sectoral (e.g. between financial market actors, products, markets, the economy and public finances) interlinkages (cf. Deutsche Bundesbank 2012: 29ff.). The ESRB addresses recommendations to the EU as a whole, individual member states or institutions. Also, the ESRB recommends specific actions to take in a given time. The addressee needs to inform the ESRB and the European Council about steps taken and to justify them in a ‘comply-or-explain’-manner. The ESRB’s main work is confidential except for non-confidential recommendations, and the yearly report. Although the ESRB is supposed to be a supervisory agency, it mainly serves as an advisory body since it does not dispose of any enforcement instruments.

¹⁸ They need to be members of the General Board and of the ECB’s General Council.

¹⁹ In exceptional cases, the ESRB could demand confidential individual data.

IV. Institutional features of an improved surveillance framework for the Euro area

As the crises made clear, vulnerability and risk analyses are crucial to detect unfavourable developments. Hence, European institutions try to fill conceptual gaps in the surveillance architecture by moderately integrating vulnerability concepts and indicators into the existing processes. While fiscal, economic and financial stability have been addressed by the refined and newly introduced processes, the different surveillance processes still have conceptual shortcomings and, more importantly, are not sufficiently connected, yet. In the following we first propose conceptual elements that would improve the surveillance processes analytically and, sketch institutional extensions to increase the processes' effectiveness and efficiency.

IV.1 Conceptual elements

As identified in the previous section, the SGP and the MPI still have some serious shortcomings. We propose to address them, first, by individually extending each of the processes by deeper analyses and, second, by considering them comprehensively and together with macro-prudential surveillance tools.

(1) Medium term projections

Both, the SGP and the MIP are short-term, whereas sustainability reporting is long-term oriented. However, in order to capture current vulnerabilities and risks with regard to future probable developments, an additional, medium-term oriented strategy is needed. One way to capture the risks for fiscal sustainability institutionally could be by creating a reporting and monitoring framework in addition to the SGP framework and the sustainability analysis. Such a forward-looking medium-term analysis covering a period of 10-20 years would have the advantage to be more policy oriented than the very long-term sustainability reporting. At the same time such an approach could be a more effective early warning tool than the SGP, which is necessarily very short-term oriented. The EC already plans to incorporate a medium-term projection into its sustainability report. However, integrating it into a surveillance process – and not just reporting about it – might foster the surveillance's, foremost the SGP's, effectiveness.

(2) Safety margins

Additionally, the medium-term projections could be refined by safety margins. An ambitious shift of the SGP's anchor, the MTO, from deficit to surplus requirements is indispensable. The sustainability analyses by the EU make clear that fiscal risks – not only because of ageing societies – call for a prudent safety margin in order to increase the resilience of public budgets against future challenges and shocks. Generally, the MTO should be oriented at cyclically adjustments to a balanced budget. However, in serious times like nowadays, adjustments should require surpluses in order to decrease the public debt level at least to the SGP's and Fiscal Compact's

60% -threshold and thereby regain credibility in the public finances' sustainability and get scope for action to prepare for future challenges such as those caused by ageing societies and ecological developments. That is even more true as the major economies in the world will face a dramatic pressure on public debt even under significant budget consolidation following the current SGP rules is implemented (DB Research 2011). In that context, it should be ensured that forecasts are conducted by more prudent calculations. Economic and fiscal forecasts should be more conservative and instead of using the simulation's means the projections should be taken from lower confidence bounds as referred to as safety margins.

(3) *An early warning mechanism*

The two proposals could translate into an early warning mechanism. This mechanism could build upon the work the EC already undertakes regarding fiscal vulnerabilities and the enhancement of the IMF's EWE for European purposes. This mechanism could cover different analyses. Fiscal sustainability should be at the core of the process to effectively complement the EC's current surveillance mandate for public finances and economic imbalances. Moreover, the mechanism could add financial and real economic indicators to the analyses in order to assess vulnerabilities and risks stemming from these areas for the public finances' sustainability. Also, the mechanism could be enriched by contagion and spill-over models simulating the materialisation of risks in specific cases, and by models that carry out a more profound risk analysis for certain important risk areas, such as the financial sector. Thereby, the EC should conduct a country-specific approach. The results could also influence the determination of country-specific safety margins proposed above and country-specific maximum debt levels allowed in the SGP. Hereby, the EC should especially differentiate between the different challenges and responsibilities of those countries that have the Euro in contrast to those who have not.

It should be discussed whether results should be made public or not. On the one hand, some of the data used are confidential; on the other hand, only published information will effectively work as peer pressure instruments to motivate countries to engage in reforms.

(4) *Cope with Spill-overs*

The crises have made clear that the Euro area economies face severe spill-over effects, not only on the real economic side but even more from the financial to the economic and fiscal side and vice versa. Therefore, it is crucial to implement mechanisms which explicitly deal with them. The SGP is not supposed to incorporate such analyses in order to keep a clear cut mandate. In contrast, the MIP already tries to assess some economic spill-over effects. However, so far, the MIP focusses heavily on current account imbalances which – to draw adequate conclusions – could not easily be considered independently and without regard to the other scoreboard indica-

tors. Also, so far, spill-over effects between the three mentioned areas are hardly captured. The proposed early warning mechanism and related simulations could make up for part of that. Further, we propose to establish a process that links all individual processes, including macro- and micro-prudential supervision, conducted by the different institutions. The European Semester could serve as a basis. Representatives of the respective institutions should meet on a regular basis and conduct stress testing and contagion model simulations. Results should translate into institution- and country-specific recommendations depending on the governance level concerned. In order to keep results and recommendations as frankly as possible, results should not be made public. The evaluation whether the recommendations have been taken into account will be conducted in the individual surveillance processes.

IV.2 Institutional reform components

(1) European Committee on Supervisory Data Analysis (Supervisory Committee)

The conceptual lack of considering spill-over effects is mirrored by the respective institutional lack: procedures and the related institutions avoid taking such spill-over-effects into account. However, we argue that only an integrated approach connecting all surveillance processes seems to be appropriate to address vulnerabilities and risks in the Euro area and to serve as a ‘fortress’ against future crises. Therefore, we propose to establish a European Committee on Supervisory Data Analysis. This committee is supposed to complement all surveillance processes as a technical advisory committee. It will conduct the relevant analyses and thereby support the respective institutions in charge as an advisory committee. The committee itself and its members are politically independent. One member is appointed for about six years by each of the European institutions including the European Economic and Social Committee as the European representative of trade unions and employers. A member can be re-appointed once. As for the German Council of Economic Experts, members could come from the academic sphere in order to guarantee a close connection to econometric analyses. Because of the large scope of analyses the Committee needs to cover, it should be supported by an adequately large staffed secretariat.

Whereas the Committee would conduct all analyses, the respective institutions keep the responsibility to decide upon their use and the formulation of recommendations – as for example the EC regarding the SGP and MIP and the definition of excessive deficits and imbalances, respectively. Nonetheless, the Committee should make results public, at least those that currently are publically available, too (e.g. SGP and MIP forecasts). This would put public pressure on the EC and the national governments to take them into account. As experiences have shown, only published information or the threat of information getting public by some politician’s comment (as for example with the Troika for the financial programme countries) would discipline countries to act

according to the rules. In order to develop the necessary design features of such a new surveillance institution, we can benefit from the experiences made in Hungary, where an independent Fiscal Council was chaired by George Kopits (2012; cf. Debrun and Takahashi 2011; Nyikos 2012), but also from other independent bodies, such as in the Netherlands or Sweden, which help to control public expenditure

(2) *Integrated surveillance framework*

As pointed out in the section above, an integrated approach is needed to effectively capture spill-over effects and the related build-up of vulnerabilities and risks. Therefore, all relevant institutions should come together on a regular basis and exchange information and evaluations of their respective fields of action. Here, the ESFS could serve as an example. Moreover, to complement the supervision related to financial vulnerabilities and risks, a micro-prudential supervisory body as part of a possible banking union could be established. Also, this would provide more information on real economic developments and regional dispersions of a financial institution's risks due to funding to public bodies. This could foster the assessment of spill-over effects between countries and between the fiscal, financial and economic field and help to detect contagion channels and related vulnerabilities and risks. Such an integrated framework, at least when it comes to assessing future risks, could leave the established corrective arms untouched as it might be appropriate to leave the processes separate while assessing possible future risks in a more comprehensive manner.

V. Conclusion

The epistemological background for our proposals is not only to build a resilient framework against crises in the Euro area but also against black swan events. The European concepts, institutions and processes have to ensure that not only 'expected risks' but even unlikely or unknown, nevertheless in a globalized, highly integrated and leveraged world with rapidly evolving contagion risks can be dealt with. Such extreme scenario treatment was described prominently by Taleb (2007, 2010). For him the crucial task is not to predict Black Swan Events rather than to build robust systems to negative ones and being able to exploit positive ones. As the financial and sovereign debt crisis has shown, financial markets, the real economy and not the least public finances are very vulnerable to hazardous Black Swan events and exposed to welfare losses beyond those predicted in standard models.

It is obvious that there will never be a comprehensive early warning framework overseeing all factors and their interplay that prevents financial, macro-economic and sovereign debt crises. However, the current framework can be improved, as could be seen in this paper. While there are now elements available that could serve much better as early warning instruments as the pre-crisis ones. When the SGP was designed in the late

nineties, its design only was about fiscal stability. Some countries chose this path successfully, but only until the crises. The basic thinking was that requiring fiscal stability would motivate related policies, such as structural reforms. At least now, politicians now that this was not that obvious. Rather, considering only the deficit criterion and neglecting the debt criterion and other macro-economic and financial market indicators, shaped a narrow understanding of what influences financial stability. Now, it is more obvious that all the mentioned elements play a role, and that the setting of all three differs between countries. Accordingly, we suggested to enhance the current EMU's institutional framework by some elements improving data assessment and monitoring.

Apart from that, methods and models should be kept improving. Also, better ways to assess data and to define indicators need to be found. Besides that, methods and processes should be kept simple and, hence, transparent, also for reasons of political economy and communication. In any case, methods should not stick to an ideological school – like neoclassic or Keynesian concepts – but should ‘use any rod to catch the fish not discussing whether the rod has to be wood or Kevlar’. Furthermore, it would be enriching to find a way to keep the institutional design open, as a ‘self-learning’ structure, so that it adapts easily to changing initial conditions while staying the same during different ‘seasons’. Here, a lot more work, especially regarding institutional designs should be undertaken to learn from that, also for the political and administrative work.

Tables and Figures

Table 1: Variables, indicators, and models used by the IMF's EWE.

	AEs	EMs
Medium-term variables		
<ul style="list-style-type: none"> ▪ Real GDP growth ▪ House prices ▪ Stock prices ▪ Private credit ▪ Construction sector contribution to GDP growth ▪ Financial sector contribution to GDP growth 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ 	<ul style="list-style-type: none"> ✓
Near-term variables		
<u>External sector</u>		
<ul style="list-style-type: none"> ▪ Reserve coverage of short-term debt and projected current account deficit ▪ Current account/GDP ▪ External debt to/GDP ▪ External debt/exports of goods and services ▪ Real export growth ▪ Real effective exchange rate overvaluation ▪ CGER current account norm deviation ▪ Private sector external debt 	<ul style="list-style-type: none"> ✓ ✓ ✓ 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ ✓ ✓
<u>Public sector</u>		
<ul style="list-style-type: none"> ▪ General government balance/GDP ▪ Primary gap ▪ General government gross debt/GDP ▪ Public debt exposed to currency risk ▪ Public debt exposed to rollover risk ▪ Government revenue, percent change 	<ul style="list-style-type: none"> ✓ ✓ 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ ✓
<u>Financial sector</u>		
<ul style="list-style-type: none"> ▪ Inflation ▪ Capital adequacy ratio (banks) ▪ Return on assets (banks) ▪ Nonperforming loans (in % of total loans) ▪ Annual change in private sector credit to GDP ratio ▪ Dummy for institutional/structural weakness ▪ Bank cross-border inflows (percent change) ▪ Loan/deposits ratio 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ ✓ ✓
<u>Corporate sector</u>		
<ul style="list-style-type: none"> ▪ Black-Scholes-Merton default probability (corporate) ▪ Return on assets (corporate) ▪ Price/earnings ratio (corporate) ▪ Interest coverage ratio ▪ Debt/assets 	<ul style="list-style-type: none"> ✓ ✓ ✓ 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓
<u>Household sector</u>		
<ul style="list-style-type: none"> ▪ House price acceleration ▪ Stock price acceleration ▪ Household liabilities/GDP ▪ Interaction (household liabilities) * (medium-term house price increase) ▪ Interaction (household liabilities) * (house price acceleration) 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ 	<ul style="list-style-type: none"> ✓

AEs: advanced economies; EMs: emerging economies.

Figure 1: Risk Octagon according to Cottarelli (2011).

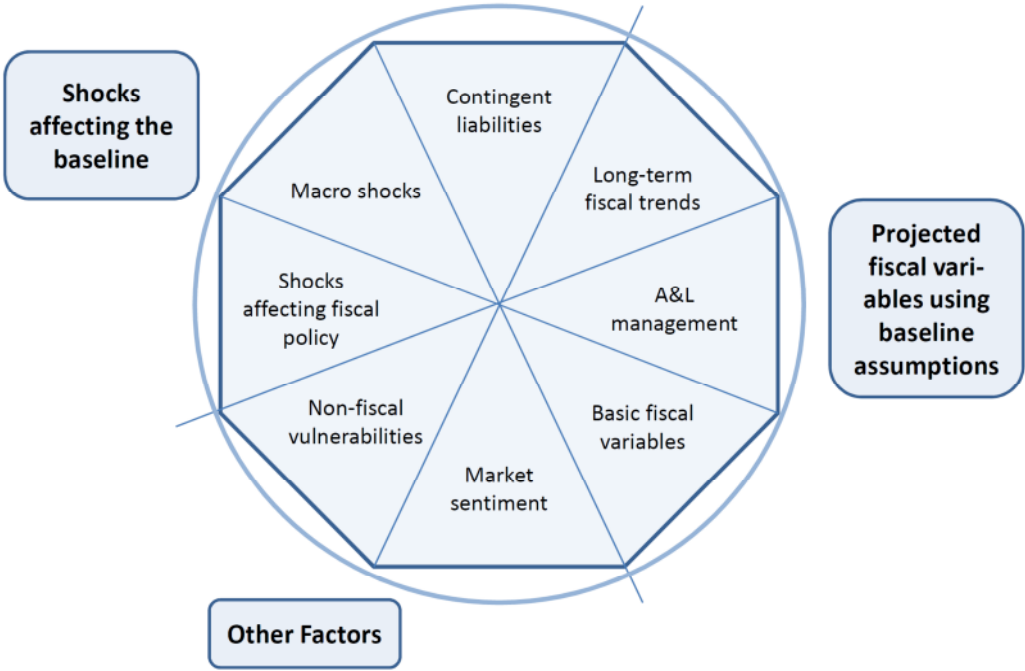


Table 2: Risk Octagon according to Cottarelli (2011).

Basic fiscal variables
<u>Short and medium-term trends:</u>
<ul style="list-style-type: none"> ▪ Cyclically adjusted primary balance ▪ Gross government debt ▪ Differential between interest rate on public debt and the growth rate of GDP
<u>Long-term trends in the fiscal variables (belonging to the first dimension):</u>
<ul style="list-style-type: none"> ▪ Pension spending trends ▪ Health care spending trends
<u>Asset and liability management:</u>
<ul style="list-style-type: none"> ▪ Maturity of government debt ▪ Sovereign bond rollovers
Uncertainty around the baseline projections (described in the first three dimensions)
<ul style="list-style-type: none"> ▪ Contingent liabilities (contractual obligations and non-contractual commitments such as those arising from the financial sector) ▪ Macro-economic assumptions (growth rate, interest rate, exchange rate) ▪ Fiscal policy deviations
Other factors
<u>Non-fiscal variables</u>
<ul style="list-style-type: none"> ▪ Current account balance ▪ Private debt
Market sentiment or risk appetite

Table 6: Variables used in the ECB's Financial Stability Review (ECB 2012).

Macro risks
<ul style="list-style-type: none"> ▪ CDS spreads of LCBGs ▪ Spreads between ten-year Euro area sovereign bond yields and the ten-year overnight index swap rate ▪ GDP growth and GDP growth forecasts ▪ Current account deviations from benchmarks for G20 member countries ▪ Capital flows ▪ Indicator measuring international financial spill-overs ▪ External indebtedness in non-Euro area EU countries ▪ Growth in credit to the private sector in non-Euro area EU countries ▪ Oil prices and spare oil production capacity ▪ Indicator measuring fiscal risk from CDS spreads
Credit risks
<ul style="list-style-type: none"> ▪ Indebtedness of and MFI lending to Euro area households, interest and write-off rates ▪ Profitability of non-financial firms in the Euro area ▪ Expected default frequency, total debt and interest burden of non-financial sectors in the Euro area ▪ Bank lending standards to non-financial firms in the Euro area and costs of external financing ▪ Estimation of shocks to market-based debt and loans of non-financial firms in the Euro area ▪ Property prices in the Euro area ▪ Sovereign bond maturities and yields, deficit ratio, government's estimated financing needs
Financial markets and global financial institutions
<ul style="list-style-type: none"> ▪ EUR/USD swap, overnight repo market rates, country differences in unsecured lending rates, funding conditions in interbank money markets ▪ sovereign bond spreads, traded volumes and yields ▪ corporate bond spreads, equity prices, euro area stock market volatility ▪ Tier I capital ratios of global LCBGs, LCBGs stock prices in the Euro area and USA ▪ Global hedge fund returns and leverage
Euro area financial institutions
<ul style="list-style-type: none"> ▪ Euro area LCBGs: loan loss provisions, profit, structure of the risk weighted assets, liabilities, aggregate lending and borrowing volumes ▪ Write-off rates, credit standards ▪ CDS spreads of Euro area and global LCBGs ▪ Maturity and debt structure of Euro area banks, MFI's domestic government bond holdings ▪ US money market funds' exposure to Euro area and EU Banks ▪ Simulating contagion effects of bank deleveraging caused by sovereign bond risk ▪ Insurances: growth of gross premia, investment income and return on equity, CDS spreads with regard to the iTraxx Europe main index, investment mix and uncertainty distribution ▪ Target2 balances, volumes of repo markets, share of interbank on total bank funding ▪ Model on the probability of a simultaneous default of more than one Euro area LCBG ▪ Model on default risk, Systemic risk measure

Figure 2: Euro Area Surveillance Procedures – institutional Overview.

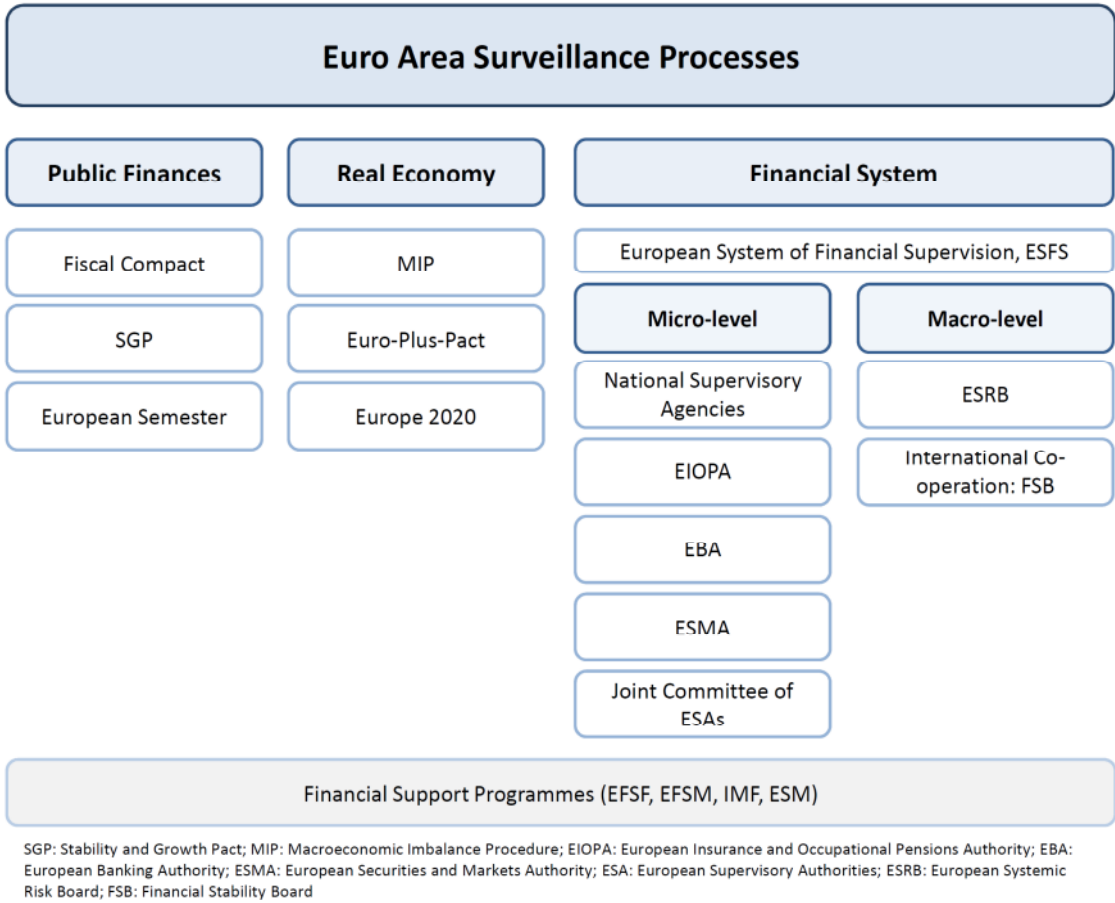


Figure 3: New Fiscal and Economic Surveillance System in the Euro Area.

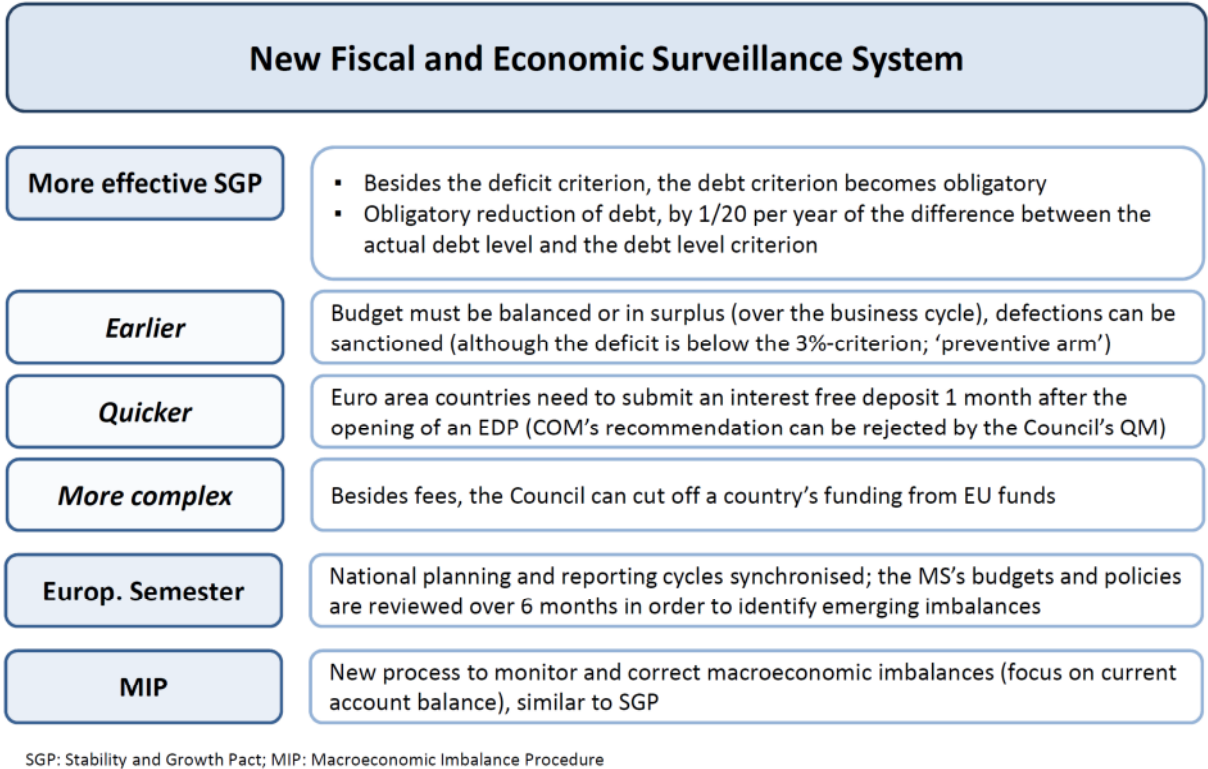


Figure 4: Macro-economic Surveillance and the Excessive Imbalances Procedure.

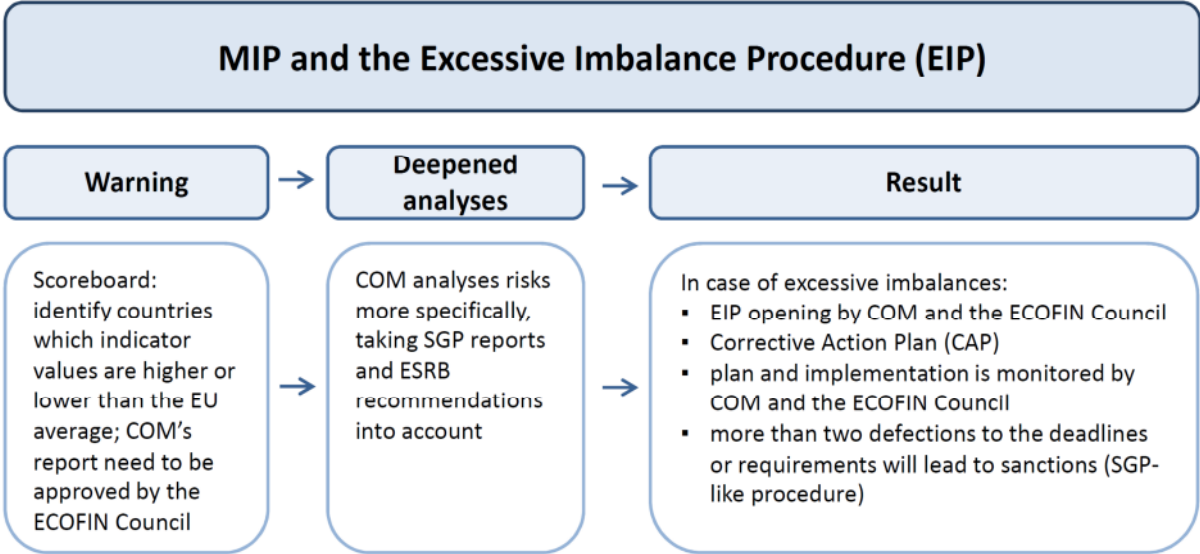


Table 7: Core indicators of the MIP's Scoreboard.

<ul style="list-style-type: none"> ▪ Three-year backward moving average of the current account balance, % GDP, threshold +6% to - 4% ▪ Net international investment position, % GDP, threshold -35% ▪ Five-year percentage change of export market shares measured in values, threshold -6% ▪ Three-year percentage change in nominal unit labour cost, thresholds of +9% for Euro area countries and +12% for non Euro area countries ▪ Three-year percentage change of the real effective exchange rates based on HICP/CPI deflators, relative to 35 other industrial countries, thresholds of -/+5% for Euro area countries and -/+11% for non Euro area countries ▪ Private sector debt, % GDP, threshold 160% ▪ Private sector credit flow, % GDP, threshold 15% ▪ Year-on-year changes in the house price index relative to a Eurostat consumption deflator, threshold 6% ▪ Government sector debt, % GDP, threshold 60% ▪ Three-year backward moving average of the unemployment rate, threshold 10%

Appendix

Table 3: Fiscal Monitoring Indicators according to Baldacci, McHugh and Petrova (2011a).

Basic fiscal variables (short and medium-term fiscal developments)
<ul style="list-style-type: none"> ▪ General government gross/net debt (% GDP) ▪ Cyclically adjusted primary balance (% potential GDP) ▪ Projected growth-adjusted interest rate (r-g; 5 or 10 year average)
Long-term fiscal trends
<ul style="list-style-type: none"> ▪ Total fertility rate (deviation from 2.1) ▪ Old age dependency ration projections ▪ Long-term projections of public pension expenditure (% GDP) ▪ Long-term projections of public health expenditure (% GDP)
Asset and liability management
<ul style="list-style-type: none"> ▪ Current gross financing needs (% GDP) ▪ Share of short-term (public) debt as a ratio of total (public) debt ▪ Debt denominated in foreign currencies (% total debt) ▪ Debt held by non-residents (% total debt) ▪ Weighted average maturity of outstanding general government debt (years) ▪ For EMEs only: Short-term external debt (% gross international reserves)

Table 4: Toolkit for Assessing Fiscal Vulnerabilities in Advanced Economies according to Schaechter et al. (2012).

Short-term financing pressures
<u>Gross funding needs (short + medium term)</u>
<ul style="list-style-type: none"> ▪ Need for large new issuance of debt to finance a fiscal deficit + need to refinance large amounts of maturing debt ▪ Current stock of general government debt/average debt maturity
<u>Markets' perception of sovereign default risk²⁰</u>
<ul style="list-style-type: none"> ▪ Credit default swap (CDS) spreads ▪ Relative asset swap (RAS) spreads
<u>Distress dependence among sovereigns</u>
<ul style="list-style-type: none"> ▪ probability of sovereign distress in one country given default in another country
Medium- and long-term pressures
<u>Medium- and long-term adjustment needs to ensure fiscal sustainability</u>
<ul style="list-style-type: none"> ▪ Cyclically-adjusted primary balance that has to be realized by 2020 and maintained until 2030 to reach a debt level of 60% of GDP by 2030²¹ ▪ Primary balance in 2016 that would be consistent with stabilizing the debt level in the very long run, in order to satisfy the intertemporal budget constraint
<u>Interest rate-growth differential</u>
<ul style="list-style-type: none"> ▪ Growth shocks (e.g. real GDP growth -1 pp compared to baseline) ▪ Interest rate shocks (e.g. interest rates + 100 bps over the medium term)
<u>Stochastic simulations: risks to public debt trajectories²²</u>

²⁰ The IMF notes that caution is needed when interpreting high-frequency financial market indicators like CDS and RAS spreads. In particular, the risks measured by these indicators depend not only on fiscal vulnerabilities but also on global and financial factors.

²¹ If the debt level in the starting year is less than 60% of GDP, that level is set as the 2030-target. For countries with large financial assets net debt targets are assumed.

²² The computation of public debt trajectories relies on a risk-based approach to debt sustainability.

Table 5: Variables used for composition of the fiscal and the financial-competitiveness index.

Fiscal Index
<ul style="list-style-type: none"> ▪ Balance, % GDP ▪ Primary balance, % GDP ▪ Cyclically adjusted balance, % GDP ▪ Stabilizing primary balance, % GDP ▪ Gross debt, % GDP ▪ Change in gross debt, % GDP ▪ Short-term debt, gov't, % GDP ▪ Net debt, % GDP ▪ Interest rate-growth-differential ▪ Change in expenditure of general government, % GDP ▪ Change in final consumption expenditure of general government, % GDP ▪ Old-age dependency ratio 20 years ahead ▪ Average yearly change in projected age-related public expenditure as % of GDP over the next 30 years
Financial-competitiveness Index
<ul style="list-style-type: none"> ▪ Net financial assets, total economy, % GDP ▪ Net savings of households, % GDP ▪ Net savings of non-financial corporations, % GDP ▪ Private sector debt, % GDP ▪ Net acquisition of financial assets, private sector, % GDP ▪ Leverage, financial corporations ▪ Short-term debt, non-financial corp., % GDP ▪ Real short-term interest rate ▪ Construction, % value added ▪ Current account, % GDP ▪ Average growth rate of real effective exchange rate, based on exports deflator, ref 35 countries ▪ Average growth rate of nominal unit labour costs over the last 3 years ▪ Real GDP growth ▪ GDP per capita in PPP, % of US level

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