

# A comparison of ECB and IMF indicators for macro-prudential analysis of the financial sector<sup>1</sup>

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## Introduction

The IMF recently published, on an ad hoc basis, a series of Financial Soundness Indicators (FSIs)<sup>5</sup> based on a common methodology – the *Compilation Guide on FSIs* (IMF, 2006), henceforth the *Guide* – for 62 countries, including all European Union (EU) countries. The European Central Bank (ECB) has an interest in monitoring the development of the IMF initiative on FSIs in the context of its own work in compiling macro-prudential indicators (MPIs) jointly with the ECB's Banking Supervision Committee (BSC).<sup>6</sup> The aim of this paper is to identify the main similarities and differences of FSIs and MPIs, with particular emphasis on highlighting some methodological issues that need to be taken into account when implementing the *Guide* in Europe.<sup>7</sup> This exercise may also help to explain possible sources of discrepancies between figures appearing in IMF and ECB publications that, on the surface, could be seen as measuring similar concepts. The focus is on indicators covering the banking sector, where the overlap between MPIs and FSIs is most pronounced.

Two main differences between MPIs and FSIs are discussed here: the consolidation approach for banking sector data, and geographical scope (ie countries versus regions). As regards the consolidation approach, the *Guide's* recommendations are geared towards a treatment of the financial sector that makes it possible to aggregate it with (and keep it distinct from) other economic sectors.<sup>8</sup> Although broadly in line with supervisory and accounting standards, FSI concepts are primarily drawn from macroeconomic measurement frameworks, which have been developed to monitor aggregate activity in the economy. Conversely, the approach to compilation of MPIs focuses primarily on the financial sector,

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<sup>1</sup> This paper does not necessarily reflect the views of the ECB, the IMF or the institutions represented in the ECB's Banking Supervision Committee.

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<sup>5</sup> The IMF published FSIs for an initial set of countries on 29 January 2007. Data for the remaining countries involved in the Coordinated Compilation Exercise are expected to be published later in 2007 and 2008. As of 8 November 2007, FSIs for 57 countries have been made available. Data for all EU countries have been published.

<sup>6</sup> The BSC is composed of central banks and banking sector supervisory agencies of the EU member countries. The ECB Statistics Committee provided support with non-supervisory data used by the ECB/BSC.

<sup>7</sup> For the ECB/BSC approach, see Grande and Stubbe (2002), Mörttinen et al (2005) and various issues of the ECB Financial Stability Review. For the IMF, see IMF (2006).

<sup>8</sup> The two approaches, as labelled in the *Guide*, are the domestically controlled cross-border (DCCB) consolidation basis and the domestic consolidation (DC) basis (see Section 2).

with the banking sector at its core, and introduces the other economic sectors as sources of counterparty and market risk for banks. Moreover, all economic activity that is headed by a bank is reported under the parent bank. This requires a cross-border and cross-sector consolidation approach, which is also consistent with national supervisory practices and EU standards. The ECB/BSC approach is considered more appropriate for the monitoring of financial stability, because it allows for a complete view of the vulnerabilities and risks building up within banking groups and across the banking sector as a whole. In terms of geographical scope, the supranational perspective on financial systems (eg EU and euro area) is missing in the IMF framework. In Europe, the adoption of a common currency (or, from an EU perspective, the creation of the single market) has fostered new linkages across banks (and markets) operating in the euro area (or the European Union), creating new possibilities for contagion. In this context, national and regional perspectives could be usefully combined to provide fuller assessment of financial stability for other countries sharing crucial cross-border links in the financial sector.

The paper concludes with an investigation of potential areas for convergence between MPIs and FSIs.

## Section 1 – ECB/BSC macro-prudential indicators

The ECB/BSC has been developing a framework for financial stability analysis over the past decade, driven largely by increasing integration across European financial systems (see ECB, 2007). An important component of the work has been constructing indicators for assessing the condition of the financial system and its resilience to stress. The ECB/BSC addressed this practical need by creating a set of MPIs that cover the entire financial system, but with special emphasis on the banking sector.<sup>9</sup>

The primary geographical scope of the financial stability analysis conducted by the ECB/BSC is the euro area and the European Union. One factor that has greatly facilitated the regional analysis conducted by the ECB/BSC is that all EU countries collect rather similar supervisory banking data, due to the adoption of the same EU Directives, creating a source of information that could form the core of the quantitative data needed to compute MPIs. Such data are compliant with Basel I (and, from 2008, Basel II) supervisory requirements, which take a consolidated view of banking groups. In particular, this requires consolidation of banking sector data, both across sectors (some subsidiaries of banking groups are not themselves banks) and across borders (some subsidiaries of banking groups are foreign-based), with the data collected by the ECB/BSC having been corrected for double-counting across the banking sectors of EU countries.<sup>10</sup> As for future changes, it has been decided that revisions to the templates for collecting banking data will be carried out in accordance with the recent accounting and supervisory changes made in implementing the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) and Basel II, respectively.<sup>11</sup> In this regard, as explained below, work undertaken by the EU Committee of

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<sup>9</sup> Mörntinen et al (2005) and ECB (2005a and b) describe the main components of the ECB approach. The ECB publishes the results of its analysis regarding the euro area in the Financial Stability Review and, in cooperation with the BSC, results regarding the European Union in the EU Banking Sector Stability Report.

<sup>10</sup> To the extent that cross-border integration of the EU banking sector deepens, or in the case of countries whose banking sector is mostly foreign-owned, the concepts of a banking sector “operating” in a country and a banking sector “domiciled” in the same country will move further apart. The Basel consolidation approach was still considered more appropriate for providing a full view of risks within the banking sector.

<sup>11</sup> The only major exception in this respect is the limitation of the scope of cross-sector consolidation under IFRS, to comply with the Basel II guidelines (ie consolidation only within the financial sector), and also with

European Banking Supervisors (CEBS) to develop common reporting templates incorporating IAS/IFRS and Basel II is expected to provide a useful benchmark for the revision of MPIs.

The analytical framework in which MPIs are used primarily involves the banking sector, and is composed of three blocks. The first consists of an assessment of conditions in the banking sector, based on backward-looking MPIs such as balance sheet, profitability, asset quality and capital adequacy measures (indicators similar to the CAMELS<sup>12</sup> supervisory ratings assigned by national supervisory authorities). The second block is forward-looking, and is designed to identify major sources of risk facing the banking sector. This analysis is based on several information sources, including market intelligence, contacts with EU national supervisory authorities and central banks, and internal risk assessment conducted by the ECB/BSC. Several MPIs are constructed to summarise the available quantitative information, covering competitive conditions in the banking sector, credit growth and the concentration of banks' exposures, asset price developments, market-based risk assessment, business cycle conditions, and indicators of financial fragility in the counterparty sectors (primarily households and non-financial corporations). Because the analysis needs to focus on a broad range of sources of risk facing the banking sector, the relevant MPIs must provide information on (1) pockets of vulnerabilities building up within the banking sector, including those reflected by the backward-looking MPIs (ie endogenous sources of risk), and (2) risks originating in banks' operating environments (ie exogenous sources of risk). For this reason, the MPIs used in this phase of financial stability assessment go beyond the banking sector to cover general macroeconomic conditions, as well as financial conditions in the household and corporate sectors. The third block is a set of indicators for assessing the resilience of the banking sector, based on its risk absorption capacity given the financial conditions and main sources of risk associated with the first two blocks. While some, primarily market-based, MPIs – eg distance to defaults, earnings-per-share, expected default frequency, price-earnings ratio – have been developed for this block, the overall assessment also draws on qualitative information, including discussion with supervisory authorities, and on an overview of the indicators used in the first two blocks. The third block is the most complex, as it requires combining the backward-looking component of the first block with the forward-looking identification of major risks in the second block.

The ECB/BSC approach to the design and use of MPIs is constantly being refined, independently of the supervisory and accounting changes already mentioned, although the link with Basel II requirements allows for MPIs to provide a consistent framework in which banks and the ECB/BSC measure risk – eg by recognising risk transfers, counterparty credit risk transfers, credit and market risk derivatives and securitisation. Examples of such refinements cover new concepts, as well as new MPIs. An example of the former case is the recognition of the financial system's increasing complexity, and the special role of larger and more sophisticated banks, given the potential impact that the failure of any of them could have on the financial system. This has required the selection of new banking sector population samples by bank size, as well as by the role of banks in national financial systems (ie in terms of so-called Large and Complex Banking Groups, or LCBGs). Indicators based on public disclosures made by LCBGs have become an essential part of the financial stability analysis conducted at the ECB/BSC, and they have the additional benefit of improving the timeliness of the information. Given that LCBGs are often listed on stock exchanges, market-

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respect to profitability, balance sheet and asset quality indicators, which are not otherwise directly affected by Basel II.

<sup>12</sup> The acronym CAMELS stands for Capital adequacy, Asset quality, Management (ie efficiency), Earnings, Liquidity, and Sensitivity to interest rates. See also Evans et al (2000) for an overview of micro-prudential indicators.

based indicators can also be extensively used for gauging market participants' assessment of LCBGs' ability to weather adverse financial disturbances. As regards new MPIs, efforts are being made to develop criteria for monitoring crucial banking sector risks, such as interest rate and liquidity risk, and to devise frameworks for stress testing that can be used to test the resilience of the EU/euro area banking sector in responding to large but plausible adverse disturbances. In this context, MPIs may eventually be used for conducting stress tests at the euro area/EU level.

## Section 2 – IMF financial soundness indicators

As a consequence of the 1997 financial crises in Asia and previous global recessions, financial stability became part of the IMF agenda, complementing other initiatives to strengthen financial systems. Following an initial consultative meeting of experts and a survey of member countries, the IMF Executive Board endorsed a list of core and encouraged FSIs in June 2001. In January 2004, the IMF Executive Board approved a compilation *Guide* to develop FSIs for macro-prudential analysis, and finalised the list of FSIs with the specification of core and encouraged indicators. The core indicators concern only the deposit-taking sector (which corresponds to credit institutions in the EU terminology), while the encouraged indicators cover other sectors as well. The distinction between core and encouraged FSIs is helpful, since the availability of a small number of carefully selected indicators (a core set) in all countries could help set priorities for future work. The IMF has organised an initial stocktaking for the compilation of these FSIs. This exercise (known as the Coordinated Compilation Exercise, or CCE) has involved 62 countries, including all 27 EU countries. Since this is a one-off exercise, certain aspects of the methodology recommended by the *Guide* (such as data timeliness and frequency) have not yet been tested. Moreover, it remains to be seen for how many countries the FSI compilation will become a regular exercise.

Nevertheless, the FSIs represent a new body of economic statistics with which to assess the strengths and vulnerabilities of financial systems. The most important characteristic of FSIs is that they are designed to measure the soundness of the financial system as a whole, rather than the performance of the system's individual units. In this way, they differ from the indicators generally used by supervisors. For the purposes of the FSIs, the *Guide* explains how to aggregate and consolidate the data reported by each unit within the sector, in order to produce a total that is representative of the system's strengths and vulnerabilities, and to provide an assessment of the sector's strength. In order to obtain the sector-level data, all positions and flows between units within a group, as well as most positions and flows between reporting entities within the sector, are eliminated. As a result, the total for the FSI compilation is not simply the sum of its parts (eg the sector-wide data on capital and reserves are smaller than the simple sum of data on capital and reserves of all units within that sector). Therefore, sectoral measures of risk, capital adequacy or profitability will not necessarily be simple aggregations or averages of individual institutions' data. The *Guide* defines the deposit-takers and other sectors broadly along the lines of the 1993 SNA classification, which significantly enhances the usefulness of these indicators.

The IMF indicators in the core set are exclusively for deposit-takers, and are broken down into capital adequacy, asset quality, earnings and profitability, and liquidity indicators. Capital adequacy indicators serve to determine the robustness of financial institutions in terms of their ability to withstand shocks to their balance sheets. There are three ratios that serve as core indicators for capital adequacy: regulatory capital to risk-weighted assets, regulatory Tier 1 capital to risk-weighted assets, and non-performing loans net of provisions to capital. For asset quality, there are two core indicators: non-performing loans to total gross loans, and sectoral distribution of loans to total loans. Deposit-takers' asset quality is affected by the performance of their customers and is exposed to risks associated with loan concentration.

In fact, a deterioration in the financial health and profitability of non-financial corporations often contributes to the impairment of deposit-takers' assets, and lack of diversification in loan portfolios can be a significant cause of deposit-takers' vulnerability.<sup>13</sup> Earnings and profitability indicators are used to assess deposit-takers' financial health, and are also important in monitoring the efficiency with which they use resources. Differences in capital structure and business mix highlight the need to analyse the related ratios simultaneously. There are four core indicators for earnings and profitability: return on assets, return on equity, ratio of interest margin to gross income, and ratio of non-interest expenses to gross income. Finally, liquidity indicators are used to detect the level of liquidity, which affects the ability of a banking system to withstand shocks. For instance, a large shock may contribute to credit or market losses, which in turn could cause a loss of confidence in the banking sector. As a result, a liquidity crisis may occur and push solvent banks into insolvency. Two ratios are core indicators for liquidity: liquid assets to total assets (liquid asset ratio), and liquid assets to short-term liabilities.

The encouraged set of indicators, on the other hand, comprises indicators designed not only for the deposit-taking sector, but also for the non-deposit-taking sectors,<sup>14</sup> financial markets and real estate markets.

A crucial feature of the *Guide* is its consolidation approach.<sup>15</sup> The main consolidation approach for deposit-takers recommended in the *Guide* is the domestically controlled cross-border consolidation (DCCB) basis.<sup>16</sup> This approach is recommended mainly because it ensures consistency with national accounts, which in turn facilitates coordinated monetary policy and financial stability analyses. Under this approach, only deposit-takers are consolidated (ie only subsidiaries that are deposit-takers are included). The *Guide* does not recommend including the cross-sector consolidation dimension (ie the DCCBS approach) primarily because this approach would reduce the clarity of the institutional sector information. Similarly, relationships with other non-deposit-taking members of the group are not included, eg connected lending between the deposit-takers and non-deposit-taking affiliates. This could complicate the early detection of emerging weaknesses in the performance of deposit-takers. Also, interpretation of these data might prove problematic, particularly in periods of merger and acquisition activity involving units in different institutional sectors. The consolidation approach recommended by the *Guide* necessitates a number of potentially complex intra-sector adjustments.

The *Guide* recommends further data adjustments, as financial data compiled in accordance with IAS/IFRS do not fully comply with the spirit of the *Guide*. In particular, according to IAS/IFRS, consolidated accounts should include all of the parent's subsidiaries, including financial non-deposit-takers and non-financial corporations. Conversely, as mentioned above, the *Guide* recommends consolidation of deposit-taking entities only. Almost all core FSIs would be affected by this approach to consolidation. A key concern for implementation of the FSIs is that many countries are likely to use data sources consolidated according to IAS/IFRS or Basel principles for the purpose of FSI compilation. Thus, for these circumstances, and as a medium-term objective, the *Guide* recommends applying

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<sup>13</sup> This may be much less the case at present because of the increasingly widespread use of credit risk transfer (CRT) techniques, even though this applies mainly to the more advanced financial systems. Moreover, CRT techniques increase the need for more extensive information on other (sub-)sectors to which risk is transferred, such as hedge funds.

<sup>14</sup> The non-deposit-taking sectors are other financial corporations, households and non-financial corporations.

<sup>15</sup> Compiling data series for calculating FSIs involves two levels of consolidation: intra-group or group-level consolidation, and inter-group or intra-sector consolidation.

<sup>16</sup> The *Guide* also recommends the domestic consolidation (DC) approach as a supplementary approach, as it permits reconciliation of FSIs with national accounts.

adjustments (deconsolidation) in order to converge towards its recommendations. In this context, during the CCE the IMF circulated guidelines and examples illustrating how to adjust data stemming from IAS/IFRS-compliant financial statements and/or from Basel-compliant supervisory returns.

### Section 3 – Comparison of the two approaches

MPIs and FSIs have been designed with the same goal: to create useful and sound benchmarks for the computation of quantitative indicators of financial resilience, primarily for the banking sector, that are broadly comparable across countries. Moreover, the FSI methodology and that of the MPIs collected and published by the EU 27 are similar on many points. Both, for instance, are based to a large extent on existing supervisory and accounting standards, and many of the indicators are similar if not identical (especially as regards the core FSIs).<sup>17</sup>

However, there are also a few differences between the two sets of indicators. It is important to identify these differences, given the costs to the 27 EU countries of setting up two different reporting methodologies for MPIs and FSIs. The reporting burden for national supervisory authorities and central banks must be taken into account, especially when considering the provision of new data series required by the IMF and not already used for MPIs. Moreover, a difference between the two series of indicators would require careful explanation, since, with regard to banks, they are designed to capture the same sources of vulnerabilities in the banking systems. Furthermore, the general public may find it difficult to interpret similar indicators of banks' profitability or solvency, which may very well have different numerical values in the IMF and ECB publications in the case of data reported at the country level. Here, we discuss three main differences in the compilation of MPIs and FSIs: (1) the conceptual approach; (2) key methodological aspects; and (3) strategic and legal issues.

As concerns the **conceptual approach**, the IMF strategy presented in the *Guide* aims to create a statistical and conceptual underpinning for a set of macroeconomic statistics on the basis of a methodological framework that, to the extent possible (but not exclusively), draws on existing statistical – and, to some extent, accounting and supervisory – standards, whereas the ECB/BSC MPIs on national banking sectors are based on existing supervisory banking data, which are compiled in accordance with international accounting and supervisory standards. In this context, the ECB/BSC approach is silent on certain detailed methodological issues that the FSI *Guide* addresses, such as intra-sector adjustments to avoid double-counting of income and capital. Ad hoc accounting guidance is also absent in the ECB/BSC approach, as it adopts, almost totally, the EU accounting and supervisory Directives. The conceptual approach devised by the IMF is based on the need to cope with the heterogeneity of financial systems worldwide. However, differences in the European Union are less marked (especially in the euro area), as there are a common currency (for the euro area countries) and a common payment infrastructure as well as rather similar financial systems. Moreover, many data definitions used by the ECB/BSC incorporate a “least common denominator” in several EU Directives, which must be applied by all Member States.

Although until recently the consolidated banking data collected by the ECB/BSC did not use a common methodology, major convergence has recently been promoted by the CEBS, which has developed a reporting scheme for the consolidated accounts under IAS/IFRS

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<sup>17</sup> The present comparison applies only for the 27 EU countries, whereas the IMF framework has potential worldwide applicability.

(called FINREP), along with solvency disclosure requirements for banks and other financial institutions (called COREP). While the implementation of FINREP and COREP at a national level, and for supervisory purposes, is a matter of national discretion, most EU countries have indicated that they either are using or will soon be using these common templates. This development will materially enhance the harmonisation of banking data collected by the ECB.

The main **methodological differences** are summarised in Table 1.

Table 1  
**Main methodological differences between MPIs and FSIs**

Differences	MPIs	FSIs
Frequency	Annual	Quarterly
Timeliness	Five to seven months after reference date	One quarter after reference date
Consolidation	DCCBS	DCCB; DC (as a supplement)
Sector-level adjustments	Rejected, except for some implicit deductions for regulatory capital	Yes
Publication of metadata	No	Yes
Geographical scope of indicators	Country level, euro area, EU	Country level only
Accounting guidelines	Link to EU Directives; in future, possible link to CEBS' FINREP/COREP	Yes

Source: ECB.

The methodological differences involve, first of all, the frequency and timeliness of data reporting, as the ECB/BSC requires annual supervisory banking data, with a five- to seven-month time lag, while the IMF criteria are more demanding, but still untested. As mentioned above, the different consolidation approaches recommended by the IMF and the ECB/BSC each have pros and cons. In particular, the ECB/BSC approach permits an aggregate view of risk at the banking group level, taking into account the principle of universal banking underlying EU rules and regulations. Moreover, as also discussed above, the increasing importance of larger banks or LCBGs constitutes further grounds for adopting a consolidated approach, in order to properly monitor all risks relating to the banking sector. Certainly, the adoption of the DCCBS approach complicates the delineation of the other financial institutions (OFIs) sector for FSI purposes, ie this approach does not guarantee symmetrical recording between sectors. This may have a bearing on the monitoring of increasingly important OFI sub-sectors such as hedge funds. A consequence of using the DCCBS approach is the need to make users aware that the OFI and deposit-taking sectors cannot be aggregated, due to double-counting. This is one of the reasons why the current version of the *Guide* does not recommend this approach. In general, when considering the consolidation approach across different sectors, consistency across various FSIs is important for the quality of the CCE –and in the event that the CCE turns into a regular exercise. The goal of the CCE was to identify the extent to which countries could, in fact, compile data consistent with the FSI methodology.

A related implementation issue concerns the extent of the intra-sector adjustments needed to compile internally consistent indicators, which are much more elaborate in the IMF

framework. While, from a theoretical point of view, these adjustments are appropriate, they may give rise to various practical difficulties, due to a possible lack of readily available data. The CCE indeed showed that, to date, only a few countries<sup>18</sup> have been able to make intra-sector adjustments recommended by the *Guide*.

The remaining methodological differences concern the publication of metadata (envisaged in the IMF framework but not yet foreseen by the ECB/BSC), the geographical scope of indicators (which is limited to country level in the IMF framework, but extends to regional level for the ECB/BSC), and the ad hoc accounting guidelines (much more detailed in the IMF framework).

Concerning the **strategic and legal differences** underlying the compilation of MPIs and FSIs, it should be borne in mind that, in the IMF case, the CCE has constituted the first opportunity to implement the approach in practice, while the ECB approach has already been in use for several years. Moreover, while the ECB approach is based on voluntary participation of the national supervisory authorities represented in the BSC, it remains to be seen to what extent the CCE will become a regular exercise, ie whether countries will continue the compilation of FSIs on a volunteer basis and whether in the future FSIs will be included eg in the framework of the Special Data Dissemination Standard (SDDS),<sup>19</sup> Financial Sector Assessment Program (FSAP) or Article IV<sup>20</sup> consultations. A decision on this may be taken later this year by the IMF Executive Board.

Assuming that the compilation of FSIs remains a voluntary exercise, compilers would rely on the *Guide*, which is necessarily rather stringent in addressing strategic and managerial issues. In particular, it recommends that the compilation of FSIs be coordinated by a lead agency, through a system of inter-agency cooperation. This is important to ensure effective coordination on FSIs, to guarantee the consistency of the concepts, definitions and framework used by different agencies in compiling FSI data, and to facilitate the dissemination of FSIs on a single centralised website and in regular publications, as recommended in the *Guide*. The *Guide* also reviews legal and other aspects of data collection, processing and dissemination, such as data confidentiality. In particular, the *Guide* recommends obtaining legal support for data collection, in line with the IMF's Data Quality Assessment Framework. The legal backing for statistical collection should cover a number of dimensions: scope, flexibility, compliance, confidentiality, integrity and confidence.

## Section 4 – Can the main areas of divergence be narrowed?

In this paper, we have identified many points of convergence between MPIs and FSIs, but also a number of differences. In this concluding section, we focus on two differences in particular: the issue of compiling indicators on a regional basis, and the consolidation basis to be used.

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<sup>18</sup> Preliminary analysis indicates that intra-sector adjustments have been made by Cyprus, Indonesia, Korea, Lebanon, Malaysia and Malta. Other countries may have made adjustments, albeit not fully consistent with the *Guide*.

<sup>19</sup> The SDDS was established by the IMF to guide countries publishing economic and financial data in the context of access, or desired access, to international capital markets.

<sup>20</sup> The FSAP is a joint IMF and World Bank effort introduced in May 1999 to promote the soundness of financial systems in member countries. Article IV consultation is mandatory for countries that have signed the IMF Articles of Agreement; it consists of regular consultations (usually once a year) between the IMF and member countries.

As for the first issue, the construction of FSIs on a regional basis is not discussed in the *Guide*. For the purpose of the CCE, the concept of FSIs was viewed as a national-level issue, with FSIs to be compiled by authorities in each country. Conversely, MPIs are primarily compiled for economic regions, such as the euro area, and only as a second step are some also compiled for individual EU countries. Indeed, regional MPIs represent a benchmark for national MPIs for the countries in the European Union and are important for the ECB/BSC's assessment of euro area/EU financial systems as a whole.

In general, there are challenges to constructing regional FSIs because data are not fully comparable across countries, especially countries outside the European Union. The consolidation process on a regional basis also imposes the additional burden of requiring information on cross-border positions and transactions within the region in order to carry out intra-regional adjustments for double-counting, as is done by the ECB/BSC in collecting supervisory banking data. Moreover, from a conceptual point of view, conducting financial stability analysis at the regional level requires the identification of meaningful geographical areas for which a regional analysis usefully complements the national-level one. Although the need for a regional approach was indisputable for the ECB/BSC, further study on this matter in the *Guide* would be welcome.

Concerning the consolidation approach, the *Guide's* recommended approach and that used by the ECB/BSC diverge substantially in that they reflect the different approaches to modelling the macroeconomy and, within it, the financial sector. Moreover, the *Guide's* attempt to design a fully consistent statistical framework for all economic sectors requires sectoral adjustments, while the ECB/BSC's primary focus on the financial sector makes it possible to dispense with them.<sup>21</sup> Finally, while links to macroeconomic statistics may be favoured by one of the two approaches, opting for either would take account of existing international accounting and supervisory standards and practices while avoiding an undue increase in the reporting burden. A more important factor in the choice is which approach provides the most appropriate information for monitoring fragilities building up within the financial sector, especially at banks. In short, the approach chosen should provide a comprehensive view of the vulnerabilities within the financial sector.

## References

ECB (2005a): "Measurement challenges in assessing financial stability", *Financial Stability Review*, December.

——— (2005b): "Assessing financial stability: conceptual boundaries and challenges", *Financial Stability Review*, June.

——— (2007): *Financial integration in Europe*, March.

Evans, O, A Leone, M Gill and P Hilbers (2000): "Macro-prudential indicators of financial system soundness", *IMF Occasional Paper*, no 192, April.

Grande, M and M Stubbe (2002): *Macroeconomic and prudential information as a source of financial stability indicators. Conceptual and practical issues from an EU perspective*, IARIW 27th General Conference.

IMF (2006): *Financial soundness indicators. Compilation Guide*.

Mörttinen, L, P Poloni, P Sandars and J Vesala (2005): "Analysing banking sector conditions. How to use macro-prudential indicators", *ECB Occasional Paper*, no 26.

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<sup>21</sup> The importance of adopting sectoral adjustments remains an empirical issue, which requires assessment through analysis of the corresponding data under the ECB/BSC and the IMF approaches.