THE ECB AND IMF INDICATORS FOR THE MACRO-PRUDENTIAL ANALYSIS OF THE BANKING SECTOR

A COMPARISON OF THE TWO APPROACHES

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In 2008 all ECB
publications
feature a motif
taken from the
€10 banknote.

CONTENTS

ABBREVIATIONS

BCBS	Basel Committee on Banking Supervision
BSC	Banking Supervision Committee
BSSR	Banking Sector Stability Report
CAMELS	Capital adequacy, asset quality, management, earnings, liquidity and sensitivity to interest rates
CBCSDI	Cross-border cross-sector consolidation basis for domestically incorporated entities
CBD	Consolidated banking data
CBDI	Cross-border consolidation basis for all domestically incorporated deposit-takers
CCE	Coordinated Compilation Exercise
CEBS	Committee of European Banking Supervisors
COREP	Common reporting framework
CRD	Capital Requirements Directive
DC	Domestically consolidated basis
DCCB	Domestically controlled cross-border consolidation basis
DCCBS	Domestically controlled cross-border cross-sector consolidation basis
DTs	Deposit-takers
ECB	European Central Bank
EU	European Union
FCCB	Foreign controlled cross-border consolidation basis
FINREP	Financial reporting framework
FSAP	Financial Sector Assessment Program
FSIs	Financial soundness indicators
FSR	Financial Stability Review
GAAPs	Generally accepted accounting principles
IAS	International Accounting Standards
IMF	International Monetary Fund
IFRS	International Financial Reporting Standards
MFSM	Monetary and Financial Statistics Manual
MPIs	Macro-prudential indicators
NPLs	Non-performing loans
OFCs	Other financial corporations
ROE	Return on equity
ROA	Return on assets
SDDS	Special Data Dissemination Standards
SNA93	System of National Accounts 1993
SPVs	Special purpose vehicles
STC	Statistics Committee

ABSTRACT

In January 2007 the International Monetary Fund (IMF) published, on an ad hoc basis, a series of financial soundness indicators (FSIs) based on a common methodology (the IMF compilation Guide) for 62 countries, including all 27 European Union countries. The European Central Bank (ECB), jointly with the Banking Supervision Committee (BSC), has an interest in monitoring the development of this IMF initiative in the context of its own work on compiling macro-prudential indicators (MPIs).

The aim of this paper is to identify the main similarities and differences between the FSIs and the MPIs for national banking sectors, as the overlap between MPIs and FSIs in this sub-set is greatest. As a result of the recently issued amendments to the IMF compilation Guide for FSIs, some key methodological differences between the two approaches have been eliminated and it is therefore expected that the figures published by the two institutions will soon converge.

The paper concludes with an investigation of the few other areas where the remaining differences could potentially be narrowed.

Key words: Macro-prudential indicators (MPIs), financial soundness indicators (FSIs), financial stability statistics

JEL classification: C82, G20, G21, G28, G32

NON-TECHNICAL SUMMARY

An increasing number of financial stability reports have been published across the world by central banks and international organisations. These reports describe quantitative tools that have been developed to measure different aspects of financial stability.

In this paper we study the design of such quantitative tools, with a special emphasis on those used to analyse the banking sector. In particular, we focus on the work conducted by the European Central Bank (ECB), jointly with its Banking Supervision Committee (BSC), and by the International Monetary Fund (IMF). Since both institutions have produced a set of financial stability indicators, called macro-prudential indicators (MPIs) and financial soundness indicators (FSIs) respectively, we outline the similarities and differences between these indicators, for the banking sector. A considerable degree of consistency exists between the MPIs and the FSIs. Notwithstanding the shared goal of producing indicators for financial stability analysis, some differences between the FSIs and MPIs do, however, remain. Some of these differences have been recently eliminated, while others remain. It is therefore expected that the figures published by the two institutions will soon converge, but not completely.

The origins of the two approaches are clearly distinct. The ECB, in the context of the European System of Central Banks (ESCB), has been engaged over the past decade in the development of a framework for financial stability analysis, driven by the increasing integration of national financial systems in the European Union (EU) and on account of its commitment under Article 105(5) of the Treaty on European Union to contribute to policies relating to the prudential supervision of credit institutions and the stability of the financial system. The MPIs are used to gauge conditions in the financial system and its resilience to stress situations.

Conversely, the IMF initiative was spurred by the global recession of late 1980s and early 1990s, which was characterised by large asset price swings and securities market collapses, and by the 1997 financial crises in East-Asia. It was felt that, in both cases, data and information gaps hindered the effective assessment of financial sector soundness, while the use of inadequate methodologies for the purposes of compiling macro-prudential indicators, insofar as they existed, and a lack of timely data for such indicators, contributed to the failure to detect financial system problems at an early stage. The methodology for the compilation of the FSIs is outlined in a Compilation Guide. First published in 2006, the Guide was significantly amended in July 2008. These amendments bring the ECB and IMF methodologies into much closer alignment with each other.

This paper describes these two approaches and puts forward a number of suggestions, based on methodological and practical considerations. In particular, the first part of the paper presents the two sets of indicators. In the second part of the paper the similarities and differences between the MPIs and the FSIs covering national banking sectors are outlined, and the potential to achieve convergence between the two sets of indicators is discussed.

The paper reports the finding that one major difference is that FSIs are set in a broad macroeconomic framework that covers all sectors of the economy, not just the financial sector. Conversely, although MPIs also cover other sectors in addition to the financial sector on the basis of their role as counterparties to financial institutions, the ECB/BSC focuses primarily on the financial sector and follows a compilation approach which provides for a comprehensive measurement of the risks facing this sector. A second difference, at the time of an initial FSI pilot collection exercise made on the basis of the 2006 version of the Guide, was that the ECB/BSC approach was more closely aligned with the existing accounting and supervisory standards, so that, unlike in the case of the IMF's FSIs, very few adjustments were made to the primary national banking sector data, which follow these standards. The amended

Guide is now much more closely aligned with international accounting and supervisory standards, although countries still have the option to make the adjustments recommended in the original version of the Guide.

Although some differences will likely remain, the paper identifies some room for convergence in the two sets of indicators. Concerning the consolidation basis, a promising solution for narrowing the difference between the IMF and the ECB/BSC approaches could be to provide more guidance on a) how to avoid (and/or to estimate the size of) double-counting generated by certain data consolidation approaches and b) the consolidation approaches to be preferred depending on the relative importance of foreign-owned banks in each country. In addition, simple refinements to the way in which several indicators are constructed would bring the IMF and ECB/BSC approaches into much closer alignment. More broadly, reflecting the ongoing changes in the financial sector, financial innovation and the entry of new market participants, it would be useful to continue updating the list of FSIs and MPIs.

INTRODUCTION

As evinced by the increasing number of financial stability reports published by central banks and international organisations around the world (for an overview, see, for example, Oosterloo et al., 2007), there is growing interest in the area of financial stability. In these reports, central banks and international institutions have begun to create frameworks for financial stability analysis, which, as a first step, require the development of quantitative tools to measure various aspects of financial stability. These tools are used in the regular macro-prudential analysis conducted by these institutions. The term "macro-prudential" denotes system-wide analysis conducted for financial stability purposes as distinct from the traditional micro-prudential analysis of individual financial institutions conducted by supervisory authorities.

The focus of the macro-prudential approach to financial stability analysis implies specific data and modelling requirements. In this paper we study the design of such quantitative tools, with a special emphasis on those for analysing the banking sector. [1] In particular, we focus on the work conducted by the European Central Bank (ECB) and the International Monetary Fund (IMF), and the similarities and differences between their two approaches. Both institutions aim to develop frameworks for financial stability analysis to be applied in an international setting and have therefore produced sets of financial stability indicators, called macro-prudential indicators (MPIs) and financial soundness indicators (FSIs) respectively. Rather than comparing the (often heterogeneous) indicators published by national authorities in their financial stability reports, this paper focuses on the application and comparison of a uniform set of indicators across countries, as made possible by the supra-national dimension of the financial stability analysis carried out by the ECB and the IMF. It must also be recognised that it is primarily in institutions such as the ECB and the IMF that the impetus to develop a relatively stable set of financial stability indicators has been strongest, due to the need to establish a comparable metric of financial stability across countries and over time.

The origins of the ECB and the IMF approaches to creating financial stability indicators are clearly distinct. The ECB, in the context of the European System of Central Banks (ESCB) [2] and in cooperation with the Banking Supervision Committee (BSC), [3] has been engaged over the past decade in the development of a framework for financial stability analysis, driven by the increasing integration of national financial systems in the European Union (EU) and on account of its commitment under the Treaty on European Union to "*contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system*". [4] The ECB/BSC has taken the first step by creating MPIs. These indicators are used to gauge conditions in the financial system and its resilience to stress situations. MPIs cover the entire financial system, with a special emphasis on the banking sector.

The MPIs and the results of the ECB/BSC financial stability analysis are presented on a regular basis in two reports published by the ECB: the EU Banking Sector Stability Report (BSSR), covering the banking sectors of EU countries and almost exclusively based on

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1 In a macro-prudential analysis only aggregate data, i.e. data at country level or at euro area or EU level are used by the ECB/BSC. They are derived from the sum of micro data, i.e. data at institution or (banking) group level. Based on the emergence and increasing complexity of very large banking groups, a need has arisen to find the right balance between the micro-prudential and macro-prudential approaches. See, for example, Knight (2006) and Section 1.2 of this paper.

2 The ESCB is composed of the ECB and the central banks of the European Union. At the date of publication these countries are (in the alphabetical order of their names in their national languages): Belgium, Bulgaria, the Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, the Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden and the United Kingdom.

3 The BSC is a forum for cooperation among the national central banks and supervisory authorities of the European Union and the European Central Bank and is composed of central banks and banking sector supervisory agencies of the EU member countries. The ECB Statistics Committee (STC) has provided support to the ECB/BSC.

4 Article 105(5) of the Treaty on European Union.

supervisory banking data, and the Financial Stability Review (FSR), covering the financial sector of the euro area and based on various data sources, including market data.[5] The conceptual framework underlying these analyses has been presented in several publications.[6] It should be stressed that work is continuing, as new concepts are regularly introduced. Several issues of the FSR have reported developments in the ECB/BSC framework for financial stability analysis, and they should be referred to if further details are required.

Conversely, the IMF initiative was spurred by the global recession of the late 1980s and early 1990s (which was characterised by large asset price swings and securities market collapses), and by the 1997 financial crises in East Asia. It was felt that, in both cases, data and information gaps hindered the effective assessment of financial sector soundness, while the use of inadequate methodologies for the purposes of compiling macro-prudential indicators, insofar as they existed, and a lack of timely data for such indicators, contributed to the failure to detect financial system problems at an early stage. The methodology for the compilation of the FSIs is outlined in the IMF Compilation Guide (IMF (2006), henceforth "the Guide"). First published in 2006, the Guide was significantly amended in July 2008.[7] These amendments, as explained below, bring the ECB and IMF methodologies into much closer alignment with each other.

In early 2007 the IMF published for the first time and on an ad hoc basis a series of FSIs for 62 countries, including all 27 EU countries.[8] These data were collected by the IMF by means of a stocktaking exercise called the Coordinated Compilation Exercise (CCE). The methodology used for the CCE was that contained in the 2006 version of the Guide, before the amendments introduced in 2008. On the basis of the results of the CCE (see Box 3), the IMF is working to establish regular collections of data for the FSIs, on the basis of the amended methodology.

A considerable degree of consistency exists between the FSIs of the IMF and the MPIs of

the ECB/BSC, not least thanks to the contribution to the CCE made by the ECB and the EU central banks.[9] The overlap between the MPIs and FSIs is particularly evident in the case of indicators covering national banking sectors published in the BSSR, and therefore we focus on this sub-set of indicators in this paper. Given the fact that there will be a transition period for the changeover to using the amended IMF methodology, this paper covers both the situation experienced when using the "old" Guide during the CCE, and the (expected) situation when the amended methodology is implemented in future regular FSI data collections. However, a numerical comparison between the FSIs and MPIs is only possible for the end-2005 FSI data that were published as the outcome of the CCE, and the corresponding MPI data that were published in the BSSR (see Section 3.1).

Notwithstanding the shared goal of producing indicators for financial stability analysis, some differences between the FSIs and MPIs do, however, remain. They reflect variations in the conceptual and methodological approaches of the two institutions, as well as in their objectives. One important difference is that the FSIs are set in a broad macroeconomic framework that

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5   At the date of publication of this paper, the euro area is composed of fifteen countries, which are also members of the EU. They are (in the alphabetical order of their names in their national languages): Belgium, Germany, Ireland, Greece, Spain, France, Italy, Cyprus, Luxembourg, Malta, the Netherlands, Austria, Portugal, Slovenia and Finland.

6   See Grande and Stubbe (2002), Mörttinen et al. (2005) and ECB (2005a and 2005b).

7   See International Monetary Fund (2008). These amendments were endorsed by the IMF Executive Board in November 2007 (see International Monetary Fund, 2007b). The IMF also publishes several FSIs in its Global Financial Stability Report, however, these FSIs do not yet follow the methodology of the Guide, and hence they are excluded from the analysis reported in this paper.

8   The IMF published the FSIs for a first set of countries on 29 January 2007. Data for some of the remaining countries involved in the CCE were published in the course of 2007. As at 21 October 2008, FSIs for 58 countries have been made available, i.e. data for four countries are still outstanding. FSIs for all the EU countries have been published.

9   The ECB participated in the network of international organisations involved in the development of the Guide and in the CCE. Moreover, two of the authors of this paper (A. Agresti and P. Poloni) worked at the IMF for a few months to assist the IMF in the CCE.

covers all sectors of the economy, not just the financial sector. During the CCE, the IMF achieved this by recommending that certain data consolidation approaches and a number of statistical filters be applied to the primary data, so as to create a consistent picture of all sectors. Conversely, although the MPIs also cover other sectors in addition to the financial sector on account of their role as counterparties to financial institutions, especially banks, the ECB/BSC focuses primarily on the financial sector and applies a compilation approach which facilitates a comprehensive measurement of the risks faced by this sector. A second difference at the time of the CCE was that the ECB/BSC approach was more closely aligned with the existing accounting and supervisory standards, so that very few adjustments were made to the primary national banking sector data which comply with these standards, whereas statistical filters and certain consolidation approaches were expected to be applied to the data for the CCE, in line with the IMF recommendations. The recent amendments to the Guide remove most of these statistical filters and the differences regarding the recommended consolidation approach, although countries still have the option to adopt alternative consolidation approaches. The amended Guide is now much more closely aligned with international accounting standards and is fully in line with the guidance of the Basel Committee on Banking Supervision (Basel I and Basel II) as the standards for compiling supervisory data series.

The differences between MPIs and FSIs on national banking sectors open to debate the question of why two parallel sets of indicators should be maintained, particularly for EU countries and especially given the shared aim of providing a tool for financial stability analysis. To answer this question, it should be borne in mind that the work of the IMF and the ECB/BSC has objectives that differ to some extent. In particular, as mentioned above, the Guide considers it important to link the FSIs to all macroeconomic sectors and to related statistics. Such links are useful because the IMF has a mandate to monitor in a consistent manner

the economic and financial performance of countries. In particular, the IMF should be in a position to use comparable statistics (including the FSIs) for each sector of a country's economy for the purpose of its Article IV missions and Financial Sector Assessment Programs (FSAPs). The amendments to the Guide, in particular the new data consolidation approach, are not accompanied by a statement on how to deal with the links across macroeconomic sectors.

For the ECB/BSC, on the other hand, the main focus of the analysis is the monitoring of the risks and vulnerabilities of the financial system, with a particular focus on banks, while information on countries' general macroeconomic conditions and on other macroeconomic sectors is used to describe the operating environment of financial institutions. As a result, a traditional breakdown of national economies into macroeconomic sectors is not attempted. Although these differences in objectives will likely remain, any room for convergence in the two sets of indicators should be identified, especially given the possible implications for the reporting burden of financial institutions, which the ECB is committed to minimising. Moreover, even if convergence cannot be achieved, it is important to explain the differences between the indicators published by the two institutions. The recent revision to the Guide offer an opportunity to reduce such differences.

More broadly, given that many countries will refer to the Guide, as amended, in the compilation of their own financial stability indicators, while others may possibly refer to the MPI practices, especially in Europe, it is useful to clearly present the differences between the two approaches, so that countries may choose the set of indicators and associated methodologies that best suit their analytical needs. In fact, as this type of indicators is the very first step in the formation of an analytical framework, it is important that they convey the information that is deemed useful for the analysis.

In order to highlight the properties of the MPIs and FSIs on the banking sector, we present the

two sets of indicators in the first part of this paper (Sections 1 and 2). In particular, concerning the MPIs, Section 1 provides an update on recent enhancements in banking sector indicators since the previous ECB publication on this topic (see Mörttinen et al., 2005). Regarding the IMF's work, Section 2 summarises the main features of the Guide, in an effort to highlight the key aspects that are relevant for a comparison with the MPIs.

In the second part of the paper (Section 3), we outline the similarities and differences between the MPIs and FSIs covering national banking sectors, and identify potential areas for convergence between the two sets of indicators. A number of suggestions are put forward, based on methodological and practical considerations.

1 THE ECB/BSC APPROACH TO ASSESSING THE FINANCIAL STABILITY OF THE EUROPEAN BANKING SECTOR BASED ON MPIs

1.1 INTRODUCTION

The starting point for outlining the ECB/BSC approach to assessing financial stability is provided by the definition of financial stability employed by the ECB. The concept of financial stability is difficult to define and has been formulated in slightly different ways in the literature.[10] The ECB's definition is as follows[11]: "*Financial stability can be defined as a condition in which the financial system – comprising financial intermediaries, markets and market infrastructures – is capable of withstanding shocks and the unravelling of financial imbalances, thereby mitigating the likelihood of disruptions in the financial intermediation process which are severe enough to significantly impair the allocation of savings to profitable investment opportunities*".

Within the financial stability analysis conducted by the ECB/BSC, the banking sector is given particular prominence on account of both its large size in the EU, in comparison with financial markets and other financial institutions, and the relatively large impact on general welfare that could potentially arise from instability in this part of the financial sector. For this reason, a large number of the MPIs cover the banking sector, drawing mostly on supervisory data on individual banks to create country-level aggregates. Since Mörttinen et al. (2005) have already described in detail the MPIs used by the ECB/BSC, this paper reports only the main concepts and we consider here only the so-called backward looking MPIs on banks, i.e. those reflecting past and present financial conditions, given their close correspondence with FSIs on banks. Three concepts are particularly important in the context of the comparison with FSIs: the geographical coverage, the consolidation approach and compliance with supervisory standards.

The geographical scope of the financial stability analysis conducted by the ECB/BSC

primarily comprises the euro area and the EU. Country-specific developments are analysed only in certain circumstances. The decision to focus on the supra-national dimension of financial stability is driven by the fact that it is necessary for the ECB/BSC to monitor developments in both the single market of the EU and the single currency area.

The choice of consolidation method is driven by the goal of using MPIs for financial stability analysis. In this type of analysis, a different approach from that used in macroeconomic analysis is required. While in the latter approach it is essential that all sectors be treated symmetrically and separately from one another (e.g. a transaction between a monetary financial institution and an "other financial intermediary" – see Section 2 – should be recorded in the balance sheets of both institutions, with the opposite sign), in the ECB/BSC financial stability analysis the most important aspect is to assess the linkages between different parts of the financial system (institutions, markets and infrastructures). In addition, it is important to be able to directly embed within the analysis links across sectors which involve the financial sector (e.g. via ownership or counterparty exposures). This is because at times of stress in parts of the financial system fragilities can spread very quickly across the financial sector and beyond. The implementation of this risk-based approach does not require economic sectors to be assessed separately, as is traditionally done in macroeconomic analysis. But it does require the identification and measurement of all risks that are associated with individual financial groups, and in particular banking groups. Therefore, the balance sheet positions of all entities that are controlled by the same parent bank are consolidated under it. This consolidation approach is applied consistently to banking sector data based on supervisory data used for a large number of MPIs for banks (and for all MPIs discussed in this paper). Consolidating

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10 For other definitions of financial stability, see Schinasi (2006), Čihák (2006) and Bank of England (2004).
11 Since 2007 this definition has appeared in the preface to every issue of the ECB's FSR.

the data in this way provides a comprehensive picture of the risks and vulnerabilities of participants in the financial system.[12] Conversely, in traditional macroeconomic analysis it is more meaningful to apply the guidelines of the System of National Accounts (SNA), which consists of an integrated set of macroeconomic accounts, balance sheets and tables based on internationally agreed concepts, definitions, classifications and accounting rules. The SNA distinguishes several macroeconomic sectors, as this better reflects their different economic specialisations (see Section 2).

Finally, concerning consistency with the supervisory standards – known as Basel II – this requires data consolidation both across sectors and across borders (see Section 1.2). The ECB/BSC decision to apply these standards to the MPIs is based on the view that this allows risks building up within the banking sector to be properly monitored. An additional advantage is that, in the EU, on account of the adoption of the Basel requirements via EU directives, supervisory banking data are rather similar, so that country-level data can be meaningfully aggregated for MPIs for EU or euro area-wide and national banking sectors.[13]

Of course, the work on financial stability analysis continues to be expanded and improved by the ECB/BSC, and new indicators are continuously being developed to address new analytical needs, while existing indicators are being improved, including forward-looking indicators that reflect expectations on future conditions of banks. The MPIs listed in this paper represent the most significant indicators for banking sectors in regular use so far, but future issues of the FSR and the BSSR should be consulted for information on new indicators or concepts, which are regularly introduced.

1.2 UPDATE ON THE BACKWARD-LOOKING MPIs FOR THE BANKING SECTOR

Following a brief review of the main properties of MPIs on national banking sectors, which are very similar to the main properties of the

FSIs presented in Section 2, we report only the main changes since 2005 (for a presentation of MPIs up to 2005, see Mörttinen et al., 2005) in the chosen sub-set of MPIs. These changes are of interest in the comparison with the FSIs because, although the MPIs we discuss in this paper are in many ways the simplest type of financial stability indicator (and the same can be said of the FSIs), these changes point to potential further developments in the FSIs.[14]

Banking sector MPIs based on supervisory data, which are described in detail in the statistical annex of the BSSR where they are regularly published, are used to monitor financial conditions in the banking sector over the medium term. They cover banking sector balance sheet positions, profitability and regulatory capital and are derived from banking supervisory data collected by each EU member country – the so-called "consolidated banking data" (CBD). The CBD comply with national supervisory[15] and accounting practices (in particular, the Basel consolidation rules; see Box 2), and the CBD-based MPIs are compiled following an approach similar to that used by national supervisory authorities to assign CAMELS supervisory ratings.[16] The most frequently used among this set of MPIs are listed in Table 1.

There have been several recent changes in the CBD-based MPIs. These changes concern the

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12 Although the financial sector plays a central role, information from other sectors feeds into the analysis. Indeed, some of the MPIs used to assess risks and vulnerabilities of banks cover other sectors, as banks' counterparties outside of the financial sector can be sources of risk for banks.

13 The EU data are cleaned of double-counting across EU countries' banking sectors.

14 Another avenue for the development of FSIs is to consider more sophisticated or market-based indicators, as presented in several financial stability reports, including the Financial Stability Review of the ECB and the Global Financial Stability Report of the IMF, but they are beyond the scope of this paper.

15 In the EU, the supervisory requirements (Basel I and II) are enshrined in the EU Capital Requirements Directive (CRD) 2006/48/EC and 2006/49/EC, as transposed into national law in each EU country. The CRD is presently under revision to reflect, among other factors, changes in Basel II.

16 CAMELS stands for Capital adequacy, Asset quality, Management (i.e. efficiency), Earnings, Liquidity and Sensitivity to interest rates. See also Evans et al. (2000) for an overview of micro-prudential indicators.

Profitability, balance sheet quality and capital adequacy

Income – cost developments and profitability

Income composition
> Net interest income to total operating income (*)
> Net non-interest income to total operating income (*)
> Fees and commissions (net) to total operating income
> Trading and forex results (gains/losses on financial transactions) to total operating income
> Other operating income (net) to total operating income

Cost composition
> Staff costs to total costs
> Administrative costs to total costs
> Other costs to total costs

Efficiency
> Cost-to-income (% of total income) (*)
> Asset share of banks with a cost-to-income ratio above 80%

Profitability indicators
> Profits (before tax and extraordinary items) to Tier 1 (*)
> ROE (profits after provisions, tax and extraordinary items) to Tier 1 (*)
> ROA (profits after provisions, tax and extraordinary items) to total assets (*)

Income, cost and profit items as % of total assets
> Net interest income to total assets (*)
> Interest receivable to total assets
> Interest payable to total assets
> Net non-interest income to total assets (*)
> Fees and commissions (net) to total assets
> Trading and forex results (gains/losses on financial transactions) to total assets
> Other operating income (net) to total assets
> Total operating income to total assets
> Staff costs to total assets
> Administrative costs to total assets
> Other costs to total assets
> Total operating expenses to total assets (*)
> Operating profits
> Specific provisions (impairment losses (net) on financial assets) to total assets
> Funds for general banking risks (not defined in the IFRS) to total assets
> Extraordinary items (net) to total assets

Capital adequacy

Overall solvency ratio (*)
Tier 1 capital ratio (*)
Banking book to total risk-adjusted assets
Off-balance sheet items to total risk-adjusted assets
Trading book to total risk-adjusted assets
Distribution of overall solvency ratio in the sample
Number of banks with a risk-based capital ratio below 9%
Asset share of banks with a risk-based capital ratio below 9% of total assets
Composition of trading book own funds requirement as a share of the total trading book own funds requirement under the Capital Adequacy Directive

Balance sheet

Coverage
> Total assets of the banking sector

Asset composition
> Cash and balances to total assets
> Loans to credit institutions to total assets
> Debt securities (financial assets at fair value through profit or loss) to total assets (*)
> Debt securities issued by public bodies (debt securities including fixed-income securities) to total assets
> Debt securities issued by other borrowers (shares and other variable-yield securities) to total assets
> Loans to customers to total assets (*)
> Shares and participating interest (for non-IFRS banks only) to total assets (*)
> Tangible and intangible assets to total assets
> Other assets to total assets

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Table 1 Selected backward-looking CBD-based MPIs[1] (continued)

Profitability, balance sheet quality and capital adequacy

Liability composition

Amounts owed to customers (deposits) to total assets (*)
Amounts owed to credit institutions to total assets (*)
Debt certificates to total assets
Accruals and other liabilities (other liabilities) to total assets
Provisions for liabilities and charges to total assets
Funds for general banking risks (not defined under IFRS) to total assets
Subordinated liabilities to total assets (*)
Equity capital (including valuation adjustments, for IFRS banks) to total assets
Other liabilities (minority interests in own funds) to total assets
Profit or loss for the financial year to total assets

Off-balance sheet items

Credit lines to total assets
Guarantees and other commitments to total assets
Derivatives (only for non-IFRS banks) to total assets

Liquidity indicators

Liquid asset ratio 1 (cash and short-term government debt, only for non-IFRS banks) (*)
Liquid asset ratio 2 (ratio 1 + loans to credit institutions, only for non-IFRS banks) (*)
Liquid asset ratio 3 (ratio 2 + debt securities issued by public bodies, only for non-IFRS banks) (*)
Liquid asset ratio (cash and loans to credit institutions, only for IFRS banks) (*)
Funding gap

Asset quality

Total non-performing and doubtful loans (gross) to total loans and advances
Total non-performing and doubtful loans (gross) to total own funds
Total non-performing and doubtful loans (net) to total own funds
Total provisions to total non-performing and doubtful assets

1) Table 1 lists published MPIs based on the CBD. MPIs labelled with (*) are also published at the country level. Some MPIs are given different names by IFRS-reporting banks from those applied by non-IFRS reporting banks. In such cases, the IFRS-compliant definition is reported in brackets. Size breakdowns (large, medium-sized and small banks) and ownership breakdowns (domestically-owned, EU or non-EU foreign branch or subsidiary) are available for all the MPIs listed here, except for the last four MPIs for capital adequacy which are not split according to size groups. The coexistence of IFRS and non-IFRS data in the BSSR reflects the transition phase during which some EU countries have not yet adopted IFRS, while others have already done so. In the future, it is expected that only IFRS figures will be reported.

publication of country-level MPIs; the splitting of national banking sector data into different groups according to bank size; and regulatory and supervisory changes affecting banks.

In relation to the *geographical scope* of the MPIs, while the ECB/BSC analysis focuses mainly on the euro area and EU as a whole, the composition of both geographical areas has recently changed.[17] This has increased the diversity of financial sector structures within each region and requires MPIs to be sufficiently flexible to accommodate such differences, while allowing the aggregation of national data across regions.[18] As a result, and as a complement to regional indicators, some country-level MPIs for the banking sector based on the CBD have been published since 2005 in the BSSR (see Table 1). The public availability of country-level MPIs facilitates a numerical comparison between the MPIs and the FSIs (see Section 3.1).[19]

17 Bulgaria and Romania joined the EU in 2007; the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia joined the EU in 2004. Cyprus and Malta adopted the euro in 2008, Slovenia in 2007. Slovakia will follow in 2009.

18 Since the 2006 BSSR, aggregation has not been feasible for the whole of the EU as the staggered implementation of the IFRS across the EU is not complete. Nonetheless, as all countries will eventually adopt the IFRS, it is expected that from 2009 it will once more be possible to compute EU-wide aggregates.

19 The comparison made in Section 3.1 presents the types of indicator that are published by both the ECB and the IMF and assesses the impact of the differences in their definitions on the numerical value of these indicators. Although not all MPIs are published at the country-level, the methodology for all MPIs can be equally employed for the computation of country-level and regional indicators. In the regional indicators, values for each country are weighted by total banking assets in that country (in ratios used for the computation of MPIs, country-level data are weighted separately in the numerator and denominator).

Concerning *differentiation across types of bank*, in 2004 the ECB started to publish MPIs for banks based on the CBD, broken down according to bank size into small, medium-sized and large banks.[20] Although this may be only a crude indicator of the types of activity conducted by banks, it has the advantages of being easy to implement and offering a first approximation to the different types of business model of banks. The increasing complexity of banks' business lines – especially those of larger banks – makes country-level aggregate data increasingly difficult to interpret. Breaking down aggregated data by bank size is only a first step towards addressing this issue; nevertheless, it can contribute to making the analysis based on MPIs more attuned to differences in banks' business strategies.

Finally, concerning *accounting and supervisory changes*, the introduction of the International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS; see Box 1) and Basel II (see Box 2) has led to an update of the underlying data definitions and aggregation procedures of MPIs for banks based on the CBD. The corresponding adjustments of the MPIs is facilitated by the fact that in the EU the changes introduced by the IAS/IFRS and Basel II are now incorporated into common reporting templates prepared by the Committee of European Banking Supervisors (CEBS), although the adoption of the CEBS templates by national supervisors is discretional and some national differences are likely to remain.[21]

20 Banks are allocated to each of the three categories based on the size of their assets, using common parameters.
21 See www.c-ebs.org/standards.htm.

IAS AND IFRS IN THE EU

The overall objective of the IAS/IFRS is to compile data that comply with the double-entry bookkeeping system and that are comparable over time and across individual institutions and economies. The ability to monitor the development of a company's performance over time and in comparison with its competitors is particularly important to investors.[1] This comparability in principle facilitates the process of aggregation, including for the purpose of compiling MPIs.

In practice, however, it is not easy to form aggregations and comparisons, since a) the IAS/IFRS do not provide a standardised template for the presentation of financial statements; b) companies have some discretion when applying accounting standards;[2] and c) accounting standards are geared to measuring the performance and solvency of individual institutions, hence they do not aim to ensure that the same transaction is recorded symmetrically by two counterparties, with respect to its recognition, valuation and timing. In the EU these practical difficulties have been mitigated by the introduction of common reporting templates by the CEBS (FINREP and COREP).

1 According to the Framework for the Preparation and Presentation of Financial Statements of the International Accounting Standards Board (IASB; cf. F.39-42), users must be able to compare the financial statements of an enterprise over time so that they can identify trends in its financial position and performance. Users must also be able to compare the financial statements of different enterprises. Disclosure of accounting policies is essential for comparability. For an overview of the IASB framework, see IASB (2001), http://www.iasb.org/.
2 For a list of alternative accounting treatments in IFRS, see III Working Group of the European Committee of Central Balance Sheet Data Offices (2003).

From an analytical point of view, a major innovation associated with the adoption of the IAS/IFRS, and embedded in the FINREP template, is the shift from instrument-based to portfolio or purpose-based reporting. In other words, banks are required to report assets or liabilities not according to the type of instrument they are composed of (e.g. bonds, stocks or derivatives), but by classifying the instrument according to its use in their strategies (i.e. held to maturity, available for sale, loans and receivables, or fair value through profit or loss). This shift is important because it allows for closer monitoring of the risks associated with each instrument held by banks (e.g. instruments held for trading or until maturity).

In 2005 the CEBS published a standardised financial reporting framework (FINREP) for the consolidated financial accounts of EU credit institutions in accordance with the IAS/IFRS, as well as a common reporting framework (COREP) for reporting solvency data for supervisory purposes. FINREP and COREP are both part of an EU-wide effort to streamline reporting requirements for institutions subject to supervision.[22]

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[22] In particular, FINREP is needed in the absence of prescribed reporting formats established in the IAS/IFRS, while the development of COREP has been driven by the need to streamline and harmonise to the extent possible the templates required to cover the full range of methods and approaches set forth in the CRD.

NEW SUPERVISORY REQUIREMENTS: BASEL II

The new supervisory requirements, known as Basel II, were finalised in June 2004 by the Basel Committee on Banking Supervision (BCBS), with the publication of its new Capital Framework.[1] Basel II was devised by the BCBS to alleviate some of the drawbacks of the preceding supervisory regime, known as Basel I.[2] Basel II was designed to improve on Basel I by aligning required capital more closely to a bank's own risk estimates and by offering a range of increasingly sophisticated and risk-sensitive options for determining capital requirements. Moreover, Basel II is endowed with a more complex structure: while Basel I only covered minimum capital requirements, Basel II is composed of three complementary pillars, namely minimum capital requirements (Pillar I), the supervisory review process (Pillar II) and market discipline (Pillar III). Furthermore, Basel II introduced and authorised the analysis of operational risk.

In the EU, Basel II was introduced via the recasting of the existing CRD[3] for credit institutions and investment firms. EU countries were required to transpose, and firms to apply, the CRD from the start of 2007. Basel II allows institutions to either retain the current Basel I approach or to adopt one of two approaches established in Basel II which have different degrees of sophistication. These more sophisticated approaches (the Advanced Internal Ratings-Based approach and the Advanced Measurement Approach for operational risk) started to be used in 2008. From 2008, all EU firms will apply Basel II.

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1 Basel Committee on Banking Supervision (2004).
2 Basel Committee on Banking Supervision (1988). Basel I is also called the "Basel Capital Accord". See Dierick et al. (2005) for a presentation of Basel II and its application in Europe.
3 This version of the CRD replaces the two previous versions, i.e. Directives 2000/12/EC and 1993/6/EEC.

Whilst recognising the benefits of the IAS/ IFRS for the harmonisation and comparability of financial institutions' data, it must also be acknowledged that accounting developments may unduly affect the magnitude, quality and volatility of banks' regulatory capital. As accounting data remain the basis for the computation of prudential ratios, the implementation of the IAS/IFRS within the supervisory framework may have a potentially significant impact on solvency ratios and, primarily, on the content of banks' own funds.[23] For this reason, the CEBS has recommended that national supervisory authorities implement certain prudential filters to institutions applying the IAS/IFRS for prudential purposes in order to avoid undesirable changes following the introduction of the new accounting rules.[24]

The computation of MPIs for the banking sector is expected to be closely aligned with the national implementation of FINREP and COREP templates, thus minimising the reporting burden for banks when introducing the IAS/IFRS and Basel II in reporting schemes.[25]

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23 See CEBS (2004).
24 In particular, the CEBS recommends that a number of adjustments and prudential filters be applied to institutions' own funds in respect of the boundary between debt and equity, the portfolio of instruments available for sale, the fair value option under IAS 39, cash flow hedges, losses on investment properties and own use properties, securitisation, risk-weighted assets, and the classification and definition of financial instruments. The CEBS has recently carried out an assessment of the impact that its recommendations regarding prudential filters have had on regulatory capital. It found that there is a high degree of compliance with the recommendations at national level but also that some flexibility in their implementation exists. See CEBS (2007).
25 Due to the high set-up costs for reporting agents (as well as for data compilers) associated with the introduction of the IAS/IFRS and Basel II, it was considered appropriate to modify the structure of MPIs with effect from the compilation of the end-2008 reference data only. In this way, experience gained at the national level in the adoption of the regulatory changes would also be beneficial in the revision of collection and compilation criteria for the MPIs. In the current transition period not all banks in all EU countries will adopt the IAS/IFRS and Basel II for prudential supervision purposes, and hence for reporting consolidated banking data to the ECB. In particular, eight EU countries did not produce IAS/IFRS-compliant data when submitting their end-2005 consolidated banking data to the ECB. However, with effect from the end-2006 data, 21 EU countries applied the IAS/IFRS and only six countries continued to use national accounting standards.

2 THE IMF INDICATORS TO MEASURE FINANCIAL SOUNDNESS

In this section we present the main characteristics of the FSIs, in the context of the comparison made in the next section. The FSIs are part of a broader financial stability framework developed by the IMF to assist with macro-prudential analysis at a country level. The methodology developed for their compilation is a new combination of principles drawn from existing statistical, accounting and supervisory standards which has been enshrined in the FSI Guide. In July 2008 the IMF amended several methodological areas of the Guide as result of the CCE for FSIs, with the aim of enhancing the comparability of cross-country data (see IMF, 2008). The IMF Executive Board recognised that the different methodologies used to compile FSIs that were observed in the CCE reflect the differences across member economies in terms of supervisory and accounting practices, the availability of data and the costs of data collection, as well as different methodological approaches. In this context, the IMF emphasised the need to take action to align the FSI methodology with accounting and supervisory standards.

The Guide has been amended by a separate paper (no consolidated version has been published yet) and the practical effects of implementation remain to be seen and may necessitate some further fine-tuning. In particular, the amendments to the Guide do not make provision for the implications of a possible hierarchy of reference standards (accounting, supervisory and statistical standards). In fact, the interpretation seems to be left to national compilers.

This section is structured in three parts and assesses certain features of the Guide as used during the CCE. In particular, the first part describes how the macroeconomic approach was applied during the CCE and briefly presents the definitions of the FSIs. The second part provides an overview of the relationship between the FSIs and the international accounting standards. The third part deals with consolidation aspects

and sector-level adjustments. Each section also reports the impact of the recent IMF amendments to the Guide.

2.1 METHODOLOGICAL APPROACH AND DEFINITIONS IN THE GUIDE

2.1.1 THE ANALYTICAL FRAMEWORK

This section presents the main features of the Guide as used in the CCE, i.e. the version published in 2006. The IMF approach 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 fullest extent possible, draws on existing statistical standards (the 1993 System of National Accounts – SNA93 – and the Monetary and Financial Statistics Manual – MFSM), accounting standards (the IAS/IFRS) and supervisory standards (Basel I). The Guide covers all economic sectors in order to analyse them independently from each other and to link them to other national macroeconomic statistics. By drawing heavily on SNA93, the IMF approach meets the objective of constructing a consistent framework for the description of key sectors of national economies, and in particular the financial sector, with symmetrical reporting for each set of counterparties. This would not have been possible if accounting and supervisory standards were relied on exclusively, as they are designed to provide rules for the preparation of harmonised financial statements for an assessment of individual (groups of) financial institutions. Thus, accounting and supervisory standards alone do not ensure symmetrical reporting of positions and transactions across sectors, thereby complicating data aggregations.[26]

The Guide is divided into four parts. The first part, which concerns the conceptual framework, sets forth the definitions of institutions and markets, the accounting principles, the presentation of sectoral financial statements, and how to aggregate and consolidate the

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26 See Poloni and Sandars (2005) for a conceptual framework within which to assess the relationship between financial accounting standards and macroeconomic statistical standards.

data. The second part, which concerns the specification of FSIs, gives guidance on how to calculate FSIs for deposit-takers, other sectors, financial markets and real estate markets. The third part deals with how to compile and disseminate FSIs, and provides practical advice. The fourth and final part, which deals with the analysis of FSIs, supplies information on their analytical use. More specifically, this section of the Guide seeks to present not only the use of FSIs in macro-prudential analysis, but also the specific use that can be made of them for each of the sectors described in the Guide, together with peer group analysis as well as the construction of some descriptive statistics. In particular, this final part of the Guide describes the financial stability framework for the analysis of FSIs and related data.

The Guide divides national economies into four main sectors: deposit-takers (DTs), other financial corporations (OFCs), non-financial corporations (NFCs) and households (HHs).[27] FSIs are macro-prudential indicators gauging the financial health and soundness of the financial sector (made up of deposit-takers and other financial institutions), as well as of the corporate and household sectors, as these are the main counterparties of the financial sector. The first attempt to compile FSIs under the IMF framework was the so-called Coordinated Compilation Exercise (see Box 3).

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27 This is broadly consistent with the sector breakdown of economic units in macroeconomic statistics (SNA93 and the European System of Accounts 1995 – ESA95). However, the "general government" sector and the "rest of the world" sector are not covered in the FSI framework. Moreover, the concept of deposit-takers is narrower than the equivalent concept of monetary financial institutions which are defined in ESA95 as central banks, special types of credit institutions and money market funds, which are MFIs but not deposit-takers.

COORDINATED COMPILATION EXERCISE

In order to implement the Guide, in 2004 the IMF invited 71 countries to participate in a Coordinated Compilation Exercise (CCE) on the basis of broad guidelines provided by its Executive Board. In the event, 62 countries and regions (including some international and offshore financial centres) agreed to participate in the CCE. They comprised systemically important countries and also countries that had received an FSAP or were subscribers to the Special Data Dissemination Standards (SDDS), or were close to subscribing.

The aim was to develop countries' capacity to compile FSIs, promote cross-country comparability of FSIs, disseminate the data and metadata for greater transparency and strengthen market discipline.

Participating countries agreed to compile 12 "core" FSIs concerning deposit-takers, to provide to the IMF (by end-July 2006) the data and metadata for core FSIs as at a reference date (end-2005) using standard reporting templates, and to nominate a single agency to act as the point of contact. Furthermore, participating countries were encouraged to compile some or all of the "encouraged indicators" concerning deposit-takers and other sectors and markets, and to provide the IMF with the data and metadata for encouraged FSIs. Finally, the CCE countries were invited to provide other information on sectoral financial statements, measures of dispersion and concentration, and historical data series.

The outcome of the CCE was published on the IMF's website in January 2007.

2.1.2 DEFINITIONS AND SPECIFICATION OF THE FSIs

As mentioned in the previous sub-section, in order to construct the FSIs according to a consistent framework, the Guide presents clear definitions of the different sectors of the economy. This section aims to provide only a brief overview; reference should be made to the Guide if further details are required.

In the Guide, DTs are defined as entities that engage in financial intermediation as a principal activity and have liabilities in the form of deposits payable on demand, transferable by cheque, or otherwise used for making payments.

The OFC sector includes insurance companies; pension funds; other financial intermediaries, including banks in distress; mutual funds, including money market funds; and financial auxiliaries. The boundaries of the OFC sector are broadly in line with the System of National Accounts 1993 classification. Overall, the definitions of economic sectors in the Guide are in line with the current statistical standards, with some marginal difference between the DT sector and the Monetary Financial Institution (MFIs) sector.

In addition, the Guide also defines financial markets as the fora in which institutions can trade financial claims and risks according to some established rules of conduct. Types of financial markets include the money market,

in particular, the interbank deposit market; the bond market; and the equity market.

After defining the key sectors and markets, the Guide focuses its attention on defining the FSIs. The IMF distinguishes between a list of 12 core indicators (covering only DTs) – see Table 2 – and a list of 27 encouraged indicators (covering other economic sectors and markets also) – see Table 3. There are less FSIs than MPIs because the IMF framework covers more countries, for some of which data availability and the degree of standardisation of the indicators might be an issue.

CORE FSIs
The indicators in the core set are exclusively for DTs and are divided following the CAMELS approach.

ENCOURAGED FSIs
The distinction between a core and an encouraged set of FSIs is helpful, since the identification of a small number of carefully selected indicators (the core set) in all countries could help prioritise the collection of the data in countries where data availability is a problem. The encouraged set of FSIs includes additional indicators constructed for deposit-takers as well as indicators for non-deposit-takers and markets.

The amendments to the Guide introduced in July 2008 affect the definitions of certain FSIs. For example, the data series "liquid assets,"

Table 2 Core set of FSIs

Deposit-takers	
Capital adequacy	1. Regulatory capital to risk-weighted assets
	2. Regulatory Tier 1 capital to risk-weighted assets
	3. Non-performing loans net of provisions to capital
Asset quality	4. Non-performing loans to total gross loans
	5. Sectoral distribution of loans to total loans
Earnings and profitability	6. Return on assets
	7. Return on equity
	8. Interest margin to gross income
	9. Non-interest expenses to gross income
Liquidity	10. Liquid assets to total assets (liquid asset ratio)
	11. Liquid assets to short-term liabilities
Sensitivity to market risk	12. Net open position in foreign exchange to capital

underlying the FSIs "liquid assets to total assets" and "liquid assets to short-term liabilities," are now amended to include interbank positions. Likewise, the definition of the data series "short-term liabilities" underlying the FSI "liquid assets to short-term liabilities" is amended to include interbank positions.

2.2 RELATIONSHIP OF THE GUIDE WITH INTERNATIONAL ACCOUNTING STANDARDS

As mentioned in Sub-Section 2.1, the 2006 version of the Guide drew selectively on existing frameworks, in particular for statistical, accounting and supervisory data.

IAS/IFRS-compliant financial statements are a natural source of data on the financial soundness of enterprises and – upon aggregation and consolidation – for the construction of FSIs. The FSI accounting standards enshrined in the 2006 version of the Guide were devised to avoid direct conflict with the IAS/IFRS to the extent possible. From Appendix IV of the Guide it is clear that the definitions and approaches that the Guide recommended for compiling FSIs were largely consistent with those of the IAS/IFRS. However, in some areas differences between the 2006 version of the Guide and the IAS/IFRS

remained. These differences concerned mainly IAS 18 (Revenue), 27 (Consolidated and Separate Financial Statements), 32 (Financial Instruments: Presentation) and 39 (Financial Instruments: Recognition and Measurement), and IFRS 7 (Financial Instruments: Disclosures).

Notwithstanding these differences, the IAS/IFRS represented a useful contribution for the compilation of harmonised FSIs as recommended in the 2006 version of the Guide. Overall, the cross-country comparability of FSIs based on statistical and supervisory data improved following the implementation of the IAS/IFRS and the application of the adjustments or "filters" recommended in the 2006 version of the Guide. Examples of such filters in the supervisory field were the initiatives of the Basel Committee and of the CEBS to ensure that valuation changes arising from fair value accounting do not feed into the regulatory capital data.[28]

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28 An example of statistical filters in the euro area is the amendment of the ECB Regulation concerning the collection of monetary statistics (ECB/2001/13) to ensure that deposit liabilities of the so-called money-issuing sector are recorded at the nominal value for the purposes of monetary analysis and monetary policy. Such examples focus mainly on the EU experience because these are the first countries where the IAS/IFRS became compulsory for consolidated accounts of listed companies (i.e. at the start of 2005).

The outcome of fair value accounting and the new recognition rules for financial instruments is, among others, high volatility of "capital and reserves" (to use the statistical terminology) or "regulatory capital" (using the supervisory term). For this reason, all capital-based FSIs that use the statistical concept of "capital and reserves" are expected to be significantly affected by the implementation of the IAS/IFRS. This will not occur if the FSIs are compiled using the supervisory concept of "regulatory capital".

In July 2008, the Guide has been amended to fully comply with the IFRS on recording fees and commissions receivable/payable as well as for gains and losses on assets available for sale. The Guide used to recommend that gains and losses on assets available for sale always be included in the income statement. Under IAS 39, they are recorded as equity except in the case of impairment losses, foreign exchange gains and losses, and when the asset is not recognised in the balance sheet. The Guide has now been amended to fully comply with IFRS on recording gains and losses on assets available for sale.

2.3 CONSOLIDATION BASIS AND THE SECTOR-LEVEL ADJUSTMENTS IN THE GUIDE

A crucial feature of the 2006 version of the Guide was the consolidation approach. The Guide explicitly recognised that multiple approaches were needed to cover country-specific circumstances and different analytical needs. However, the Guide explicitly recommended only two of them: the domestic consolidation basis (DC) and the domestically controlled cross-border consolidation basis (DCCB). The DCCB approach encompasses the activity of a parent bank and all its branches and subsidiaries worldwide, as is the case with the supervisory perspective where the focus is on the income and capital of the parent bank and risks facing the global enterprise. Domestically controlled cross-border consolidation was the Guide's preferred approach, but it also accepted the domestically controlled cross-border and cross-sector consolidation basis (DCCBS) whereby diverse types of financial institutions are

included in the consolidation in line with the approach of the Basel Committee.[29]

Other consolidation approaches for deposit-takers discussed in the Guide were the foreign controlled cross-border consolidation basis (FCCB) and the cross-border consolidation basis for all domestically incorporated DTs (CBDI). According to the latter approach, the data for domestically controlled DTs and the local subsidiaries of foreign DTs are consolidated with that of their branches and subsidiaries abroad.

The chart below provides a schematic representation of the differences between the main consolidation approaches.

The Guide also commented that supervisory data are often available in accordance with the DCCBS, although it did not explicitly recommend this consolidation basis. This basis is represented by the whole of block 1.

The compilation of consolidated sector-level data for use in FSIs is a two-step process. Given that data are generally available at consolidated group level, (1) data reported by the banking groups in the reporting population are aggregated and (2) further sector-level adjustments (consolidations) are carried out to produce sector-level data.[30] If data are not reported on a consolidated group basis, additional adjustments are required to eliminate intra-group positions and transactions. Such adjustments are desirable from an analytical point of view. However, the benefits of doing such adjustments depend on many factors, among them the size of the adjustments, as well as national data availability and resources allocated to this task.

With regard to the recent amendments to the Guide concerning the consolidation basis, the new recommendation is (i) the cross-border, cross-sector consolidation basis for all domestically

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29 See San Jose et al. (2007).

30 Following adjustments, the sector data are no longer the sum of individual deposit-takers' reports. Thus, data on FSIs disseminated by individual deposit-takers and those for a sector as a whole are likely to differ.

incorporated deposit-takers (CBCSDI) and/or (ii) the domestically controlled, cross-border, cross-sector consolidation basis (DCCBS). The reason for allowing two sets of indicators under different consolidation basis is to take into consideration the extent of foreign control of domestically incorporated DTs in the case of some countries.

Furthermore, intra-sector consolidation adjustments to the income and expense statement and the balance sheet have ceased to be recommended in the Guide. However, the IMF still leaves countries the option to undertake these adjustments.

On the relationship of the Guide with Basel I and Basel II, the amendments state that in compiling supervisory data-based series countries are requested to comply with BCBS guidance (Basel I and Basel II) as the standards for compiling supervisory data-based underlying data series.

3 COMPARISON AND POSSIBLE RECONCILIATION OF THE TWO APPROACHES

This section comprises two parts. The first part covers the main similarities and differences between the MPIs and FSIs – both those experienced during the CCE and those that are expected to continue to apply once the amendments to the FSI Guide are implemented. To give a concrete example of these similarities and differences, the first part also includes a numerical comparison of the two sets of indicators. The second part deals with future work and areas for convergence.

3.1 MAIN SIMILARITIES AND DIFFERENCES BETWEEN THE MPIs AND FSIs

The macro-prudential approaches of the IMF and the ECB/BSC share the same main goal, which is to create quantitative benchmarks (or indicators) for the analysis of the resilience of the financial sector. Since the overlap between FSIs and MPIs is greatest where indicators for national banking sectors are concerned, the focus of this paper is on MPIs and FSIs on banking sectors, and the comparisons in the following paragraphs will refer to this sub-set of indicators only. In order to be meaningful, the indicators need to be broadly comparable across countries. For both MPIs and FSIs, the indicators for banking sectors are primarily based on measures of capital adequacy, asset quality, earnings and profitability, liquidity, and sensitivity to market risk. Moreover, the methodologies applied for the IMF's FSIs and for the MPIs collected and published by the EU-27 countries are broadly similar on many points, for instance regarding the accounting rules, the coverage of institutions and the construction of the indicators.

However, there are also differences between the two approaches, which are reviewed in this section. The differences which have been eliminated by the recent amendments to the Guide will be separately identified. For EU countries it is important to minimise to the extent possible the differences between the two approaches, due to the costs associated with setting up two different reporting methodologies for compiling the MPIs and the FSIs, especially with regard to indicators for the banking sector where there is an extensive overlap. In particular, 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 for the FSIs but not used for the MPIs. Moreover, differences in the construction of the two series of indicators are hard to justify, as those that refer to the banking sector strive to capture the same sources of vulnerabilities. Furthermore, the general public may find it difficult to interpret similar indicators (e.g. for banks' profitability or solvency) if, as they well might, the numerical values differ in the IMF and ECB publications, in which data are reported at a country level. Indeed, Sub-Section 3.1.1 provides a comparison of the published values of the indicators for the banking sector.

3.1.1 NUMERICAL COMPARISON BETWEEN THE FSIs AND THE MPIs

By way of example the following numerical comparison highlights the quantitative differences between the data collected by the IMF in the CCE and the data of the ECB/BSC, with reference to the end-2005 period. While the ECB only published the indicators, the IMF also published the underlying data series (e.g. numerator and denominators of a ratio). On the other hand, the ECB published both the ratios and the changes from their levels in the previous year, while the IMF has so far only published the outcome of the CCE, i.e. one observation regarding each ratio as at end-2005.

In the following tables we compare the indicators for the 25 countries that comprised the EU at end-2005, which are covered by both frameworks. Only the FSIs for the deposit-taking sector are reviewed, i.e. some of the encouraged FSIs are excluded. It is stressed that in the CCE countries compiled FSIs on a best efforts basis, so a number of European countries may have submitted data to the IMF that had already been compiled and submitted to the ECB/BSC for the computation of the MPIs.

Table 4 provides the template that has been used for the data comparison and identifies those FSIs that are matched by corresponding MPIs published at the country level. For simplicity, given that the list of MPIs is longer than the list of FSIs, the template is modelled on the list of all FSIs, i.e. both the core and encouraged sets.

From this numerical comparison the following emerges. First, out of the 18 MPIs published at the country-level by the ECB/BSC, only eight overlap with the FSIs. These eight indicators are highlighted in light and dark yellow. Therefore, a comparison with the FSIs published by the IMF is only possible with reference to these indicators. Second, in the case of five out of the

eight indicators the MPI is constructed slightly differently from the FSI (albeit they aim to measure the same risk or phenomenon). These five indicators are highlighted in light yellow in the template. They are "liquid assets to short-term liabilities", "customer deposits to total (non-interbank) loans", "non-interest expenses to gross income", "return on equity" and "return on assets". The latter two indicators differ from the FSIs published by the IMF because in the ECB/BSC approach the numerator is calculated after tax, while in the IMF approach income may be calculated either before or after tax.

This means that a numerical comparison is meaningful only for the remaining three indicators

Table 4 Comparison of the definitions of similar MPIs (applying the DCCBS and CBCSDI consolidation methods) and FSIs (applying the DCCB and DC consolidation methods)

IMF Core Financial Soundness Indicators	DCCB	DC	ECB/BSC Macro-prudential indicators	DCCBS[1]	CBCSDI
1 Regulatory capital to risk-weighted assets			Overall solvency ratio		
2 Regulatory Tier 1 capital to risk-weighted assets			Tier 1 ratio		
3 Non-performing loans to total gross loans			Non-performing and doubtful assets (gross) (% of loans and advances)	EU/euro area only	EU/euro area only
4 Non-performing loans, net of provisions, to capital			Non-performing and doubtful assets (net) (% of own funds)	EU/euro area only	EU/euro area only
5 Sectoral distribution of loans to total loans			N/A	N/A	N/A
6 Return on assets (net income to average total assets)			Return on assets (after tax and extraordinary items) (ROA)		
7 Return on equity (net income to average equity)			Return on equity (after tax and extraordinary items) (% of Tier 1) (ROE)		
8 Interest margin to gross income			Net interest income (% of total income)		
9 Non-interest expenses to gross income			Net non-interest income (% of total income)		
10 Liquid assets to total assets (liquid asset ratio)			N/A	N/A	N/A
11 Liquid assets to short-term liabilities			Market liquidity indicator[2] IFRS reporting countries: Liquid assets ratio (cash and loans to credit institutions) (% of amounts owed to credit institutions) Non-IFRS reporting countries: Liquid asset ratio 2 (cash, short-term government debt, loans to credit institutions) (as % of amounts owed to credit institutions)	EU/euro area only	EU/euro area only
12 Net open position in foreign exchange to capital			Own funds requirement for foreign exchange risk	EU/euro area only	EU/euro area only

1) "EU/euro area only" denotes that no country breakdowns are published by the ECB; N/A denotes that the indicator is not published by the ECB, albeit the information may be internally available.
2) This MPI reflects market conditions and is not constructed using banking sector data, hence its value is unaffected by the scope of the consolidation.

Table 4 Comparison of the definitions of similar MPIs (applying the DCCBS and CBCSDI consolidation methods) and FSIs (applying the DCCB and DC consolidation methods) (continued)

IMF Encouraged Financial Soundness Indicators for DTs	DCCB	DC	ECB/BSC Macro-prudential indicators	DCCBS[1]	CBCSDI
1 Capital to assets			IFRS reporting countries: Equity (% of total assets) Non-IFRS reporting countries: Equity (including valuation adjustments) (% of total assets)	EU/euro area only	EU/euro area only
2 Large exposures to capital			N/A	N/A	N/A
3 Geographical distribution of loans to total loans			N/A	N/A	N/A
4 Gross asset position in financial derivatives to capital			Derivatives (% of total assets) – net position	EU/euro area only	EU/euro area only
5 Gross liabilities position in financial derivatives to capital			Derivatives (% of total assets) – net position	EU/euro area only	EU/euro area only
6 Trading and forex gains/ losses to total income			Trading and forex gains/losses on financial transactions (% of total income)	EU/euro area only	EU/euro area only
7 Personnel expenses to non-interest expenses			Staff costs (% of total costs)	EU/euro area only	EU/euro area only
8 Spread between reference lending and deposit rates			N/A	N/A	N/A
9 Spread between highest and lowest interbank rates			N/A	N/A	N/A
10 Customer deposits to total (non-interbank) loans			Amounts owed to customers (% of total assets)		
11 FX-denominated loans to total loans			N/A	N/A	N/A
12 FX-denominated liabilities to total liabilities			N/A	N/A	N/A
13 Net open position in equities to capital			IFRS reporting countries: - Assets (% of total assets): Financial assets at fair value – shares and other variable-yield securities - Liabilities (% of total assets): Equity (including valuation adjustments) Non-IFRS reporting countries: - Assets (% of total assets): Shares and participating interest - Liabilities (% of total assets): Equity	EU/euro area only	EU/euro area only

(highlighted in dark yellow). These three indicators are 1) regulatory capital to risk-weighted assets; 2) regulatory Tier 1 capital to risk-weighted assets; 3) interest margin to gross income.

Tables 5 and 6 compare the numerical values of the eight country-level MPIs and FSIs. Table 5 compares the indicators compiled using the DCCBS approach, while Table 6 covers those compiled using the CBCSDI approach.[31] In the CCE, ten EU countries (Denmark, Greece, Spain, the Netherlands, Austria, Portugal, Slovenia, Sweden, Finland and the United Kingdom) compiled FSIs using the DCCBS approach, while nine EU countries (Belgium, Ireland, France, Italy, Hungary, Latvia, Lithuania, Luxembourg and Portugal) applied the CBCSDI approach. Portugal compiled FSIs using both approaches. Since the indicators refer to end-2005 data, no Bulgarian or Romanian data appeared in the ECB/BSC publication. The remaining seven countries (the Czech Republic, Germany, Estonia, Cyprus, Malta, Poland and Slovakia)

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31 It should be noted that in the ECB/BSC data, the CBCSDI aggregates are affected by double-counting, as subsidiaries and branches abroad are reported twice: by the host country and by the home country, where they are consolidated with the data for the parent bank. For this reason, cross-country comparisons should not be attempted when using these data. But irrespective of the conceptual flaws of these data, they were considered useful by countries where a large part of the domestic banking sector is foreign-owned.

Table 5a Comparison of the MPIs and FSIs compiled using the DCCBS approach

(percentages; end-2005 country-level FSIs)

| | non-IFRS reporting countries | | | | | | | |
	AT	BE	DE	HU	LU	SI	SE	UK
Core Set of FSIs (DCCBS)								
6 Return on assets (net income to average total assets)	0.61					1.12	0.98	1.12
7 Return on equity (net income to average equity)	14.82					16.99	20.65	17.32
8 Interest margin to gross income	72.15					48.49	54.62	49.91
9 Non-interest expenses to gross income	71.93					61.96	54.34	56.76
1 Regulatory capital to risk-weighted assets	11.82					9.67	10.08	12.76
2 Regulatory Tier 1 capital to risk-weighted assets	8.17					6.55	7.04	8.91
10 Liquid assets to total assets (liquid asset ratio)	N/A					N/A	23.51	N/A
11 Liquid assets to short-term liabilities	N/A					N/A	51.03	N/A
Encouraged Set of FSIs								
12 Customer deposits to total (non-interbank) loans	N/A					N/A	N/A	N/A

Source: IMF.

Table 5b Comparison of the MPIs and FSIs compiled using the DCCBS approach

(end-2005 country-level "backward looking" MPIs)

| | non-IFRS reporting countries | | | | | | | |
	AT	BE	DE	HU	LU	SI	SE	UK
Profitability (% of total assets, if not otherwise indicated)								
Profits (after tax and extraordinary items) (ROA)	0.61	0.45	0.28	2.66	0.56	0.79	0.65	0.76
Profits (after tax and extraordinary items) (% Tier 1) (ROE)	14.90	15.34	9.44	35.42	9.83	16.19	19.51	18.56
Net interest income (% of total income)	64.65	58.20	52.98	76.03	37.05	56.09	55.04	68.04
Net non-interest income (% of total income)	35.35	41.80	47.02	23.97	62.95	43.91	44.96	31.96
Solvency								
Overall solvency ratio	11.34	11.72	11.46	13.06	19.35	9.67	9.91	13.41
Tier 1 ratio	7.68	8.52	7.48	12.61	16.03	6.55	7.07	7.91
Liquidity (% of amounts owed to credit institutions)								
Liquid asset ratio (cash and loans to credit institutions)								
Liquid asset ratio 2 (ratio 1 + loans to credit institutions)	125.26	67.49	77.41	405.51	156.57	45.39	105.65	150.36
Balance sheet structure (% of total assets)								
Amounts owed to customers	40.12	47.34	34.26	64.73	42.67	59.07	29.68	44.34

Source: ECB.

							IFRS reporting countries									
CY	CZ	DK	EE	ES	FI	FR	GR	IE	IT	LT	LV	MT	NL	PL	PT	SK
		0.87		0.95	0.87		0.95						0.49		0.93	
		18.86		16.93	9.36		15.29						16.01		15.45	
		62.07		56.16	64.59		66.95						54.08		50.87	
		53.53		50.94	56.32		57.75						67.72		59.92	
		11.47		12.43	21.66		13.20						12.61		11.38	
		10.14		8.01	18.82		11.01						10.32		6.89	
		N/A		32.21	5.97		N/A						25.68		14.06	
		N/A		97.89	9.53		N/A						268.62		100.43	
		N/A		77.55	N/A		N/A						76.28		70.40	

							IFRS reporting countries									
CY	CZ	DK	EE	ES	FI	FR	GR	IE	IT	LT	LV	MT	NL	PL	PT	SK
0.49	1.30	0.66	2.64	0.88	0.78	0.55	1.04	0.61	0.63	0.82	1.91	0.92	0.47	1.36	0.82	1.44
8.36	17.71	14.01	8.64	17.17	11.61	18.69	15.63	19.34	13.30	12.34	27.23	13.53	14.68	18.68	15.55	9.52
70.58	34.95	63.78	73.82	58.41	61.80	41.55	68.85	61.87	49.20	56.24	52.01	65.87	54.17	64.15	54.86	72.01
29.42	65.05	36.22	26.18	41.59	38.20	58.45	31.15	38.13	50.80	43.76	47.99	34.13	45.83	35.85	45.14	27.99
13.60	23.43	11.65	41.98	11.77	14.00	11.21	13.33	11.10	10.16	13.33	11.40	17.37	12.31	14.62	11.38	21.70
10.49	22.11	9.23	39.96	7.92	11.82	7.95	10.99	7.68	7.29	9.54	10.47	14.16	9.24	14.93	7.63	23.41
868.45	123.01	68.53	435.02	65.83	246.29	64.85	98.19	56.34	69.67	320.11	277.16	98.71	59.10	231.78	110.83	175.06
84.34	35.02	26.03	34.33	51.31	50.49	26.96	61.56	27.16	40.22	75.89	71.59	72.89	42.36	73.76	50.88	67.47

Table 6a Comparison of the MPIs and FSIs compiled using the CBCSDI approach

(percentages; end-2005 country-level FSIs)

			non-IFRS reporting countries					
	AT	BE	DE	HU	LU	SI	SE	UK
Core Set of FSIs (CBCSDI approach)								
6 Return on assets (net income to average total assets)		0.50		2.27	0.73			
7 Return on equity (net income to average equity)		19.20		29.77	17.04			
8 Interest margin to gross income		49.30		66.29	25.14			
9 Non-interest expenses to gross income		71.10		58.02	53.01			
1 Regulatory capital to risk-weighted assets		11.40		12.28	15.47			
2 Regulatory Tier 1 capital to risk-weighted assets		8.40		11.09	12.89			
10 Liquid assets to total assets (liquid asset ratio)		30.70		19.94	N/A			
11 Liquid assets to short-term liabilities		58.20		30.58	N/A			
Encouraged Set of FSIs								
12 Customer deposits to total (non-interbank) loans		82.50		90.53	174.33			

Source: IMF.

Table 6b Comparison of the MPIs and FSIs compiled using the CBCSDI approach

(end-2005 country-level "backward looking" MPIs)

			non-IFRS reporting countries					
	AT	BE	DE	HU	LU	SI	SE	UK
Profitability (% of total assets, if not otherwise indicated)								
Profits (after tax and extraordinary items) (ROA)	0.63	0.50	0.28	1.80	0.51	0.68	0.66	0.69
Profits (after tax and extraordinary items) (% Tier 1) (ROE)	15.74	16.79	9.44	24.75	12.64	13.42	19.53	16.93
Net interest income (% of total income)	62.42	59.98	52.98	72.81	32.31	57.67	55.65	66.42
Net non-interest income (% of total income)	37.58	40.02	47.02	27.19	67.69	42.33	44.35	33.58
Solvency								
Overall solvency ratio	11.52	11.49	11.46	11.98	15.51	9.94	9.99	14.01
Tier 1 ratio	7.77	8.48	7.48	10.62	13.10	7.12	7.17	8.44
Liquidity (% of amounts owed to credit institutions)								
Liquid asset ratio (cash and loans to credit institutions)								
Liquid asset ratio 2 (ratio 1 + loans to credit institutions)	116.72	67.50	77.41	149.82	104.80	39.00	105.67	90.68
Balance sheet structure (% of total assets)								
Amounts owed to customers	40.38	47.48	34.26	59.01	37.15	54.52	29.85	40.84

Source: ECB.

						IFRS reporting countries										
CY	**CZ**	**DK**	**EE**	**ES**	**FI**	**FR**	**GR**	**IE**	**IT**	**LT**	**LV**	**MT**	**NL**	**PL**	**PT**	**SK**
						0.50		0.84	0.74	1.30	2.06				0.97	
						14.36		19.95	13.99	15.97	25.12				15.84	
						32.39		62.37	49.80	50.92	50.92				51.84	
						64.31		46.61	60.52	68.34	57.64				58.50	
						11.41		12.44	9.97	9.82	10.00				11.32	
						8.25		9.39	7.32	8.08	8.68				7.10	
						20.93		34.20	4.76	23.05	N/A				15.34	
						150.20		40.10	9.42	29.55	N/A				99.02	
						78.86		52.22	66.51	83.08					66.42	

						IFRS reporting countries										
CY	**CZ**	**DK**	**EE**	**ES**	**FI**	**FR**	**GR**	**IE**	**IT**	**LT**	**LV**	**MT**	**NL**	**PL**	**PT**	**SK**
0.40	1.29	0.65	1.77	0.83	0.80	0.55	0.94	0.56	0.61	0.87	1.69	0.97	0.48	1.58	0.85	0.99
7.04	24.13	14.18	24.55	17.04	10.24	19.06	15.82	14.70	13.07	17.19	27.29	14.86	14.97	20.14	15.61	17.46
72.03	56.66	63.93	61.42	58.47	69.18	41.88	69.14	61.06	49.60	66.85	56.08	67.72	53.98	57.80	55.85	70.06
27.97	43.34	36.07	38.58	41.53	30.82	58.12	30.86	38.94	50.40	33.15	43.92	32.28	46.02	42.20	44.15	29.94
13.39	11.58	11.47	10.71	11.80	17.18	11.22	13.24	12.66	10.13	9.82	9.99	20.47	12.20	14.55	11.32	14.66
10.15	11.10	9.07	10.01	7.98	14.86	8.02	10.90	9.69	7.30	7.24	8.67	18.81	9.21	14.40	7.87	15.35
238.28	226.48	76.18	67.94	53.87	172.75	60.74	100.47	59.63	69.07	57.41	81.00	34.83	56.65	191.04	82.55	150.03
70.76	64.61	26.39	55.27	48.52	36.99	25.27	61.85	22.77	39.69	57.35	56.98	39.26	41.71	69.08	48.84	59.78

applied other consolidation approaches. Hence, a comparison with the country indicators published by the ECB/BSC is possible only for the 18 EU countries that applied either the DCCBS or the CBCSDI approach.

Moreover, as mentioned above, for five indicators the numerical differences can be explained by the fact that the MPIs are constructed differently from the FSIs, while there should theoretically be no differences between the remaining three MPIs and three FSIs as they apply the same consolidation approach. In conclusion, only three indicators for 18 EU countries, i.e. a total of 54 numbers, are comparable.

Nevertheless, some differences are noted in these directly comparable indicators, in particular, in the indicator "interest margin to gross income", while the solvency indicators are broadly similar in the ECB and IMF publications, with the exception of those for Finland. These differences can possibly be explained by the different reporting populations. For instance, in Portugal the reporting institutions comprised deposit-takers for the FSIs but credit institutions – i.e. a broader reporting population – for the MPIs. The difference concerning the solvency ratios for Finland may be explained by the different treatment of one particular reporting bank.

3.1.2 CONCEPTUAL DIFFERENCES IN THE APPROACHES

One of the main differences between the IMF and ECB/BSC approaches is that they have different objectives. While the IMF is concerned with providing countries at all levels of financial development with a minimum set of (methodologically sound) tools for compiling FSIs, the ECB/BSC monitors relatively well-developed financial economies which have, in addition, close economic links, common regulations and, in half of the countries, a single currency.

Moreover, the IMF approach supports other initiatives undertaken to strengthen national financial systems, including the FSAPs, and the FSIs may eventually be adopted as disclosure

standards for the purpose of Article IV consultations[32] and the Special Data Dissemination Standards.[33] Given that it must support these additional objectives, the IMF framework aims in principle to be statistically coherent with other macro-statistics, or at least to ensure a fair degree of international comparability.

The 2006 version of the Guide, as implemented during the CCE, relied to a large extent on existing statistical standards (SNA93 and MFSM) and, to a lesser extent, on accounting standards (IAS/IFRS) and supervisory standards (Basel I and II). In contrast, the recent amendments to the Guide appear to reverse this hierarchy: first and foremost, FSIs must be coherent with supervisory standards; second, FSIs must be coherent with IAS/IFRS, unless they differ from with supervisory standards; and third, the FSIs may resort to statistical standards, but only if they do not conflict with supervisory or accounting standards. As mentioned in Section 2, since the Guide has been amended by a separate paper, there is no discussion on the implications of such a possible hierarchy of reference standards. In practice, the interpretation seems to be left to national compilers and may change over time. Given the importance of the amendments, a consolidated version of the Guide may be necessary, once more practical experience in the data compilation has been gained.

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32 Countries that are members of the IMF subscribe to the Articles of Agreement of the IMF, which impose a number of obligations on them. An Article IV consultation is one of these obligations, and it consists of regular consultations (usually once a year) between the IMF and the member country. IMF economists visit the member country to gather information and hold discussions with government and central bank officials, and often private investors, labour representatives, members of parliament and civil organisations. Upon its return, the mission submits a report to the IMF's Executive Board for discussion, which may be published, subject to the agreement of the country concerned.

33 The Special Data Dissemination Standards were established by the IMF to guide countries that have, or that might seek, access to international capital markets in the provision of their economic and financial data to the public. The SDDS are expected to enhance the availability of timely and comprehensive statistics and therefore contribute to the pursuit of sound macroeconomic policies; they are also expected to contribute to the improved functioning of financial markets. Although subscription is voluntary, it entails a commitment on the part of a subscribing member to observe the standards and to provide certain information to the IMF about its practices in disseminating economic and financial data. To date, there have been 64 subscriptions to the SDDS.

The CCE was the first opportunity to put the Guide into practice. In the CCE, most FSIs were compiled in ways that were not fully compliant with the recommendations of the Guide. This lack of full compliance was largely to be expected, given the ad hoc nature of the exercise.[34]

On the other hand, the ECB/BSC approach has, since the very beginning, focused on risks developing within the financial system, and it takes the supervisory approach as a suitable blueprint. By extending it from a micro-prudential point of view to a macro-prudential one, this approach takes into account all risks facing the financial sector, i.e. both those originating within the sector, with all positions being consolidated under the parent financial institution (and mostly relating to banks' on and off-balance sheet positions), and those originating outside it (i.e. originating in the operating environment). In particular, this allows the ECB/BSC to focus on compiling statistics through a broad range of indicators.[35] Where applicable, the compilation of MPIs complies with international accounting and supervisory standards.

Another difference is that while the IMF Guide addresses in several instances the need to combine indicators for various sectors in the economy, the ECB/BSC approach focuses on the financial sector, and its methodology does not require the specification of additional criteria for the separate reporting of other sectors in the economy (as they are simply counterparties of the financial sector), in such a way that they can be aggregated together with the financial sector to create a national aggregate.[36] For this reason, the ECB/BSC approach is silent on this kind of methodological issue.

Moreover, the preparation of a compilation Guide arose from the need to cope with the heterogeneity of financial systems worldwide, not least on account of the fact that some of the countries in the IMF constituency have relatively less developed frameworks for financial stability analysis. Without the Guide many countries would have adopted different local practices, which would have compromised a worldwide comparison.[37] On the other hand, within the EU (and even more so in the euro area) differences in the development of national financial systems are not great, as there is a common payment infrastructure, rather similar (bank-based) financial systems and, in the euro area, a single currency. Moreover, many data definitions used by the ECB/BSC have a common minimum denominator which must be applied by all Member States. Given these similarities among EU countries, a risk-based financial stability analysis centred on the financial system could be founded on the traditional, national (company-level) supervisory approach replicated first on a national and then on a regional scale, rather than on an ad hoc macroeconomic framework.

Furthermore, as mentioned in Section 1, although the consolidated banking data collected by the ECB/BSC did not, until recently, rely on explicit common guidance, convergence was strongly promoted by the CEBS. The CEBS has developed a reporting scheme for the consolidated accounts under the IAS/IFRS (i.e. FINREP) and solvency disclosure requirements (i.e. COREP) for banks and other financial institutions. While the implementation of FINREP and COREP at the national level and for supervisory purposes is a matter of national discretion, most EU countries have indicated that they have taken or will soon take advantage of these common templates. This development

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34 Indeed, it has been stated that "*in practice, few if any countries will be able to produce the data exactly as is specified in the Guide by 2007. This may limit the scope to compare directly two different countries' FSIs, as there could be differences in methodology. Due to the difficulties many countries will have in improving data sources, this problem is unlikely to be alleviated in the short term. In recognition of this limitation, the IMF stress that there will be a greater flexibility in implementation and that, for the foreseeable future, data will be recorded on a best efforts basis.*" (Moorhouse, 2004).

35 This point is stressed also in ECB (2005a and 2005b).

36 For an analysis of the links between the supervisory and the SNA approach, see Mink et al. (2005).

37 For some emerging market economies the framework proposed by the IMF in the Guide represents a first attempt at financial stability analysis at the country level. For this reason, it is crucial that the Guide be appropriately designed to monitor financial stability, so that these countries can adopt best practices from the outset.

will materially enhance the harmonisation of the data collected by the ECB/BSC.

3.1.3 DIFFERENCES IN METHODOLOGY AND STATISTICAL PRACTICES

The main differences in the methodology and statistical practices used by the ECB/BSC and by the IMF (the latter during the CCE) to compile the indicators concern data frequency and timeliness, the publication of metadata, the geographical scope of the indicators and the underlying accounting rules (see the summary in Table 7). In addition, and specifically for indicators for the banking sector, other important differences concern the consolidation approach, intra-sector adjustments, consistency with international accounting and supervisory standards, the analysis of banks by size and the numerator or denominator of specific indicators. Some of these differences are expected to disappear once the amendments to the Guide are implemented (see the last column of Table 7).

In the context of the CCE[38], the data for the FSIs have been collected only once so that it remains uncertain to what extent the Guide's recommendations which were not tested during the CCE (e.g. on data timeliness and frequency) would be complied with on a regular basis in the future. Indeed, following the CCE, the IMF Executive Board recommended that the compilation of FSIs should continue on a regular, but not compulsory, basis.[39] Moreover, the IMF Executive Board acknowledged the need for some amendments to the Guide in the light of experience. Such amendments were published on 22 July 2008 and are expected to eliminate several differences between the ECB and IMF approaches as described below.

FREQUENCY AND TIMELINESS

Although FSI data and metadata had to be submitted to the IMF within seven months after the previous year-end date for the purpose of the CCE, the Guide (and the IMF Executive Board) has recommended that in the steady state data should be compiled in the quarter following the reference date. The Guide also recommends that it be compiled at a quarterly frequency. The

amendments to the Guide do not affect these recommendations.

The ECB/BSC collects the CBD data on an annual frequency between May and July each year, with reference to the situation as at end-December of the preceding year. The timing is not strictly fixed as it depends on national data availability constraints, and data are reported to the ECB/BSC on a voluntary basis. They are published annually in the BSSR.

While the (rather demanding) recommendations of the Guide in terms of data frequency and timeliness would be welcomed by data users, these recommendations were not really tested during the CCE. In the steady state, it is likely that the same data availability constraints faced by EU countries reporting to the ECB/BSC would apply to countries reporting FSIs to the IMF. In this respect, EU countries have indicated that for the foreseeable future they may only be able to compile FSIs semi-annually, and flexibility with regard to timeliness would be required.

PUBLICATION OF METADATA

Together with the FSI data, the IMF has also published extensive metadata which aim to provide detailed information on the extent to which compilers have followed the methodological recommendations of the Guide. The amendments to the Guide do not affect the publication of metadata.

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38 The FSIs were published by the IMF in January 2007, following completion of the CCE (IMF 2007a). All EU-27 countries participated in the CCE.

39 See IMF (2007b). According to IMF Public Information Notice No 07/135, dated 20 November 2007, the IMF "*saw clear value in the regular collection and dissemination of FSIs by the IMF, with the creation of a centralized public FSI database that would be available to member countries, international institutions, and markets. This would enhance data availability, encourage greater cross-country comparability of indicators in financial analysis, contribute to greater transparency, and reduce the reporting burden of countries to the IMF – thereby enhancing IMF surveillance (…). Directors agreed that countries should be encouraged – but not required – to report FSIs to the IMF. Many Directors supported the voluntary provision of FSIs with quarterly periodicity and with a one quarter lag, while many others felt that semiannual or annual reporting would be sufficient*" (www.imf.org/external/np/sec/pn/2007/pn07135.htm).

It should be noted that the IMF has decided not to provide cross-country data tables as yet. However, there are facilities aimed at assisting data users to obtain and compare information across countries. Several CCE participants have published the FSI data and metadata on their own websites, and some have also added a commentary.[40]

Conversely, the metadata provided by the ECB/BSC in its annual BSSR on the CBD is much more condensed. This is due to the relative homogeneity of the national financial systems in the EU and the common definitions used as a basis. However, it is acknowledged that further work should be undertaken in order to improve the information base, in particular concerning information on consistency with and deviations from the ECB/BSC recommendations.

GEOGRAPHICAL SCOPE OF THE INDICATORS

The construction of FSIs on a regional basis is not discussed in the Guide. For the purpose of the CCE, FSIs are considered at the national level only and are to be compiled by national authorities in each country. The amendments to the Guide do not change this approach. Conversely, the ECB/BSC approach primarily focuses on compiling indicators for the EU and the euro area, and only as a secondary step does it compile selected indicators for each EU country also.

In general, it seems difficult to construct regional FSIs because data are not fully comparable across countries.[41] Moreover, there are several possible approaches to the compilation of regional FSIs, based on the weights given to national FSIs on the basis of balance sheet data.[42] In addition, further adjustments would theoretically be needed in order to minimise the double-counting of equity and income, although due consideration would have to be given to the underlying reporting burden, especially if such adjustments would not be very significant. In the ECB/BSC data, the main intra-EU ownership links in the banking sector are netted out thus creating country-level data that are almost completely clean of double-counting and from which meaningful regional indicators can be

computed. Nevertheless, regional FSIs could be compiled for the 27 countries of the EU and may potentially be useful for countries in geographical areas where cross-border links are particularly important on account of currency unions or particular economic, regulatory and financial links.

COMPILATION AND ACCOUNTING GUIDANCE

The 2006 version of the Guide provided accounting guidance on several issues, such as the accrual of interest, the treatment of non-performing loans, and gains and losses on financial instruments. Some of this accounting guidance diverged from international accounting and/or supervisory standards. The recent amendments to the Guide have abandoned such guidance and introduced an almost complete alignment with international accounting and supervisory standards.

Similarly, the ECB/BSC approach relies principally on the common definitions and accounting practices provided by the EU directives, the IAS/IFRS and common supervisory practices. However, during the CCE the different accounting guidance followed by the IMF and ECB/BSC compilers may have had an impact on the published indicators. For instance, one important accounting issue covered in the Guide before its amendment is the treatment of interest. The Guide recommended that interest be recorded on an accrual basis, at the effective yield agreed at issuance of the underlying instruments. Conversely, for the ECB/BSC the reference interest rate is the rate applicable at a given moment in time, which may differ (e.g. because it is floating) from the rate originally agreed at issuance.

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40 See Bundesbank (2006) and Geršl and Heřmánek (2006).

41 Doubts as to whether a sufficient degree of international data comparability has been achieved in practice with the CCE have been raised by the Bundesbank (2006).

42 National FSIs can be computed by i) a domestic consolidation approach or ii) a DCCB or DCCBS consolidation approach. Consistent with its chosen consolidation approach, the ECB/BSC has used the DCCBS weights. The regional consolidation undertaken by the ECB/BSC requires information on cross-border positions and transactions among banking groups (including non-bank financial subsidiaries) within the region, so that intra-EU positions are free from double-counting.

Both the Guide and the ECB/BSC approach also make efforts to harmonise key series, such as non-performing loans (NPLs) and other impaired assets, as the prompt identification of impairment or non-performance is crucial for the identification of vulnerabilities. In both cases, the use of a 90-day overdue criterion to define NPLs is required. However, during the CCE the Guide accepted stricter national practices,[43] but this exception will be abandoned following the implementation of the amendments of the Guide.

As for the treatment of gains and losses on assets available for sale, the Guide recommended that all realised and unrealised gains and losses arising in each period on all assets available for sale be recorded in the income and expense statement. Since under IAS 39 these gains and losses are mostly recorded as equity, the amendments to the Guide fully comply with the IAS 39 approach.

Conversely, the ECB/BSC has always followed the approach required by IAS 39. During the CCE, the different approaches followed by the IMF and ECB may have had an impact on the published indicators.

CONSOLIDATION APPROACH

As described in Section 2, the 2006 version of the Guide recommended the domestically controlled cross-border consolidation approach (DCCB), with the domestically consolidated approach (DC) as a subsidiary approach. Both the DCCB and DC approaches, but in particular the latter, have the advantage of ensuring that there is a strong link to other macroeconomic statistics. This Guide recommendation has recently been amended. The new recommendation is (i) the cross-border, cross-sector consolidation basis for all domestically incorporated deposit-takers (CBCSDI) and/or (ii) the domestically controlled, cross-border, cross-sector consolidation basis (DCCBS). Even after its amendment, the Guide retains a rather extensive presentation of the approaches it initially recommended (DCCB and DC) for the reference of countries that may still prefer to use such approaches.

The ECB/BSC, for its part, has always applied the DCCBS approach, which is based on the supervisory (Basel) cross-sector consolidation approach within the financial sector, excluding insurance companies. This approach allows for an aggregate view of risks at the banking group level, taking into account the principle of universal banking underlying EU rules and regulations. Moreover, as discussed in Section 1, with the increasing significance of larger banks, there is all the more reason to adopt a consolidated approach in order to properly monitor all risks relating to the banking sector. For instance, it is important to consolidate on the balance sheet the activities of special purpose vehicles (SPVs), as required by Basel II and the IAS/IFRS, when most risks and rewards have not been transferred from the bank to such SPVs. In some cases, especially but not exclusively in countries where a significant portion of the domestic banking sector is foreign-owned, the CBCSDI approach could also be considered a useful complement to the DCCBS approach.[44]

As acknowledged in the Guide, two consolidation approaches have the potential to comply with the Basel requirements: the DCCBS and the CBCSDI approaches. However, the Guide recognises that the adoption of these approaches for FSI purposes reduces the ability to segment financial sectors; if similar indicators are compiled for each sector, potential double-counting may arise. In fact, these approaches do not allow symmetrical recording between sectors to be carried out, in particular between

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43 Indeed, the national definitions of these series are rather different even within the EU, as no common basis is found in the EU directives.

44 The CBCSDI approach does not allow cross-country comparisons to be made due to double-counting (both in the home and host countries) of foreign subsidiaries of domestically controlled banks. Another limitation of an approach based on domestic incorporation, from a financial stability point of view, is that it tends to treat domestic and foreign banks in the same way. However, academic research, as well as research conducted by the IMF (see, for example, IMF (2003a) and references therein) indicates that foreign banks may actually behave differently from domestic banks at times of crisis. The BIS also collects international banking data and, following the crisis in emerging markets in the late 1990s, it began publishing consolidated banking data alongside the banking statistics it had started to produce earlier, i.e. the locational banking statistics, which are based on a domestic incorporation approach.

deposit-takers and OFCs, a fact of particular importance given that some (or most) OFCs are owned by deposit-takers. The amendments to the Guide do not discuss how to overcome this problem.

On the other hand, for most EU countries the CBCSDI and especially the DCCBS are the preferred approaches because consistency with macroeconomic statistics is not a requirement for the data collected by the ECB/BSC, so no symmetrical recording between sectors is needed. Rather, the identification of the concentration and dispersion of risks is the primary purpose of these data. Moreover, this approach corresponds to national supervisory practices. Most importantly, now that both the IMF and the ECB follow the same consolidation approaches, one of the most important differences between FSIs and MPIs has disappeared. This is expected to have important benefits in terms of a reduced reporting burden and greater consistency in the figures published by the two institutions, as well as in terms of usefulness of these indicators for financial stability analysis.

INTRA-SECTOR ADJUSTMENTS
During the CCE, a particular implementation issue arose for countries aiming to compile indicators using the DCCB consolidation approach which was then recommended by the Guide. Following the recent amendments, the Guide has ceased to recommend intra-sector adjustments. However, it leaves the option open to countries if they want to make these adjustments. These adjustments are not required by the ECB/BSC for the compilation of MPIs based on the CBD (with the exception of certain deductions for regulatory capital). Thus, another important difference between the IMF and ECB approaches has disappeared.

Whilst from a statistical point of view intra-sector adjustments are considered appropriate, especially in order to preserve the internal consistency of sectors, they raise various practical difficulties on account of the costs incurred due to the lack of readily available

data. Furthermore, in the case of the DCCBS approach, the Guide, as amended, does not indicate how to undertake such adjustments. In principle, a sector of DTs that includes OFCs owned by banking groups should be created and kept separate from the rest of the OFCs, and consolidation adjustments should then be undertaken within the two modified sectors. This operation may be easy or immaterial in less financially developed countries, but may substantially increase the reporting burden in other countries, such as most EU countries. The cost of these compilation efforts would need to be matched by corresponding benefits for users. The ECB/BSC users consider that the costs outweigh the merits, although it is recognised that without such adjustments double-counting of income and capital across and within sectors may occur. The absence of such adjustments is considered acceptable as it is thought that their effects would be of limited significance. The Annex to this paper provides a numerical comparison of intra-sector adjustments made to banking sector data during the CCE.

IAS/IFRS ADJUSTMENTS
The Guide provides detailed recommendations on certain aspects of adjustments needed to cope with possible distortions introduced by the IAS/IFRS. However, most of these adjustments have been eliminated with the recent amendments to the Guide. Some adjustments are still required as far as the consolidation basis and the accounting of loans and provisions are concerned (general provisions for financial assets and provisions for potential costs).

Conversely, in the ECB/BSC approach, the IAS/IFRS requirements are applied in full to the CBD, with the exception of the scope of consolidation.[45] In fact, the ECB/BSC simply requires countries to provide data compliant with the IAS/IFRS in accordance with national practices, which generally use the CEBS

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45 The IAS/IFRS recommend that all entities belonging to a group should be consolidated, while under the Basel supervisory standards implemented in the collection of data by the ECB/BSC, non-financial subsidiaries and insurance companies are excluded from the scope of consolidation.

templates. As mentioned, however, the CEBS has recommended that national supervisory authorities implement certain prudential filters (regarding own funds, the borderlines between equity and debt, fair value accounting, etc.) to institutions applying the IAS/IFRS for prudential purposes, in order to avoid any undesirable change that may be introduced in the changeover to these new accounting rules. Hence, in the ECB/BSC framework there are also some adjustments to the IAS/IFRS principles. As it is in line with evolving national practices, the ECB/BSC approach (and in the future the IMF approach also) will be able to gain in flexibility in the event of potential revisions to the IAS/IFRS.

BASEL II ADJUSTMENTS

The IMF Guide provides guidance on the need to comply with Basel I in the compilation of indicators for the banking sector based on supervisory data. However, the recent amendments to the Guide explicitly comply with the full BCBS guidance, i.e. with Basel I and Basel II, as the standards for compiling supervisory data-based indicators. The new IMF approach is identical to the current ECB/BSC approach to Basel II. For EU countries, the switch to the new supervisory requirements is likely to be easier than was the switch to the IAS/IFRS, both because the existing Basel I requirements have already created a common platform across the EU as a starting point (whereas national generally accepted accounting principles – GAAPs – differed), and because the new CRD offers a common benchmark for the implementation of Basel II. However, the fact that Basel II allows banks to choose from various options (see Box 2) may complicate the aggregation of the EU banking sector solvency data.

DIFFERENT GROUPS OF BANKS

Due to the increasing complexity of the financial systems in most advanced economies and the ECB/BSC's focus on financial stability analysis of systemic sources of risk, the ECB/BSC has increasingly categorised banks by

size and adapted the computation of banking sector-based MPIs accordingly.

As it stands, even after the recent amendments, the Guide only deals with national banking sectors, without splitting them according to the size or impact of individual banks in key financial markets, although a section of the Guide (which was not tested during the CCE) encourages peer group and dispersion analysis as a complement to the analysis of FSIs.

This difference between the approaches of the ECB/BSC and the IMF illustrates that the ECB/BSC framework is tailored to more developed financial systems, while the IMF framework is designed to provide a minimum common denominator for financial systems at any level of development.

CONSTRUCTION OF SPECIFIC INDICATORS

As described above, some of the numerical differences between the FSIs and the MPIs for the banking sector can be explained by the different ways in which the indicators are constructed, despite the fact that they are meant to measure the same risk or phenomenon. For instance, "customer deposits to total (non-interbank) loans" is an FSI that aims to measure the same phenomenon (i.e. the extent of bank financial intermediation between depositors and borrowers) as the MPI "amounts owed to customers as a percentage of total assets". However, the denominator is different, which explains the differences in the published figures.

Following the recent amendments to the Guide, the definitions of some FSIs have been amended. The new definitions are closer to those followed by the ECB/BSC. For instance, the IMF has amended the series "liquid assets" to include interbank positions. This should allow an easier comparison between the FSI "liquid assets to short-term liabilities" and the "liquid assets ratio" MPI.

Another important example concerns the profitability indicators. During the CCE, the IMF and the ECB/BSC adopted different

Table 7 Main methodological differences between the MPIs and FSIs for the banking sector

Differences	ECB/BSC MPIs on the CBD	IMF FSIs	
		In the 2006 Guide (used in the CCE)	Following the July 2008 amendments
Frequency	Annual	N/A (untested)	Quarterly
Timeliness	5-7 months after the reference date for aggregated indicators.	7 months	One quarter after the reference date
Publication of metadata	No	Yes	Yes
Geographical scope of indicators	Primarily at the EU level; on a secondary basis also at country level	Only country level	Only country level
Accounting guidance	Link to EU directives, common supervisory practices and, increasingly, to the IAS/IFRS. Not published	Yes. Published	Limited. Published
Consolidation basis	DCCBS (CBCSDI)	DCCB, DC	DCCBS and/or CBCSDI (DCCB and DC allowed)
Sector-level adjustments	Rejected, except for some deductions for regulatory capital	Yes	Rejected (presumably, except for some deductions for regulatory capital)
IFRS compliance	Broad (filters recommended by the CEBS); major deviation: the scope of consolidation	Ad hoc adjustments	Broad; major deviations: accounting of loans and provisions
Basel II compliance	Full	No guidance	Full
Size of banks	MPIs broken down by bank size	FSIs at aggregate level only	FSIs at aggregate level only
Construction of indicators	There are differences in the construction of five indicators meant to measure the same risk or phenomenon (ROE, ROA, liquid assets ratio, customer deposits to total loans, non-interest income as a percentage of gross income)		Differences in four indicators will remain. The liquid assets ratio will be more similar

strategies for computing return on equity (ROE) and return on assets (ROA). In particular, the preferred definition of net income (the numerator of both ratios) was income before extraordinary items and taxes, as this provided the best indication of banks' profitability. But the Guide also accepted the use of net income after extraordinary items and taxes. This flexibility arose because opinions on the two approaches are evenly split. In other words, the Guide left national compilers free to choose whether the pre or post-tax basis should be adopted. Overall, among commentators on the Guide there is broad agreement on the fact that, if the purpose of the FSIs is to measure the robustness of banks (i.e. their capacity to translate generated income into permanent own funds), a post-tax measure is preferable,

while if the purpose is to measure the income-generating ability of banks, a pre-tax measure is preferable. The recent amendments to the Guide have clarified that the definition of "net income" should be understood to be before taxes and extraordinary items.

The ECB/BSC instead recommends collecting ROE and ROA information on both pre and post-tax and extraordinary items bases. Both measures can be easily computed by compilers. But while the ECB/BSC computes ROE and ROA on both bases for the annual report on the EU banking sectors, only the post-tax and extraordinary items data are published because they are considered the more informative MPIs for the robustness of the banking sector. Indeed, only the "post" measure allows for an

assessment of the speed at which banks' own funds can be financed without raising further capital from shareholders. Moreover, post-tax and extraordinary items data allow for greater cross-country comparability of ROE figures, as fiscal regimes may differ significantly across countries. However, since the IMF will publish measures of profitability (ROE and ROA) before tax and extraordinary items, these measures will not be comparable with those (post-tax and extraordinary items) published by the ECB/BSC.

3.2 FUTURE WORK AND ROOM FOR CONVERGENCE

3.2.1 FUTURE OBJECTIVES OF THE WORK ON FSIs AND MPIs

The CCE was the first opportunity to put the IMF's theoretical framework into practice. This first stocktaking exercise will be repeated regularly, on a voluntary basis. FSIs may increasingly be compiled within the framework of the FSAP and/or Article IV consultations.[46] Indeed, the results of the CCE were reviewed and discussed at the end of May 2007 in a meeting of regional and international organisations and financial sector standard-setters[47] and a meeting of countries participating in the CCE. At the latter meeting, virtually all countries supported a proposal to continue compiling and publishing FSIs on a regular basis. Overall, CCE countries considered the benefits of the CCE to outweigh the costs, in particular as the CCE was helpful in developing compilation expertise in several countries and helped improve countries' disclosure practices in the field of FSIs and the cross-country comparability of the FSIs.

CCE countries also proposed amending the Guide recommendations regarding the consolidation approach, intra-sector adjustments, the adherence to IAS/IFRS and Basel II, etc. In November 2007, the IMF Executive Board endorsed the views of CCE countries and of the Reference Group of the CCE. As a result, the differences between the ECB/BSC and IMF frameworks have diminished. In the future it is

expected that most CCE countries will continue to compile FSIs and that more countries (five to ten each year) will join this exercise. It is also expected that FSIs will gradually be published in the statistical annex of the IMF Global Financial Stability Review.

For the regular compilation of FSIs, in relation to strategic and organisational issues, countries would refer to the Guide, as amended. In particular, the Guide recommends that the compilation of FSIs be coordinated by a lead agency, through a system of inter-agency cooperation. Such a system is important if the coordination work on FSIs is to be effective; the concepts, definitions and frameworks used by different agencies to compile FSI data are to be consistent; and the dissemination of FSIs via a single centralised website and in regular publications is to be facilitated, as recommended in the Guide.

Turning to future developments in the ECB/BSC work on MPIs based on the CBD, a major challenge will be to ensure that the extent to which country-level practices are allowed to vary across the EU does not severely affect the comparability of countries' banking data. Moreover, increasing cooperation among national supervisory authorities at European level, in particular the common adoption of FINREP, may help to mitigate one of the main shortcomings of the consolidated banking data, namely the issue of aggregation of micro-prudential data. This issue is described extensively in the literature.[48] In short, while macro-prudential analysis requires data which enable aggregation over time and across countries to be performed, the data used currently are collected for the purpose of analysing individual institutions, usually with

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46 The IMF initially established a provisional target date of end-2008 for the core FSIs, or a sub-set of the core FSIs, to be included as required items in the SDDS (See IMF, 2003b), but more recently it decided to abandon this target – see IMF (2007b).

47 These institutions comprised the Reference Group of the CCE, which was established to provide views on emerging issues in the CCE.

48 See IMF (2000), Debbage (2002) and Mörttinen et al. (2005).

no regard for the need for aggregations or comparisons over time. The assumption is that the common adoption of FINREP by national authorities may lead to more regular data comparisons across countries. National authorities may then put more emphasis on the need for aggregations and comparisons over time, e.g. by requiring reporting agents to report in a symmetrical manner positions and transactions among themselves. However, although one of the aims of accounting standard-setters is to make data comparable over time and across companies, it does not necessarily follow that the symmetrical reporting of positions and transactions between companies will actually occur.[49]

In addition, following the rapid development of the financial sector, the entry of new key participants and the use of new and complex financial instruments, the range of MPIs continues to be updated to ensure that the information collected from supervisory and market sources is the optimum data for monitoring the conditions, risks and resilience of the banking sector of the EU and of the euro area. Also, by relying, as far as possible, on existing national practices without a set of formal rules collected in a compilation guide, the ECB/BSC gains much needed flexibility in the definition of MPIs and the extension of its analytical framework for financial stability analysis.

Finally, countries reporting FSIs and MPIs to the IMF and ECB/BSC may be encouraged to reinforce the legal backing for data collection. Indeed, the Guide reviews legal and other aspects of data collection, processing, and dissemination, such as data confidentiality. In particular, it recommends that legal support be obtained for data collection, in line with the IMF's Data Quality Assessment Framework. The legal backing for statistical data collection should cover a number of dimensions: scope, flexibility, compliance, confidentiality, integrity and confidence. Conversely, beyond the data collected from market and statistical sources, the ECB/BSC approach is based on the voluntary provision of supervisory data by national

authorities, without recourse to a legal act backing the data collection. Although the FSI and MPI data have so far been collected on the basis of current availability, in the steady-state, compliance with the Guide's recommendation may be sought. It is, however, very difficult to foresee whether and to what degree the ECB/BSC and IMF approaches could converge in the future in terms of such legal aspects.

3.2.2 CAN THE MAIN AREAS OF DIVERGENCE BE NARROWED?

In this paper we have identified great similarities but also several differences between the MPIs and FSIs. While some differences have been eliminated and some are expected to be smaller in future IMF and ECB publications, some differences will remain. These remaining differences concern the data timeliness and frequency, the publication of metadata, the geographical scope of indicators, the construction/definition of some indicators, and the breakdown of indicators by size groups. Moreover, to the extent that the DCCB and DC are consolidation approaches that the Guide still allows, some EU countries may decide to follow this option, hence the FSI and MPI indicators will be different.

In this sub-section, we focus on two key areas where we see room for convergence. They relate to 1) further guidance on the consolidation approach to use and 2) the type of indicator to compile. Such convergence is important for EU countries, as published FSIs and MPIs for the

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49 According to the IAS/IFRS framework (F.39-42), data should allow users to compare the financial statements of an enterprise over time so that they can identify trends in its financial position and performance. Users must also be able to compare the financial statements of different enterprises. For this reason, national supervisory authorities implementing the CEBS templates for banks are expected to require symmetrical recording of positions and transactions in the accounts of banks' counterparties. For example, in a securitisation deal between a bank and a special purpose vehicle, the assets sold to the latter should be removed from the balance sheet of the bank and only recognised in the balance sheet of the special purpose vehicle. However, this may not occur if the bank retains some of the risks and rewards of the securitised assets. In this case, the assets are also recorded in the balance sheet of the bank. This violates the principle of symmetrical recording and leads to an overestimation of the financial assets in the economy.

banking sector of the same country should be numerically the same, otherwise the analytical information would be difficult to interpret for data users and the public. We also indicate areas for future work where efforts by the ECB/BSC and the IMF are thought to be similar in scope and method.

3.2.2.1 FURTHER GUIDANCE ON THE CONSOLIDATION BASIS

During the CCE, one of the key differences between the current IMF and ECB/BSC approaches was the method of data consolidation for banking sector data, although this difference was reduced as a result of the amendments to the Guide. As mentioned above, the preferred consolidation approaches for deposit-takers currently recommended in the amended Guide are the DCCBS and/or the CBCSDI basis, but countries wishing to compile FSIs on a DCCB or DC basis are free to do so. As discussed above, these approaches (in particular the DC basis) have some merits in terms of statistical consistency, but are rather demanding (in particular the DCCB basis) in terms of compilation efforts. Moreover, by leaving countries the option to compile FSIs on a DC or DCCB basis, the "*need to enhance comparability of cross-country data*" stated in the amendments to the Guide may not be fulfilled. Furthermore, the amended Guide does not discuss, while some guidance may be needed, how to avoid the potential double-counting generated by the DCCBS and CBCSDI approaches when considering the interaction between the banking sector and other sectors. Further guidance, in particular for EU countries, may therefore be issued.

The new consolidation approaches recommended by the amended Guide allow the CBCSDI data to be split into two groups depending on whether deposit-takers are domestically owned (in which case the data for their foreign and domestic branches and subsidiaries would be consolidated, thus providing data according to the DCCBS approach in the Guide definition) or foreign-owned (the FCCBS approach). This split would meet the analytical requirements by permitting

an overview of the full spectrum of risks faced by banking groups.

In order to achieve the objective of linking the indicators to macroeconomic statistics and ensuring an accurate segmentation of economic sectors, the DC approach could continue to be a supplementary consolidation approach. This solution could, however, be onerous for some countries, due to the requirement for national compilers to report two or even three sets of data. However, to give an example of one practical approach, if banks do not have a significant foreign presence, priority could be given to the DCCBS approach (e.g. by providing a large set of indicators on a more frequent and timely basis) given its higher information content in terms of financial risks and fragilities, and since it allows comparability across countries. Conversely, priority could be given to the FCCBS approach in countries where most banks are foreign owned/controlled.

Moreover, in order to assess the interaction between the DT sector and the OFC sector, OFCs belonging to a parent that is a domestically owned bank and included in the consolidated banking data in accordance with supervisory requirements should in principle not be separately reported in the OFC sector. In practice, however, it is acknowledged that data constraints may severely limit this solution. Given such data limitations, and wishing to maintain the DCCBS approach, the business of these OFCs may be reported both on a consolidated basis in the DT sector and in the OFC sector. This could be acceptable as long as it were clarified in the metadata that the OFC and DT sectors cannot be aggregated, due to double-counting. In order to gain a rough idea of the overlap between the two sectors, countries could provide at least an estimate of the size (total assets and total assets under management) of the OFCs which are consolidated with banking groups.

3.2.2.2 TYPE OF INDICATORS

Further room for convergence concerns the type of indicators to include in the list of MPIs

and FSIs to compile. Refinements to the set of indicators that may be necessary for analysing developed financial systems may not be equally crucial for analysing relatively less complex financial systems.

A first, simple refinement that would align the IMF and ECB/BSC approaches much more closely concerns the way in which several indicators are constructed. As explained above, at least five indicators which are compiled and published by both the IMF and the ECB/BSC at the country level are constructed slightly differently, albeit they aim to measure the same risk or phenomenon. For instance, the indicators for the ROE and ROA of the banking sector differ because in the ECB/BSC approach the numerator is calculated "after tax and extraordinary items", while in the IMF approach income will be calculated "before tax and extraordinary items". Without arguing the relative merits of the two alternative measures, a simple solution would be for both the IMF and ECB/BSC to publish both indicators (before and after tax and extraordinary items), given that both measures are likely to be easy for national authorities to compile.

Another area where both the MPIs and FSIs could be improved concerns the asset quality indicators, especially those related to the computation of NPLs. In fact, the increasing recourse to new credit risk transfer techniques, such as securitisation, and recourse to credit derivatives, diminishes the analytical value of these indicators, as credit risk is transferred to other parties, albeit the balance sheet positions may remain basically the same. Thus, FSIs and MPIs related to NPLs should be adjusted so that they retain their analytical value.

Taking a broader view of financial stability indicators than just those for the banking sector discussed so far, which are both used by the ECB/BSC and encouraged in the Guide, other avenues for improvement can be identified.

For instance, while FSIs and MPIs provide quantitative information on the health and soundness of the financial system, the financial stability analysis based on these indicators can be assisted by conducting stress tests.[50] FSIs have already been used in stress tests in Article IV reports for some countries, but a more systematic treatment would be welcome in the Guide as well.[51] The ECB/BSC has also attempted to enrich its financial stability framework by developing a methodology for stress-testing, with a special emphasis on cross-border links.

Similarly, reflecting the changes occurring in the financial sector, financial innovation and the entry of new market participants, it would be useful to continue adapting the list of FSIs and MPIs. For instance, given the important role of certain OFCs, such as special purpose vehicles and SPVs engaged in securitisations, hedge funds, insurance companies and pension funds in the financial sector, the encouraged set of FSIs could be extended to include additional indicators for the above-mentioned key OFC sub-sectors.

New FSIs and MPIs should be devised as soon as financial innovations or new developments in the financial sector are considered to have potential implications for the stability of the financial sector, while sufficient flexibility should be preserved to allow countries to introduce new indicators selectively, depending on their level of financial development. Such a differentiated approach to the set of financial indicators across countries may carry particular weight in the Guide, given the very different levels of financial development across the countries in the IMF constituency. Moreover, since

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50 The Guide highlights (paragraphs 13.23 to 13.27) that the analysis of FSIs can be strengthened by using stress tests and information on the effectiveness of banking supervision and the robustness of the financial system infrastructure.

51 "*The relationship between FSIs and stress-testing derives from the fact that changes in FSIs are typically an output of stress tests and also an "intermediate" input in some cases. Specifically, in stress-testing the impact of a macroeconomic shock is usually measured by its impact on the capital ratio FSIs. Moreover, some shocks are formulated in terms of changes in the level of NPLs and thus provide a direct measure of the link between changes in the NPL-based FSIs and the capital ratio for the deposit-taking sector*" (paragraph 13.25 of the Guide).

guidance on compiling the FSIs is provided in a comprehensive but rigid format, it is important that extensions to the set of FSIs be introduced as early as possible, especially if some expertise has already been developed in some central banks, in order to create a state-of-the art set of FSIs for financial stability analysis.

But, by expanding the set of FSIs to include more sophisticated indicators (e.g. market-based indicators), even if only for the most developed financial markets, the FSI framework would succeed in providing a useful benchmark for financial stability indicators for its member countries. Such indicators would be composed of basic indicators (the present core and encouraged set of indicators) that all countries would aim to compile, and an additional set of more complex indicators that could shed light on new developments in the financial sector and that would be compiled only by countries with more advanced financial systems.

Finally, it is acknowledged that there is scope for the ECB/BSC approach to converge towards the IMF approach as far as the publication of metadata is concerned, since this is considered a useful practice that allows for an assessment of the extent to which countries' data is consistent with, and/or deviates from the ECB/BSC recommendations.

ANNEX

NUMERICAL COMPARISON OF INTRA-SECTOR ADJUSTMENTS TO BANKING SECTOR DATA

A question related to the consolidation basis concerns the intra-sector adjustments to income and capital. The need to implement such adjustments depends on the extent to which the indicators may be distorted as a result of double-counting of income and capital. During the CCE, for many countries, the decision to introduce intra-sector adjustments to meet the recommendations made in the Guide ultimately depended on their quantitative impact. For this reason, in each country that conducted intra-sector adjustments in the CCE, we checked the size of such adjustments by comparing their data with and without such adjustments.[52] Since the CCE, some Guide recommendations have been abandoned for cost and/or practical reasons; however, the amended Guide leaves countries the option to make these adjustments.

Only six countries conducted intra-sector adjustments on the data collected for the CCE. They were Cyprus and Malta in the EU, and Indonesia, Lebanon, Malaysia and South Korea. None of these countries in their replies to the FSI metadata questionnaire (published on the IMF website; see question C1.2) indicated the quantitative impact of the ten intra-sector adjustments recommended by the Guide on the values of the FSIs. However, it is possible to

calculate the impact of one of these ten adjustments on the five capital-based core FSIs (see table below). Indeed, data on "shares and other equity investments in other DTs in the reporting population" have been reported to the IMF by several countries, including Cyprus, Malta and Lebanon. This information, which is useful for a better understanding of the structure of the banking sector, is available in the sectoral financial statements which are part of the FSI metadata (line 58).[53] The table shows that if the series underlying the five capital-based FSIs are adjusted by adding back the "shares and other equity investments in other DTs in the reporting population" used for the intra-sector adjustment made by these three countries, indicators I1 (regulatory capital to risk-weighted assets) and I2 (Tier 1 capital to risk-weighted assets) are overestimated, while indicators I3 (non-performing loans net of provisions to capital), I7 (return on equity) and I12 (net open position in foreign exchange to capital) are underestimated. The magnitude of this single adjustment is on average rather small (from 1.2 to 3.6 percentage points of the value of the corresponding FSI), and it is more pronounced in the case of Lebanon (3.0 to 3.6 percentage points) and less significant in the case of Cyprus. Although extracting this information and calculating revised indicators is a relatively

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52 For instance, during the CCE one country indicated that these adjustments overall had an impact of 0.22% on total assets.
53 The FSI metadata also include actual data such as the sectoral financial statements.

Table Impact of one intra-sector adjustment on the value of capital-based core FSIs (only for three countries applying the DCCB approach)

(percentages; end-2005 data)

Country		I1	I2	I3	I7	I12
				Indicator		
Malta	Ratio after adjustment	17.31	14.12	49.37	16.92	4.35
	Ratio before adjustment	17.80	14.60	47.98	16.45	4.23
	% difference	*-2.80*	*-3.40*	*2.80*	*2.80*	*2.80*
Cyprus	Ratio after adjustment	12.36	9.98	34.82	14.14	1.96
	Ratio before adjustment	12.52	10.13	34.39	13.91	1.93
	% difference	*-1.20*	*-1.50*	*1.20*	*1.70*	*1.50*
Lebanon	Ratio after adjustment	22.66	19.95	25.66	11.83	19.16
	Ratio before adjustment	23.37	20.66	24.88	11.47	18.58
	% difference	*-3.10*	*-3.60*	*3.00*	*3.00*	*3.00*

Source: IMF.

simple exercise, the selective application of only some adjustments may impair the cross-country consistency of the data and the ensuing FSIs.

However, in general, even when the difference may be significant, the benefits of doing such adjustments and the cost of deviating from the recommendations in the Guide during the CCE have to be weighed against the existing availability of national data, or the cost of collecting new data, and the amount of resources that would be needed to extract the adjusted data.

Finally, it should be taken into account that national authorities might prefer not to undertake the suggested adjustments in national publications, simply because the resulting data would not be in line with their national supervisory and regulatory approaches and it may confuse users to have two different sets of published data, which ought to be identical.

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