

Chairman summary on session IPM65: Statistical tools used in financial risk management

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Ms Armida San Jose (Division Chief, Financial Institutions II, IMF) presented the IMF's framework for Financial Soundness Indicators, which measure the current strengths and weaknesses of a country's banking system, allowing for the monitoring of financial risks and thus providing analysts and policymakers with the opportunity to compare the soundness of the financial systems of different countries. The indicators were intended to measure the soundness of the overall financial system, not the performance of individual units. The highly innovative methodology used to compile these indicators drew on statistical, supervisory and business accounting frameworks. Armida selected three conceptual issues for further discussion: the basis for the consolidation of banks; the valuation of financial instruments; and the recognition of current income and expenses. By way of conclusion, the paper stresses the need for greater convergence and integration in the methodology, and for promoting greater comparability in indicators over time and across countries.

Mr Paolo Poloni (ECB) compared the ECB and IMF approaches to compiling financial stability indicators. He started by describing the ECB approach – one that covers the entire financial system but places special emphasis on identifying the major sources of risk facing the banking sector. The ECB approach collects a wider range of data (including market sources) than does that of the IMF, due to the greater complexity of the European financial system. The ECB indicators are compiled primarily for the EU and euro area and, as a sub-set of these, for each EU country. For this sub-set, comparison with the IMF indicators becomes critical. Paolo identified the issue of consolidation as one in which there are substantial differences between the IMF and the ECB, and offered a proposal for possible convergence. Moreover, unlike the IMF approach, ECB's does not require intra-sector adjustments to the banking sector data. Differences between the two frameworks result in the publication of different figures, and also entail costs for the reporting institutions, particularly when preparing a data series required by the IMF but not required under the European approach.

Discussion on these two papers was stimulated by the comments of **Mr Greg Haymes** (Principal Researcher, Bank of Canada), who also reflected on experiences in the Bank of Canada, which participated in the FSI pilot. The challenges facing the Bank of Canada were (i) the time spent in documenting the detailed metadata and (ii) the degree of collaboration with – and lack of resources among – other government agencies, the supervisor of financial institutions and the national statistical office. At the Bank of Canada, every effort was made to harmonise the data sources used in macroprudential analysis with those of the FSIs.

Regarding the key differences in forms of consolidation, **Mr Greg Haymes** agreed that the ECB proposals for the domestically controlled cross-border, cross-sector consolidation basis were consistent with national supervisory standards, and that the data were more readily available and based on standards by which the banks themselves judge their financial stability. He suggested an approach that would allow for flexibility in using the two types of consolidation, depending on the sophistication of a country's financial system. This approach would also be compatible with the compilation of regional indicators, and would facilitate data

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produced on a euro area basis. Looking at the FSI conceptual framework, Greg argued that – at a minimum – the Basel framework should be included in the Guide, which should also accept the IAS as the standard on most accounting issues (except for the IAS recommendation to consolidate the parent and all subsidiaries regardless of whether they are financial or non-financial entities). The key lessons for central banks and international organisations in compiling FSIs were described as the need to: (i) establish relationships with senior reporting managers; (ii) ensure that providers realize the value of their data; (iii) target more in-depth relationships with the largest providers; (iv) understand response burden; (v) seek early feedback on new requests; (vi) conduct on-site visits, training and information sessions; and (vii) focus on the long-term benefits of such efforts.

The paper introduced by **Ms Evelyn Hayden** (Economist, Bank Analysis and Inspections Division, Oesterreichische Nationalbank), on Bank Failure Prediction, proposed a statistical method to assess the point in time at which a bank begins to exhibit risk, and a statistical model for survival time analysis of such banks in crisis. This two-step approach was proposed for off-site supervision of banks as a means of assessing the health of banks and to predict bank failure. Management efficiency and size relative to nearby competitors were seen as important predictors of crisis banks. At-risk banks that are among the largest banks in their region face lower risk, while banks with efficient management have a higher probability of surviving periods of financial crisis. Interestingly, there was no evidence that macroeconomic variables play an important role in predicting default in the at-risk sample.

The statistical model for survival time analysis of crisis banks included variables to measure credit risk and banks' ability to cover losses and loan loss provisions. Statistical variables specific to two-step models are used to measure management quality, including staff efficiency, and have been included in the two-step model. One statistic – used only for the sample of at-risk banks – is the ratio of net interest income to number of employees. Another interesting statistic used for the sample of at-risk banks is the bank's total balance sheet relative to the balance sheet total of all banks in the home region, thus measuring its size relative to its geographically closest competitors.

Stimulating the conversation were comments by **Mr Homero Gonçalves** (Financial Accounts Unit, Banco de Portugal), who discussed the relevance of the analysis and the filtering of supervisory data. Mr Gonçalves then examined the methodology and findings of the two-step model in providing explicit time to default estimates. Questions were raised on: (i) the need for additional statistics; (ii) the feasibility of implementing the model in other sectors, such as NFCs; (iii) reasons for the lack of statistical significance of macroeconomic variables; (iv) collection of data by legal entity or on a group basis; (v) whether the approach would influence the behaviour of financial entities; and (vi) implementation of the approach within Supervision Departments.

The paper by **Ms Natacha Valla** (Banque de France) measured a bank's broader liquidity position using stock-based indicators. New asset-based measures of bank liquidity were used in the analysis of gross liquidity flows. This analysis provided data on gross liquidity – purchases and sales of liquid assets by banks – and liquidity growth relative to aggregate trend growth. These concepts were described as "gross liquidity flows" and "idiosyncratic" flows, indicating the degree of heterogeneity among banks when expanding or contracting liquidity. The liquidity measurement used was entirely asset based – cash, inter-bank, repos, securities and net off-balance sheet commitments with credit institutions. This allowed for the measurement of liquidity by legal entity and provided an understanding of a firm's ability to access funds through asset sales. The approach does not use liquidity gaps based on maturity. Data collected were from non-consolidated balance sheets, institution by institution, permitting the measurement of liquidity flows across entities within the same banking group. The liquidity dynamics could be assessed against the macroeconomic situation, as well as in relation to individual bank liquidity positions against trend.

Discussion was spurred by **Ms Filipa Lima** (Head of the Methodological Developments Unit, Banco de Portugal), who reviewed the new approaches to bank liquidity and raised questions on: (i) whether improved datasets that include management information were necessary; (ii) whether the approaches could distinguish between centralised and decentralised liquidity management; (iii) the feasibility of making comparisons with firms' liquidity risk management statements; (iv) whether the approach could be used in stress testing for firm-specific shocks; (v) whether there would be any links to the measurement of liquidity risk in the money markets (under current conditions); and (vi) whether the assessment of firms' liquid obligations, by counterpart and by funding channels, as well as by new products and/or markets, could provide further context to assess banks' gross liquidity flows.