Course Structure and Standard Syllabus

Course Area: Financial Sector Policies

Course Title: Financial Sector Surveillance (FSS)

Objectives: This two-week course aims at providing a *foundation* to assess financial sector risks. The course targets government officials charged with financial sector surveillance. After completion, participants will be expected to:

- Compute and interpret key financial ratios derived from accounting data. Use financial ratio analysis to detect potential vulnerabilities and sources of strength in bank balance sheets. Describe the limitations of financial ratio analysis.
- Become familiar with the IMF's Financial Soundness Indicators and their use in financial sector surveillance.
- Understand and assess banks' main risks (e.g., credit, market, liquidity). Identify key aspects of stress test design and implementation, and interpret stress test results.
- Recognize the importance of non-bank financial intermediaries and their links to banks.
- Assess macro-financial linkages (e.g., the impact of business cycles on banks' soundness).
- Have the foundations to track the buildup of vulnerabilities due to 'excessive' credit, real estate prices, leverage and balance sheet mismatches.
- Have the foundations to assess how shocks can propagate and amplify through the financial system. Participants will also have a better appreciation of why there has been a dramatic shift in the approach to financial regulation since the Global Financial Crisis.

Topics to be covered

1. Motivating financial sector surveillance: macro-financial linkages and crises
2. Business model of banks and non-bank financial intermediaries
3. Credit risk
4. Market risk
5. Funding and liquidity risk
6. The IMF's Financial Soundness Indicators
7. The time dimension of systemic risk
8. The cross-sectional dimension of systemic risk
9. Macro stress testing: Solvency
10. Systemic liquidity risk
11. Sovereign risk
12. Case studies

Prerequisites

The course is targeted to junior to mid-level government officials involved in the surveillance of the financial sector. The aim of the course is to introduce participants to key elements in the analysis of financial sector vulnerabilities and mitigants. Participants are ***required*** to complete the online FMAx course prior to enrolling in this course.

Related courses

Complementary courses comprise the course on Financial Sector Policies, Risk-Based Banking Supervision, Systemic Macro Financial Risk Analysis and Macro Stress Testing.

Evaluation

Two short pre- and post-course quizzes will be administered to assess the background knowledge of participants and the learning gains associated with the course. The results of the quizzes will be confidential.

Syllabus[1]

UNIT 0: MOTIVATING FINANCIAL SECTOR SURVEILLANCE: MACRO-FINANCIAL LINKAGES AND CRISES

L-0

1. Financial Crises and vulnerabilities
2. The Importance of Macro-Financial Linkages
3. Course objectives and roadmap

References

Reinhart, Carmen and Rogoff, Kenneth, January 2009, "The Aftermath of Financial Crises", National Bureau of Economic Research, Working Paper 14656, http://www.nber.org/papers/w14656.pdf

Wyplosz, Charles 2009, The ICMB-CEPR Geneva report: "The future of Financial Regulation, http://www.voxeu.org/article/financial-regulation-reform-goodhart-report

UNIT 1: BUSINESS MODEL OF BANKS AND NON-BANK FINANCIAL INTERMEDIARIES

L-1

1. Banks' and non-bank financial intermediaries' business models
2. A review of bank profitability, provisioning and capital
3. Bank and shadow bank linkages and measurement issues

[1] All lectures and workshops are 1.5 hours long.

W-1

Fundamentals of Financial Ratio Analysis (including CAMELS). The purpose of the workshop: computation of key financial ratios from banks' balance sheet to extract information on their soundness.

References

Van Greuning, Hennie, and Sonia Brajovic Bratanovic, 2009, Analyzing Bank Risk, World Bank

European Commission, 2012, "Non-Bank Financial Institutions," Economic Papers n. 472, November

Financial Stability Board, 2018, "Global Monitoring Report on Non-bank Financial Intermediation 2018."

UNIT 2: MARKET AND INTEREST RATE RISK

L-2

1. Source of sensitivities to market risk
2. Interest rate risk: repricing gaps and duration
3. FX rate risk and equity price risk

W-2

Workshop on market and interest rate risk. Objective: compute interest rate risk using the repricing gap and the duration models.

References

Conroy, Robert M., 1998, "Duration and Convexity," Darden Graduate School of Business Administration, University of Virginia.

UNIT 3: VALUE AT RISK

L-3

1. Market risk models (VaR, earnings-at-risk)
2. Alternatives to compute VaR
3. Market risk mitigation

W-3

Workshop on Value at Risk. Objective: compute Value at Risk (VaR) and Expected Shortfall using the historic and delta-normal methods.

References

Manganelli, Simone, and Robert F. Engle, 2001, "Value-at-Risk Models in Finance," ECB Working Paper no. 75.

Jorion, Philippe, 2001, "Computing Value at Risk," in *Value at Risk*, 2nd edition, Ch. 5 (New York: McGraw-Hill).
www.bancpath.com/2011/10/alm-basics-market-value-of-equity.html

Duffie, Darrell and Jun Pan, 1997, *An Overview of Value at Risk*.

UNIT 4: INTRODUCTION TO CREDIT RISK

L-4

1. The concept of default
2. Key credit risk indicators
3. Loan loss provisioning and capital

W-4

Workshop on credit risk parameters. Objective: Calculate various credit risk indicators, including the NPL ratio, default rate, and indicators based on loan loss provisions data such as the NPL coverage ratio or risk costs. The workshop emphasizes proper understanding of the data and the associated credit risk parameters, their limitations, and their evolution over time.

References

Barisitz, S., 2013, "Nonperforming Loans in CESEE – An Even Deeper Definitional Comparison" , OeNB Focus on European Economic Integration Q3/13, Vienna

D'Hulster, Katia, Salomao-Garcia, Valeria, Letelier, Raquel, 2014, "Loan classification and provisioning: current practices in 26 ECA countries - overview paper", World Bank Financial Sector Advisory Center (FinSAC) working paper series (Washington, DC: World Bank Group)

European Banking Authority, 2016, "Guidelines on the application of the definition of default". EBA, London.

UNIT 5: CREDIT RISK MODELLING

L-5

1. Building blocks of credit risk modeling
2. Portfolio models of credit risk
3. Illustration: The CreditRisk+ approach

W-5

Workshop on CreditRisk+. The workshop focuses on the estimation of the loss distribution of hypothetical credit portfolios, the estimation of expected and unexpected loses, and associated loan loss provisions and capital charges.

References

Allen, Linda, 2002, "Credit Risk Modeling of Middle Markets," Baruch College, CUNY. http://fic.wharton.upenn.edu/fic/allenpaper.pdf

Avesani, Renzo, Alin T Mirestean, Jean Salvati, and Kexue Liu, 2006, "Review and Implementation of Credit Risk Models of the Financial Sector Assessment Program (FSAP)", IMF Working Paper No. 06/134.

Credit Suisse, 1997, CreditRisk+—A Credit Risk Management Framework (New York: Credit Suisse).

UNIT 6: EXTRACTING INFORMATION FROM BOND SPREADS

L-6

1. Default probabilities and recovery rates
2. Credit ratings and transition matrices
3. Calculating PDs from bond spreads

W-6

Workshop on Extracting Information from Bond Spreads. Objective: extract probabilities of default using market data on bond spreads.

References

Hull, John, Mirela Predescu, and Alan White, 2005, "Bond Prices, Default Probabilities and Risk Premiums," Journal of Credit Risk, Vol. 1, No. 2, pp. 53–60. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2173148

UNIT 7: FUNDING AND LIQUIDITY RISK

L-7

1. Sources and measures of liquidity and funding risk
2. Scenario analysis for liquidity risk and stress testing
3. Systemic liquidity risk

W-7

Workshop on liquidity stress testing. Objective: introduce the cash-flow based approach to liquidity stress testing.

References

Banque de France, 2008, Financial Stability Review – Special Issue Liquidity, https://www.banque-france.fr/uploads/tx_bdfgrandesdates/rsf_0208_01.pdf

BCBS, 2013, "Liquidity Stress Testing: A Survey of Theory, Empirics and Current Industry and Supervisory Practices,", Working Paper No. 24.

Brunnermeier, Markus, and Lasse Pedersen, 2009, "Market Liquidity and Funding Liquidity," Review of Financial Studies, Vol. 22, No. 6, pp. 2201–38.

UNIT 8: THE IMF'S FINANCIAL SOUNDNESS INDICATORS

L-8

1. Overview of the IMF's Financial Soundness Indicators (FSIs)
2. Limits to FSIs
3. IMF's work in financial sector surveillance (FSAPs)

W-8

Workshop on Financial Soundness Indicators. Purpose of the workshop: A review of the uses and limitations of the FSIs as forward-looking tool to assess banking sector soundness.

References

Crowley, Joseph, and others, 2016, "Pilot Project on Concentration and Distribution Measures for a Selected Set of Financial Soundness Indicators," IMF Working Paper WP/16/26

IMF, Financial Soundness Indicators Compilation Guide

V. Sundararajan, Charles Enoch, Armida San José, Paul Hilbers, Russell Krueger,Marina Moretti, and Graham Slack, 2002, "Financial Soundness Indicators: Analytical Aspects and Country Practices", IMF Occasional Paper 212.

UNIT 9: MACRO STRESS TESTING OF SOLVENCY

L-9

1. Key steps in stress test design and implementation
2. Types and uses of stress tests
3. Sensitivity analysis and scenario analysis

W-9

Workshop on stress testing (Bankistan case study). Purpose: This workshop allows participants to conduct stress tests on credit, market, and liquidity risk on a solo and combined basis using fictitious data.

References

Čihák, Martin, 2007, "Introduction to Applied Stress Testing," IMF Working Paper 07/59.

Demekas, Dimitri, "Designing Effective Macroprudential Stress Tests: Progress So Far and the Way Forward," IMF Working Paper 15/146, https://www.imf.org/external/pubs/ft/wp/2015/wp15146.pdf

Henry, Jérôme, and Christoffer Kok, 2013, "A Macro Stress Testing Framework for Assessing Systemic Risks in the Banking Sector," ECB Occasional Paper no. 152, October https://www.ecb.europa.eu/pub/pdf/scpops/ecbocp152.pdf?d6abeaccc88f250577caff6f51130ecd

IMF, 2012, "Macrofinancial Stress Testing Principles and Practices," IMF Policy Papers

UNIT 10: SOVEREIGN RISK

L-10

1. Indicators of sovereign risk

2. Regulatory treatment of sovereign exposures
3. Positive and negative aspects of linkages between the banking sector and sovereign entities.

W-10
Workshop on sovereign risk. Objective: Illustrate the feedback loops between sovereign and banking sector risks using data from selected European countries. Discuss the interlinkages and potential feedback loops between the sovereign and banking sectors in the participants' countries, and draw financial stability implications.

References

Acharya, Viral V., Itamar Drechsler, and Philipp Schnabl, "A Pyrrhic Victory? Bank Bailouts and Sovereign Credit Risk," Journal of Finance, 2014, 69 (6), 2689–2739.

Borensztein, Eduardo and Ugo Panizza, "The Costs of Sovereign Default," IMF Staff Papers, 2009, 9 (56), 683–741.

Committee on the Global Financial System, "The Impact of Sovereign Credit Risk on Bank Funding Conditions," 2011. CGFS Papers No. 43, Bank for International Settlements.

UNIT 11: NON-FINANCIAL CORPORATE SECTOR RISKS

L-11
1. Cross sector linkages
2. Key financial indicators
3. Methods to assess bankruptcy risk: z-scores and KMV

W-11
Workshop on non-financial corporate sector risks. Purpose: This workshop allows participants to compute distance to default applying the KMV model to corporate sector data.

References

Chow, Julian, 2015, "Stress Testing Corporate Balance Sheets in Emerging Economies," IMF Working Papers WP/15/216.

Gülcan Yıldırım Güngör, Tuba Pelin Sümer, and Merve Demirbaş Özbekler, 2015, "Corporate Sector Leverage from Financial Stability Perspective," Bank of International Settlements.

International Monetary Fund, 2015, "Corporate leverage in Emerging Markets—A Concern?" Global Financial Stability Report 2015 (October), Chapter 3.

UNIT 12: TIME DIMENSION OF SYSTEMIC RISK

L-12
1. Procyclicality (including leverage through the business cycle)
2. Key variables for surveillance of systemic risk
3. Early warning systems based on housing market prices and credit growth.

W-12
Workshop on the time dimension of systemic risk. Objective: Construct early warning models based on credit and house prices and assess their performance using the signaling approach

References

Dell'Ariccia, Giovanni, and others, 2012, "Policies for Macrofinancial Stability: How to Deal with Credit Booms," IMF Staff Discussion Note 12/06.

Arregui, et al., 2013, "Evaluating the Net Benefits of Macroprudential Policy: A Cookbook," IMF Working Paper 13/167.

Drehmann, M., Juselius, M., 2013, "Evaluating early warning indicators of banking crises: Satisfying policy requirements," BIS Working Paper 421.

UNIT 13: CROSS-SECTIONAL DIMENSION OF SYSTEMIC RISK

L-13
1.Interconnectedness
2. Indicators based on balance sheet data
3. Network Analysis

W-13
Workshop on the cross-sectional dimension of systemic risk. Objective: Analyzing "domino-type" contagion among banks, including systematically important ("too-interconnected") banks, using the Bank Network Excel Add-In.

References

Acharya, V., Pederssen, L., Phillipon, T. and Richardson, M. (2010). Measuring Systemic Risk. New York University.

Espinoza-Vega, M., and J. Solé (2010). "Cross-Border Financial Surveillance: A Network Perspective," IMF Working Paper, WP/10/105.

IMF, 2009, "Assessing the Systemic Implications of Financial Linkages," GFSR Chapter 2.

UNIT 14: ADVANCES IN SYSTEMIC RISK MONITORING

L-14
1.CoVaR
2. CoRisk
3. JPoD, Distress Dependence Matrix

References

Adrian, T. and Brunnermeier, M., 2011. "CoVaR," NBER Working Papers 17454, National Bureau of Economic Research.

Bisias, D., M. Flood, A. Lo, and Valavanis, S.,2012, A Survey of Systemic Risk Analytics, Office of Financial Research, Working Paper 0001.

Segoviano, M., and C. Goodhart, 2009, "Banking Stability Measures," IMF Working Paper WP/09/4.

UNIT 15: CASE STUDIES

Participants to analyze critically the structure, coverage, and analysis of the Financial Stability Reports of selected countries and prepare a presentation discussing strengths as well as aspects that could be improved (i.e., data gaps, shortcomings in the analysis, proper identification of vulnerabilities and risk factors, disclosure, policy recommendations and others).