

MACROPRUDENTIAL ANALYSIS AND FINANCIAL SOUNDNESS INDICATORS

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Introduction

- Macroprudential surveillance is defined as monitoring of conjunctural and structural trends in financial markets so as to give warning of the approach and potential impact of financial instability
- Systemic risk, financial instability or disorder entails heightened risk of a financial crisis - “a major collapse of the financial system, entailing inability to provide payments services or to allocate credit”.

- Instability of institutions and markets tends to be a necessary but not sufficient condition for a financial crisis in this sense.
- Macroprudential analysis is of immense importance given the costs of crises - as much as 15% of GDP.
- Such work should be undertaken not only by international organisations but also domestic authorities and private financial institutions

- To assist such surveillance, we seek to set out in generic terms the financial and economic data needed for monitoring risks to domestic financial stability.
- It is important to start with a view of the nature of financial instability in theory, and the types of turbulence, which might pose particular systemic dangers.
- These give background for the derivation of various types of financial data that are needed for macroprudential analysis

Structure

Introduction

- 1 Theories of financial instability and related indicator variables
- 2 Deriving indicator variables from experience of financial instability
- 3 Suggested data needs
- 4 An alternative – the IMF FSI list

Conclusion

1 Theories of financial instability and related indicator variables

- Selective synthesis required of different theories
 - Financial fragility
 - Monetarist
 - Uncertainty
 - Disaster myopia
 - Asymmetric information and agency costs

- Bank runs and underlying risks – credit, liquidity and interest rate/market risk
- Herding
- Industrial
- Inadequacies in regulation
 - Moral hazard and guarantees
- International aspects of financial instability
 - Exchange rate policy
 - Institutional investors and herding
 - Foreign currency financing

Indicator variables derived from theory

- Specific set for each theory (e.g. financial fragility covers debt, asset prices, investment)
- Some overlap – particular focus on credit market structure, competition, prices, quantities and exposures
- Both macroeconomic and financial indicators are relevant

2 Deriving indicator variables from experience of financial instability

Main types of financial instability

- bank failures following loan or trading losses
- systemic consequences of market price volatility after a shift in expectations
- collapse of market liquidity and issuance

Table 1: Selected episodes of financial instability 1970-98

Date	Event	Main feature
1970	US Penn Central Bankruptcy	Collapse of market liquidity and issuance
1973	UK secondary banking	Bank failures following loan losses
1974	Herstatt (Germany)	Bank failure following trading losses
1982	Ldc debt crisis	Bank failures following loan losses
1984	Continental Illinois (US)	Bank failure following loan losses
1985	Canadian Regional Banks	Bank failures following loan losses
1986	FRN market	Collapse of market liquidity and issuance
1986	US thrifts	Bank failures following loan losses
1987	Stock market crash	Price volatility after shift in expectations
1989	Collapse of US junk bonds	Collapse of market liquidity and issuance
1989	Australian banking problems	Bank failures following loan losses
1990	Swedish commercial paper	Collapse of market liquidity and issuance
1990-1	Norwegian banking crisis	Bank failures following loan losses
1991-2	Finnish banking crisis	Bank failures following loan losses
1991-2	Swedish banking crisis	Bank failures following loan losses
1992-6	Japanese banking crisis	Bank failures following loan losses
1992	ECU bond market collapse	Collapse of market liquidity and issuance
1992-3	ERM crisis	Price volatility after shift in expectations
1994	Bond market reversal	Price volatility after shift in expectations
1995	Mexican crisis	Price volatility after shift in expectations
1997	Asian crisis	Price volatility following shift in expectations and bank failures following loan losses.
1998	Russian default and LTCM	Collapse of market liquidity and issuance

Further Distinctions

- financial deregulation
- disintermediation and reintermediation
- failure of a single large institution
- Commodities
- property related lending and speculation
- crises linked to international debt
- crises with an equity market linkage
- Contagion between countries

Data requirements for analysing risks to financial stability, derived from stylised patterns of actual crises

- Regime shifts, first to laxity, later to rigour
- Entry conditions to financial markets eased
- Debt accumulation and asset price booms
- Innovation in financial markets
- Risk concentration and lower capital adequacy for banks

Table 2A: Features of selected episodes of financial instability (1933-85)

	USA Great Depressio n (1933)	USA Penn Central (1970)	UK Secondary Banks (1973)	Germany Herstatt (1974)	LDC debt crisis (1982)	USA Contl Illinois (1984)	Canada regional banks (1985)
Debt accumulation	●	●	●	●	●	●	●
Asset price boom	●		●				
Concentration of risk	●		●	●	●	●	●
Regime shift	●		●	●	●		
New entry of intermediaries	●		●	●	●		
Innovation	●	●	●				
Monetary tightening	●	●	●	●	●		
Declining capital adequacy of financial institutions	●		●	●	●	●	●
Credit rationing/liquidity failure/bank runs	●	●	●	●	●	●	●
Contagion between markets	●			●	●		
International transmission	●			●	●		
Action by the authorities		●	●	●	●	●	●
Severe macroeconomic impact	●				●		
Dysfunction of financial system/economic collapse	●						

Table 2C: Features of selected episodes of financial instability (1991-98)

	Swedish banking crisis (1991)	Japanese banking crisis (1992)	ECU bond market collapse (1992)	ERM crisis (1992)	Bond market reversal (1994)	Mexican crisis (1994)	Asian crisis (1997)	Russia and LTCM (1998)
Debt accumulation	●	●	●		●	●	●	●
Asset price boom	●	●			●		●	●
Concentration of risk	●	●			●		●	●
Regime shift	●	●	●	●	●	●	●	●
New entry of intermediaries	●	●	●				●	●
Innovation			●	●	●			●
Monetary tightening	●	●		●	●	●	●	
Declining capital adequacy of financial institutions	●	●					●	●
Credit rationing/liquidity failure/bank runs	●	●	●				●	●
Contagion between markets					●		●	●
International transmission			●	●	●	●	●	●
Action by the authorities	●	●				●	●	●
Severe macroeconomic impact	●	●		●	●	●	●	
Dysfunction of financial system/economic collapse		?					?	

A cross check from econometric studies

- Banking crises often accompany currency crises
- Studies highlight indicators such as real exchange rate appreciation, credit expansion, high real interest rates, recession and stock market declines
- Often highlight short term, quantitative indicators of the crisis itself rather than the preceding build up of vulnerability - most useful when give “early warning indicators”

3 Types of data required for macroprudential surveillance

- flow of funds data
- financial prices
- monetary data
- detailed data on banks
- qualitative data
- external data
- macroeconomic data

Flow-of-funds data

Corporate and household deficits/GDP + -

Corporate debt levels/income or GDP +

Corporate debt-equity ratios +

Household debt levels/income or GDP +

Measures of income gearing +

Bank versus market financing of companies

Unusual growth of financial claims in a particular market +

Investment patterns of institutional investors, notably cross-border +

Banking indicators derived from flow-of funds (e.g. overall capital adequacy -, balance sheet expansion +).

Financial prices

Equity prices (overall and for financial institutions) +

Commercial and residential property prices (at national and regional level) +

Potential “bubbles” in terms of deviations of asset prices from past averages +

Corporate bond spreads (for domestic and eurobonds) -+

Corporate loan spreads -+

Bank bond spreads -+

3-month CD spreads -+

3-month CP spreads -+

Prices of related futures and options

Maturity of debt +-

Monetary data

Broad money growth +-

Total credit to the non-financial sector +

Velocity of money and credit +

Growth in bank assets (total and by subsector of banks) +

Sectoral or regional loan concentration +

Official interest rates -+

Real short and long term interest rates -+

Current monetary regime and its sustainability -.

Banking/Financial structure

Individual bank data showing averages, distributions and time series of capital adequacy -, margins -, liquidity -, wholesale + and retail - funding, profitability -, returns on equity -, non-performing loans for banks +, derivatives exposures for hedging + or speculation -.

Where possible, corresponding data for investment banks and hedge funds.

Change in number of banks +

Change in number of foreign banks +

New entry to markets +

Estimation of revenue functions to assess contestability +

Market maker structure and market liquidity indicators -

Qualitative information

Easing of financial regulation +

Recent financial innovations +

Developments reducing entry barriers to markets (notably technological change) +

Coverage of the safety net + (especially deposit insurance or other implicit or explicit guarantees)

Potential correlation of risks +

Structural and regulatory features limiting potential contagion –

Information gathered from operational activities regarding potential for “herding” and other risks.

External financial data

Current account deficit +

Foreign currency bank lending +

Real exchange rate/terms of trade +

Foreign exchange reserves -

Capital account flows in banking or portfolio form +

Short term debt in foreign currency relative to total domestic debt
and to short term assets in foreign currency +

Direction of trade data – correlation with other countries at risk +

Memo: macroeconomic data

Economic growth at national and regional level +-

Investment +-

Inflation +

Corporate profitability -

Forecasts of the above variables

4 An alternative approach – the IMF Financial Soundness Indicator (FSI) list

- Criteria for selection:
 - Focus on core markets and institutions
 - Analytical significance
 - Revealed usefulness
 - Relevance to range of countries
 - Availability
 - Parsimony – economy in use of data

The Core FSI list (banking data)

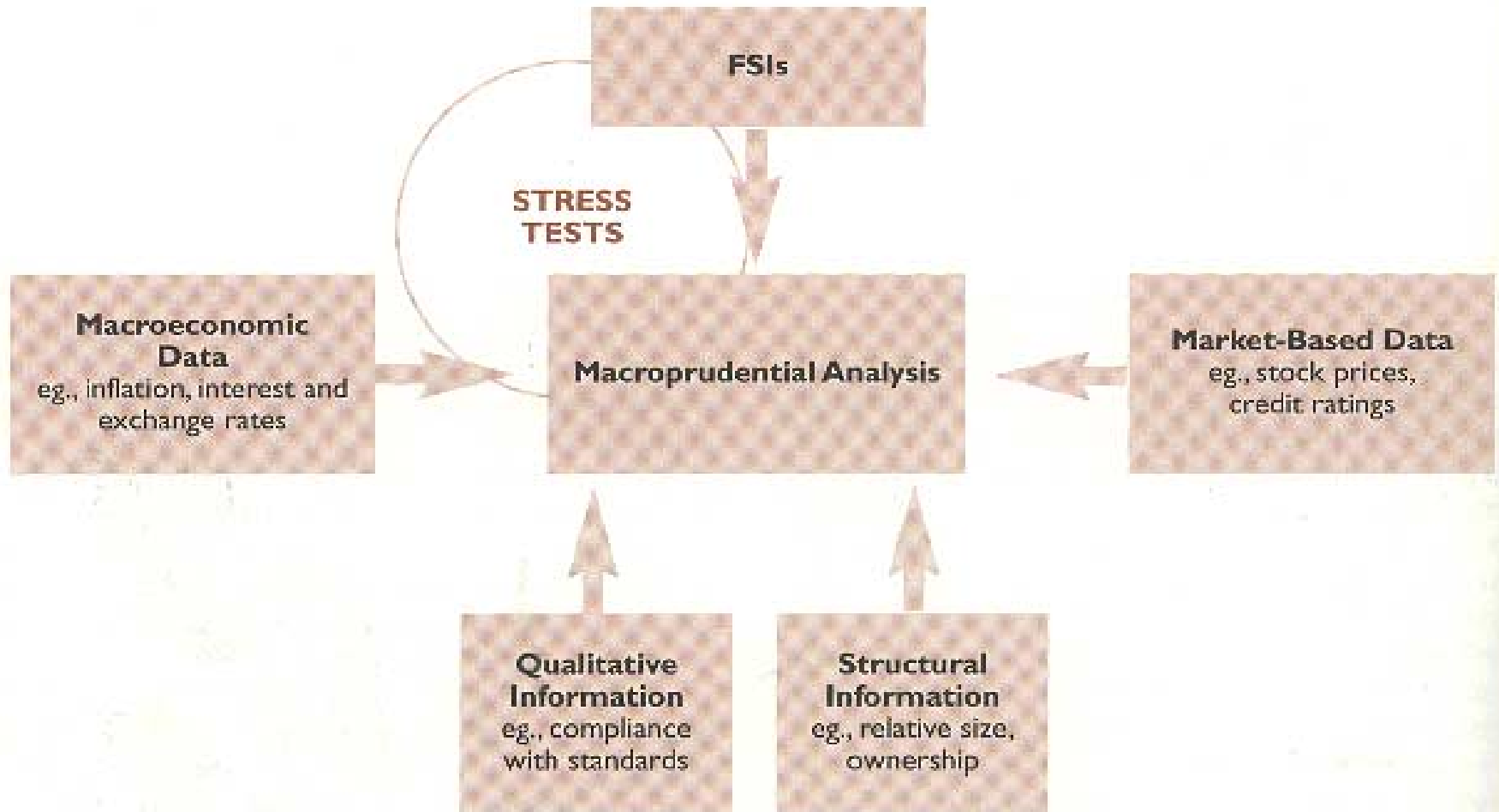
- Capital adequacy
 - Regulatory capital to risk weighted assets, regulatory Tier 1 to risk weighted assets
- Asset quality
 - NPLs to total gross loans, NPLs net of provisions to capital, sectoral distribution of loans to total loans, large exposures to capital

- Earnings and profitability
 - ROA, ROE, interest margin to gross income, non interest expenses to total income
- Liquidity
 - Liquid assets to total assets (liquid asset ratio), liquid assets to short term liabilities
- Sensitivity to market risk
 - Duration of assets, duration of liabilities, net open position in FX to capital

The Encouraged FSI list

- Further information on:
 - Deposit taking institutions
 - Market liquidity
 - Nonbank financial institutions
 - Corporate sector
 - Households
 - Real estate markets
- Complement: macroeconomic, market based, structural and qualitative information (including adherence to codes)

Components of MP analysis



Comment

- Broad convergence between data sets
- Nevertheless, IMF list should be seen as minimum, with encouraged as well as core list essential.
- Query whether choice of indicators relevant to range of countries may leave out key idiosyncratic ones
- Major statistical effort needed e.g. in flow of funds, institutional investor data (especially given pension reform and population ageing), back data on property prices, NPLs

Conclusions

- Theory of financial instability as well as the experience of financial crises in the past and econometric estimates enable derivation of lists of financial and macroeconomic data for use in macroprudential surveillance.
- The indicators are in no way precise, and may all occur separately without financial instability being present or even threatened, hence a need to be aware of the *combinations* that are threatening
- IMF approach – combined list should be seen as minimum, with more data desirable
- Second lecture will focus on practical and analytical issues in use of data in macroprudential analysis

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See also http://www.geocities.com/e_philip_davis/fs_resources.htm