

Lost in complexity: systemic risk as an insuperable challenge?

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Outline

- 1. Defining systemic risk**
- 2. Identifying and assessing systemic risk**
- 3. Developing a policy toolkit for addressing systemic risk**
- 4. Conclusions**

I. Defining systemic risk

- **IMF-FSB-BIS:** a risk of disruption to financial services that is caused by an *impairment of all or parts of the financial system* and has the potential to have serious *negative consequences for the real economy* (2009)
- **ECB:** risk that financial instability becomes so widespread that it *impairs the functioning of the financial system* to the point where *economic growth and welfare* suffer materially (2009)
- **EU ESRB:** systemic risk means a risk of *disruption in the financial system* with the potential to have serious negative consequences for the internal market and the *real economy* (EU Regulation, 2010)
- **US FSOC:** serious adverse effects on *financial stability in the United States* (Dodd-Frank, 2010)
- **UK FPC:** risks to the stability of the *whole or a large part of the financial sector* (HM Treasury, 2011)

I. Dimensions of systemic risk

Complexity associated with (i) many dimensions of systemic risk

- **Distribution of risks within the financial system** (cross-sectional dimension)
 - *Risk concentration* (in individual institutions such as SIFIs or in the form of common exposures across institutions)
 - *Contagion risk* (interconnectedness via direct links e.g. counterparty relations or common dependence on funding sources and/or indirect links e.g. through confidence effects)
- **Distribution of risks over time** (time dimension)
 - *Pro-cyclicality of the financial sector* (excessive risk-taking in good times and sharp corrections when cycle turns with adverse feedback loops)

I. Dimensions of systemic risk

(ii) multiple interplays between the dimensions

- excessive credit growth, increased asset prices and reduced RoE (*time dimension*) create incentives for risk-taking and innovation of complex financial products which may result in overall increased leverage in the financial system and more complex interrelationships (*cross-sectional dimension*)

(iii) many factors affecting the dimensions

- structure of *incentives* of institutions
- *risk management* approaches of institutions
- regulatory, supervisory and other public policy (e.g. accounting) *standards*
- developments in the *real economy*

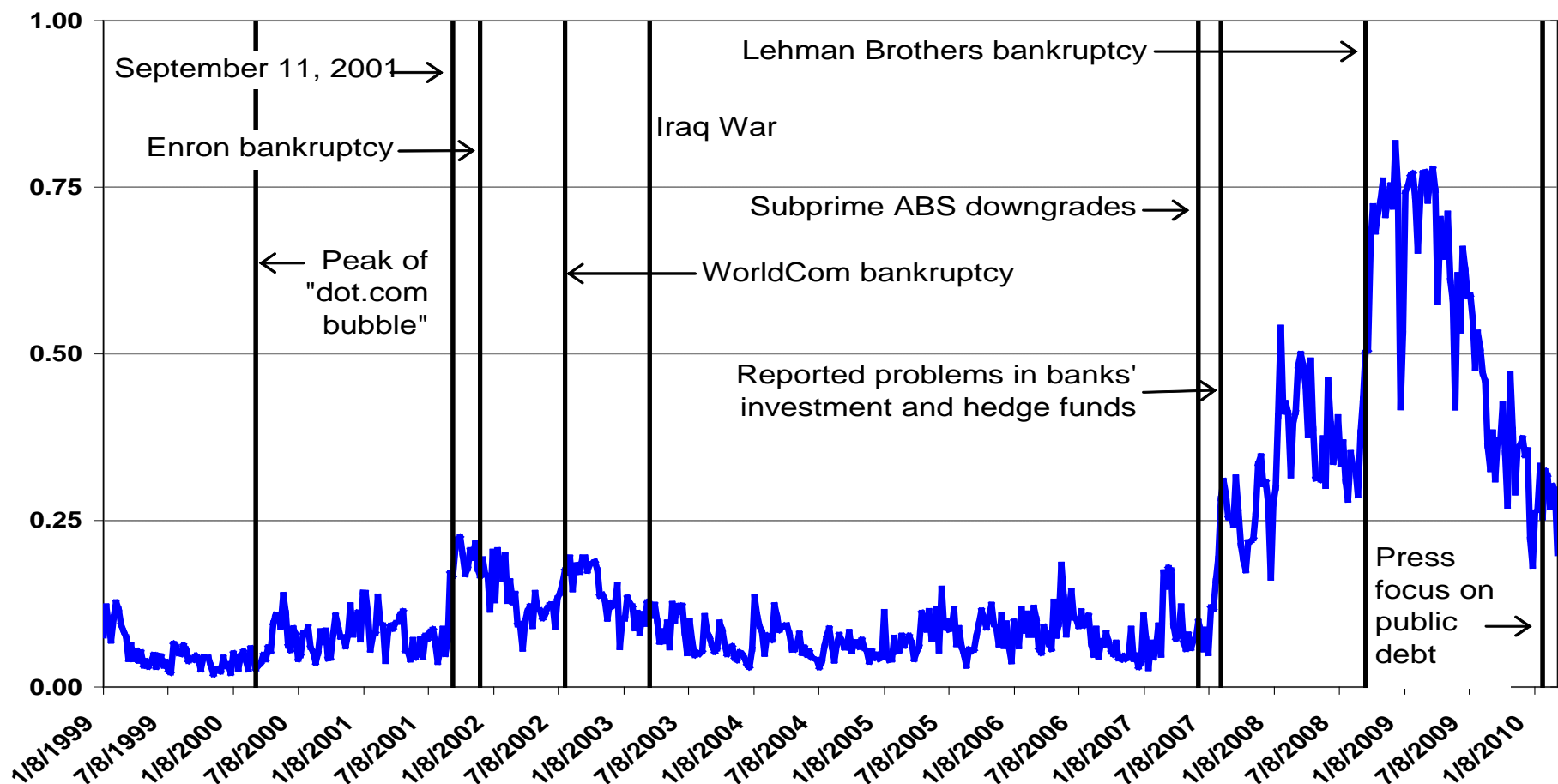
2. Analytical tools for systemic risk identification

Financial stability indicators

Direct or model-based indicators of current conditions for all systemically relevant intermediaries and markets or composite indicators for financial sub-sectors/system

+	Can be developed relatively fast and flexibly depending on structural changes in the financial system and new risks
–	Partial in nature (composite indicators as alternative); limited/no predictive power
Future	Development of indicators of risks stemming from the non-banking and non-financial corporate sector

2. Composite indicator of financial system stress



- **Scope:** Equity, bond, money and FX markets plus intermediaries (various sub-items) - **real time**
- **Basic sub-measures** include volatilities, trends, spreads, recourse to marginal lending (weekly data)
- **Normalisation** between 0 and 1 and **aggregation** weighted with correlations ("systemic")

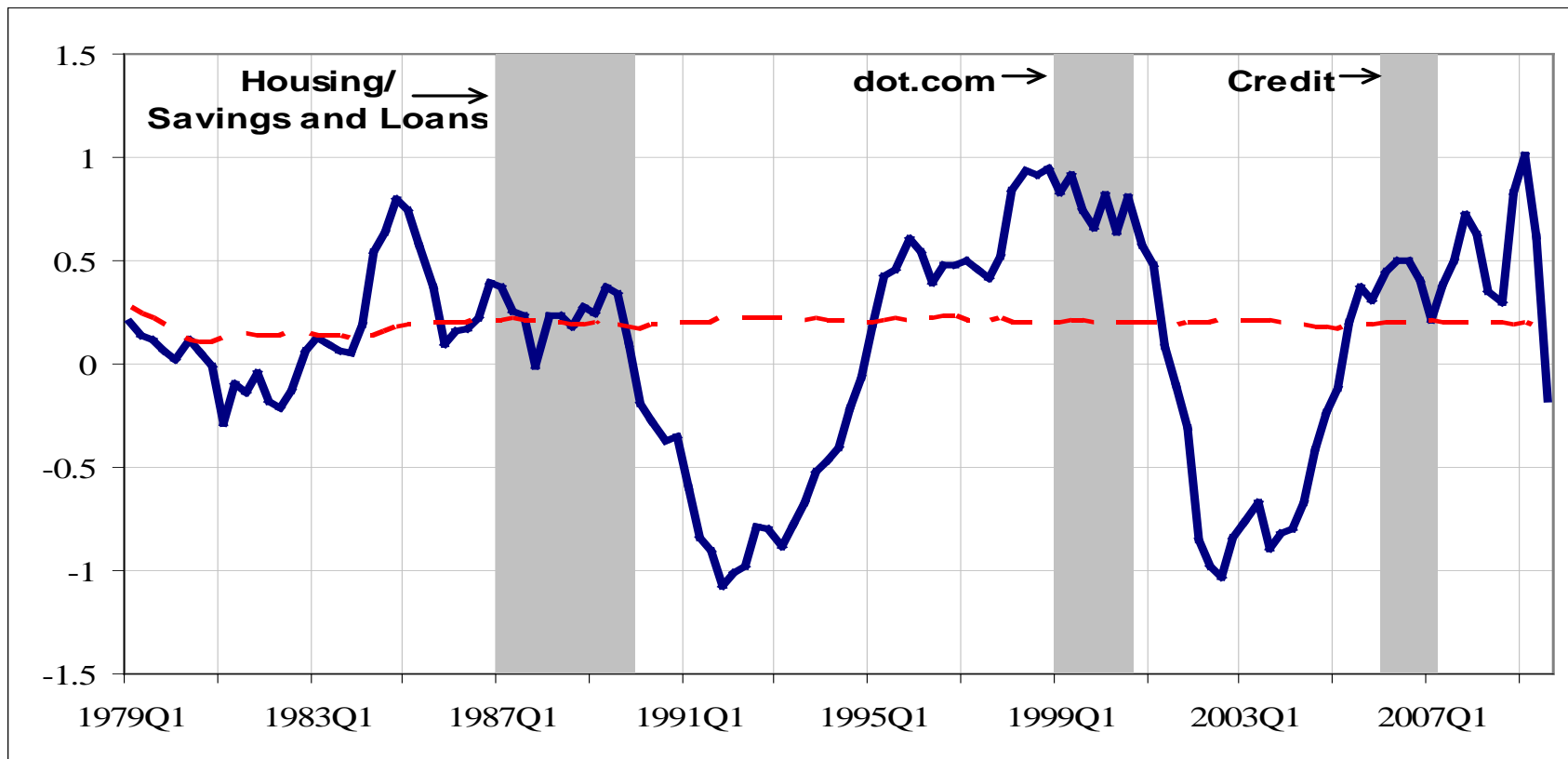
2. Analytical tools for systemic risk identification

Early warning systems

After defining an index of a bubble, distress or crisis analyse variables that help predict index and monitor them with respect to (optimal) signal thresholds

+	Focus on market perceptions about the future and thus needs to be complemented with information that market is not pricing in
–	Generally failed to predict crises in the past; high uncertainty about timing of predicted crises
Future	Early warning tools covering non-bank financial intermediaries, in particular the insurance sector and money market funds; models based on money market and bank firm-level data

2. “Global” credit gap as EWS for asset bubbles



- — De-trended private credit to GDP ratio (GDP-weighted average across countries)
- - - “Optimal” signal threshold (each time 70th percentile – “quasi” real time)
- ■ Widespread mortgage/equity bubble episode (≥ 8 countries 1.75 SD above trend)
- “Costly” bubbles (followed by 3 years of GDP growth 3 p.p. below potential)

2. Analytical tools for systemic risk assessment

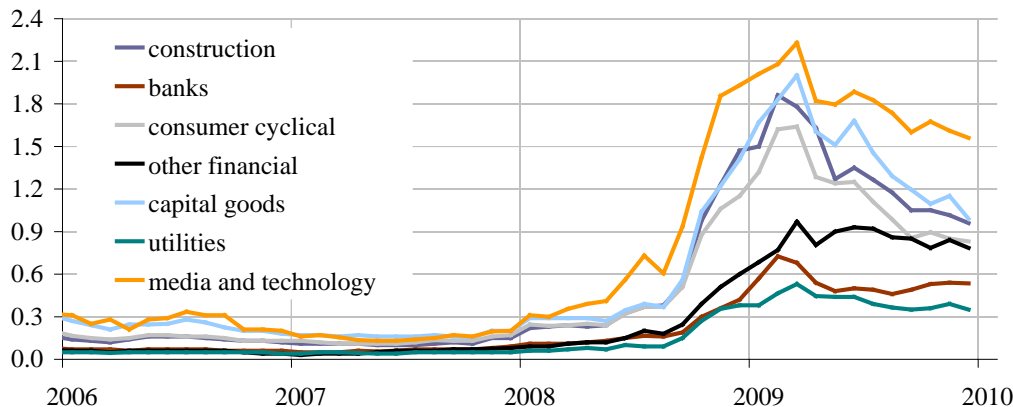
Top-down stress-testing

Assessment of the impact of severe but plausible macro-financial scenarios emerging from risk identification by using a financial sector model

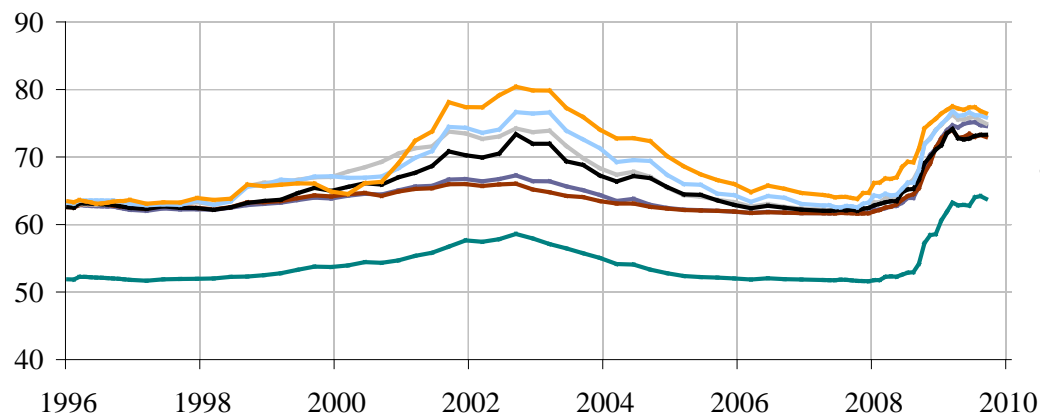
+	Ranking of risks in terms of potential losses for the banking/financial system; support to risk prioritisation tasks and related policy deliberations
–	Challenges in translating risks identified in suitable adverse scenarios to ensure a consistent ranking of the risks; no feed-back between financial system and real economy
Future	Enhancements on the interrelated building blocks that form the top-down stress testing framework: modelling of bank profitability and second-round effects

2. Top-down stress-testing

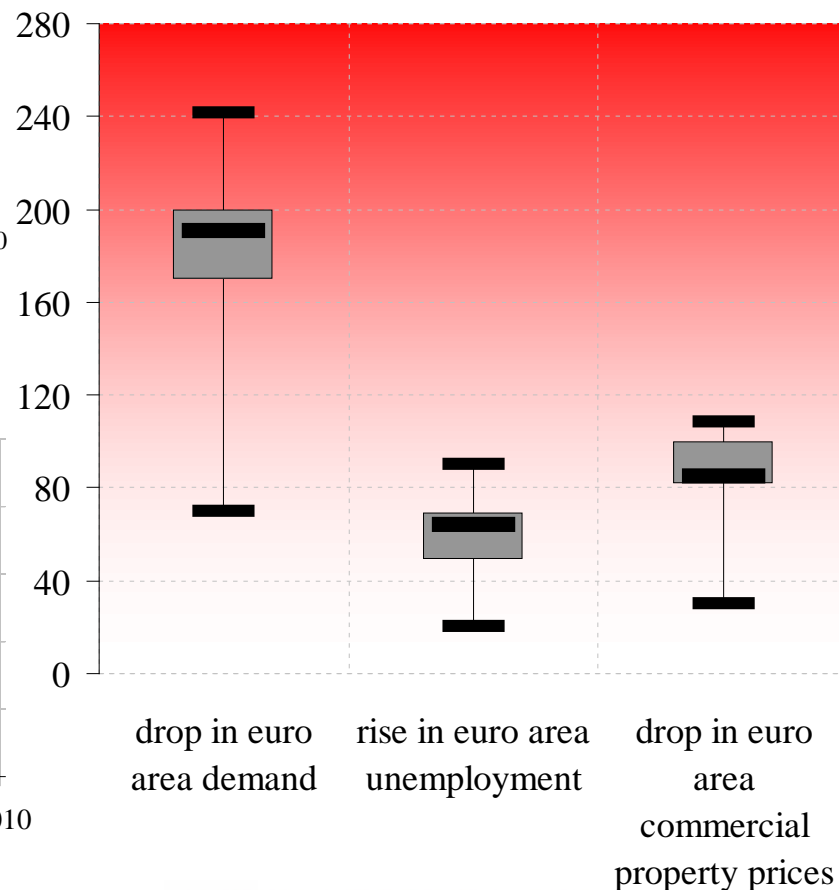
Expected default frequencies (EDFs) for selected euro area sectors (%; median)



Loss given default (LGD) rates for selected euro area sectors (%; median)



Distribution of changes in credit Value at Risk relative to baseline for selected scenarios, up to end-2010 (%; 2.5% probability scenarios)



2. Analytical tools for systemic risk assessment

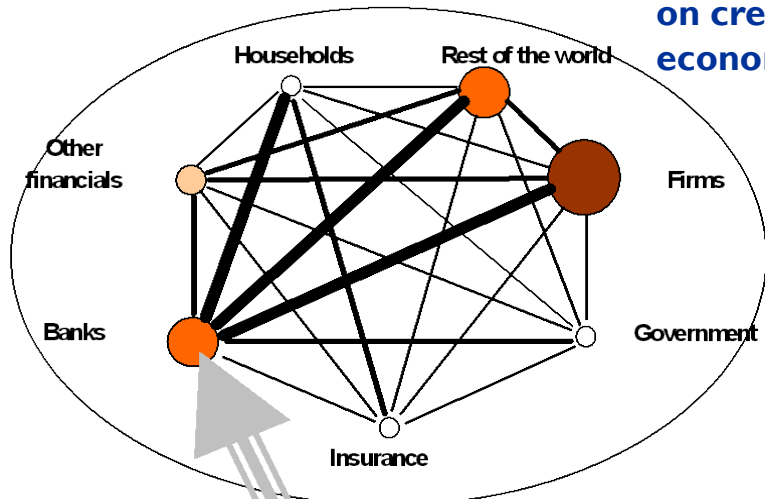
Contagion and spill-over models

Identification of systemic inter-linkages (across firms, sectors and countries) and overall assessment of impact of shocks

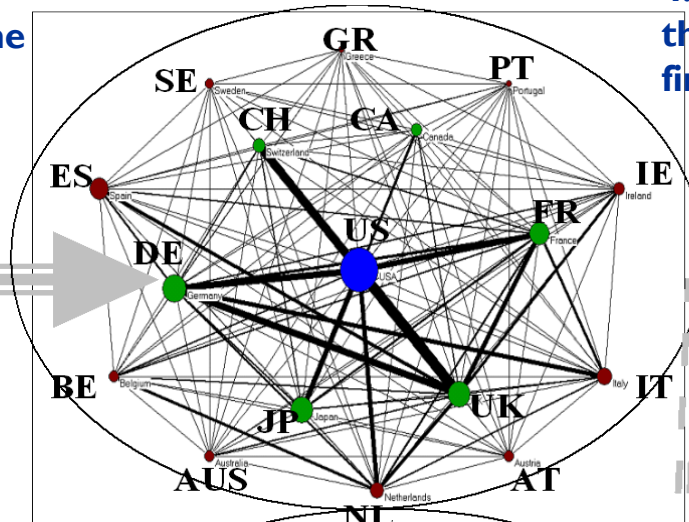
+	Analysis of network fragilities and integration in the stress-testing framework (second round effects within the banking sector and contagion to other sectors)
–	Analysis suggests limited amplification effects; important data gaps (e.g. on direct exposures)
Future	Propagation channels (e.g. from housing and commodity markets) to the financial system; development of contagion models with built-in amplification mechanisms

2. Contagion and spill-over models

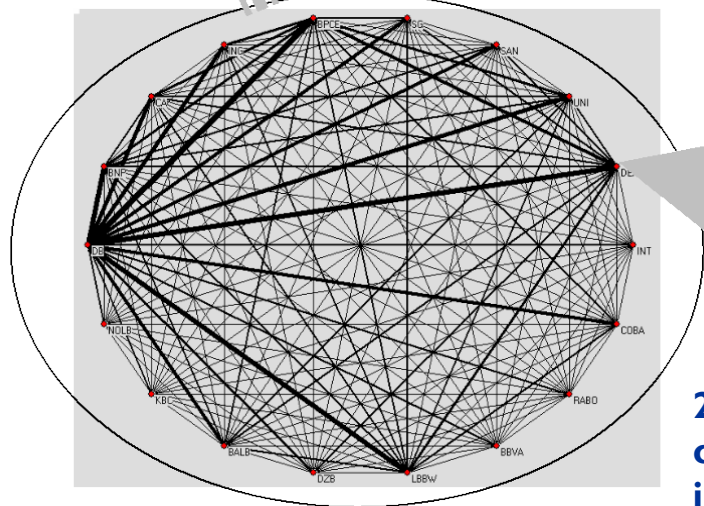
3: Constraints on credit to the economy



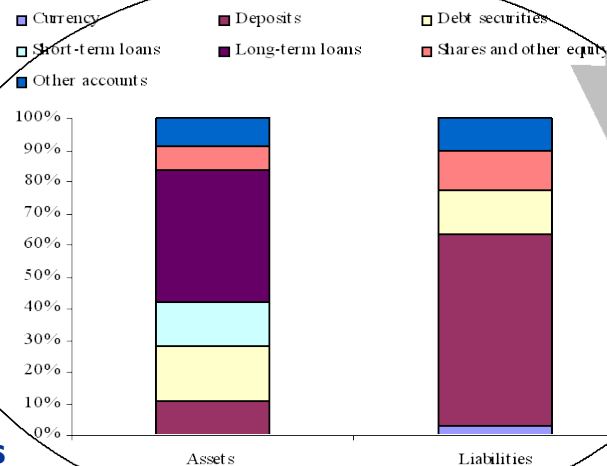
4: Contagion to the global financial system



5: Feedback effects into the banking system



2: Impact on counterparties in the interbank market



1: Shock to a systemically important institution

3. Developing a macro-prudential policy toolkit

SUPERVISORY TOOLS		CENTRAL BANK TOOLS	FISCAL TOOLS
Nature of tool	CROSS-SECTIONAL DIMENSION	TIME DIMENSION	
Essentially microprudential	<ul style="list-style-type: none"> • Large exposure constraints • Rules on counterparty credit risk • Increased scope and intensity of supervision 	<ul style="list-style-type: none"> • Loan-to-Value caps • Loan-to-Income caps • Through-the-cycle risk weights • Stress risk weights • Capital conservation buffer • Increased scope and intensity of supervision 	
Both micro- and macroprudential	<ul style="list-style-type: none"> • Net Stable Funding Ratio • Liquidity Coverage Ratio • CCP clearing of OTC derivatives 	<ul style="list-style-type: none"> • Leverage ratio 	
Essentially macroprudential	<ul style="list-style-type: none"> • Prudential surcharges on SIFIs • Resolution arrangements, e.g. bail-ins 	<ul style="list-style-type: none"> • Countercyclical buffer • Dynamic provisioning • Time varying margins or haircuts • Rules on compensation 	<ul style="list-style-type: none"> • Adjusting terms for accessing liquidity and payment system facilities • Changing reserve requirements • Taxes/levies on systemic institutions • Rules on tax deductibility for interest paid by borrowers

3. Interplay between macro- and micro-prudential policies

Issues relating to the use of one tool for two purposes

- *Mandates of supervisors* need to be aligned
- *Potential conflicts of interest* between macro- and micro-prudential objectives need to be properly managed
- *Margins* should be left to macro-prudential supervisors to use micro-prudential tools

Issues relating to the cross-border dimension

- Need for *coordination cross-border* in the use of macro-prudential tools:
 - to ensure *effectiveness* of measures at the national level (e.g. FX lending)
 - to promote *coordinated action* by banks (e.g. maintenance of lending levels in certain geographical areas)

3. Interplay between macro-prudential and other public policies

Macro-prudential policies complement macro-economic (monetary and fiscal) policies

- Macro-prudential bodies not expected for their policy recommendations to target:
 - *central banks* in the field of monetary policy (but they could target them as market infrastructure overseers)
 - *fiscal authorities* but they could look at the interplay between sovereign and banking risks

Macro-prudential policies complement other public policies aiming at reducing the likelihood of financial crisis

- Macro-prudential bodies expected:
 - to contribute to the design of macro-prudential elements of *financial regulation*
 - *not* to have a primary role in *crisis management and resolution*

4. Conclusions

Systemic risk oversight is not an insuperable task but will continue posing challenges for quite some time due to:

- complexity of the *notion* of systemic risk (many dimensions and lack of quantitative measure)
- many *analytical challenges* for identifying and assessing systemic risk
- lack of *stand-alone* macro-prudential tools (issues of performance assessment and accountability)
- overall lack of a *complete macro-prudential framework* (in terms of tools, transmission channels and objectives)

Actual experience of existing macro-prudential bodies (ESRB, FSOC, FPC) and reflections in the international bodies (IMF, BIS, FSB) will contribute to developing a macro-prudential framework in the years to come