



FSAP stress testing: Denmarks experience



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FSAP Stress test experience

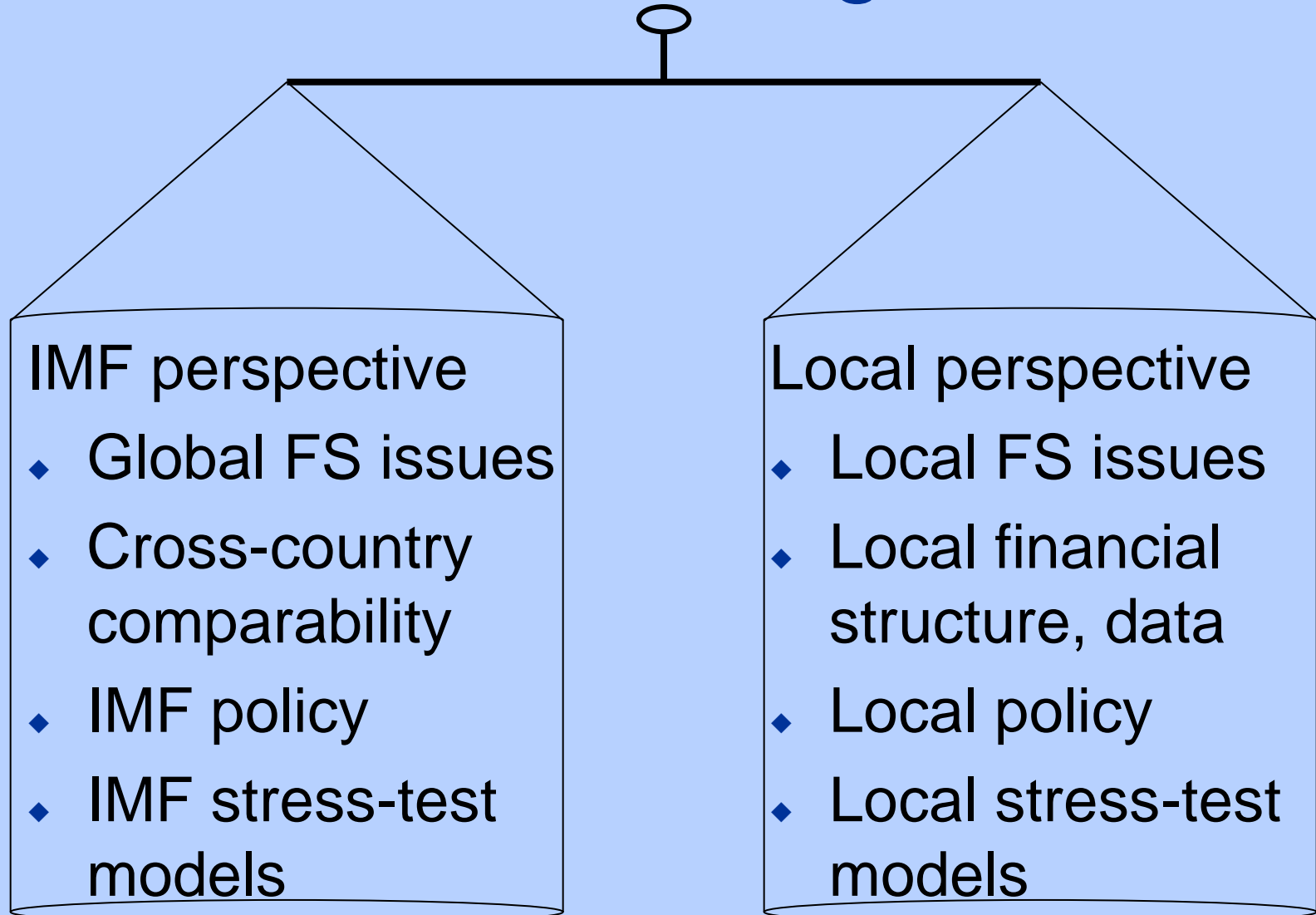
Subjective personal experience of local central bank stress-test co-ordinator.

For FSAP stresstest methodology and results, see:
Denmark: FSAP – Technical Note – stress testing,
IMF country paper 07/125
and other FSAP papers (all published)

For our planned future stress-test work, see
Danmarks Nationalbank *Financial stability 2007*



IMF FSAP balancing act





What would IMF want?

Quick survey of IMF FSAP stress tests:

- ◆ Big differences in scope of FSAP stress tests
- ◆ But rising standards, especially since 2003

IMF 'ideal specification' FSAP macro stress test:

- ◆ Coverage of all systemically important FIs
 - ◆ Banks, Insurers, Pensions, Conglomerates
- ◆ Top-down and bottom-up estimates
- ◆ Of credit, market and contagion risks
- ◆ For short (1yr) and medium (3yr) term
- ◆ For single- and multi-factor scenarios of
 - ◆ External & internal, demand & supply shocks



What is special about Denmark?

- ◆ Welfare state
 - ◆ Flexsecurity stabilisers + tax incentives
- ◆ Mortgage credit system
 - ◆ balance principle, no default in 200+ yrs
- ◆ Banking system
 - ◆ Highly concentrated: CR5 = 70-80%, but 150+ banks
 - ◆ Internationalised: 30% foreign banks, incl 2 of top 5
- ◆ Fixed exchange rate since 1982
 - ◆ No (need for) central bank macro projections
- ◆ Bureaucratic restraint/constraints
 - ◆ Tax freeze
 - ◆ Burden-conscious, given overlap with Basel II, IFRS
 - ◆ Financial stability profile and resources
 - ◆ Data limitations, eg. confidentiality issues



Timeline for IMF FSAP stresstest

Aug-2005: 2-day preparatory visit

Nov-2005: 1st mission (2 weeks)

Lots of meetings covering

- ◆ data for stresstest: banks, borrowers, OFIs
- ◆ existing analyses, systemic risk
- ◆ FSAP stress test: scope, methods, scenarios

Dec-2005 to Feb-2006: local homework

- ◆ Calculation of stresstest results

May-2006: 2nd mission (1 week)

- ◆ Reconciling the stress-test results



IMF FSAP stress-tests

Stress test scenarios:

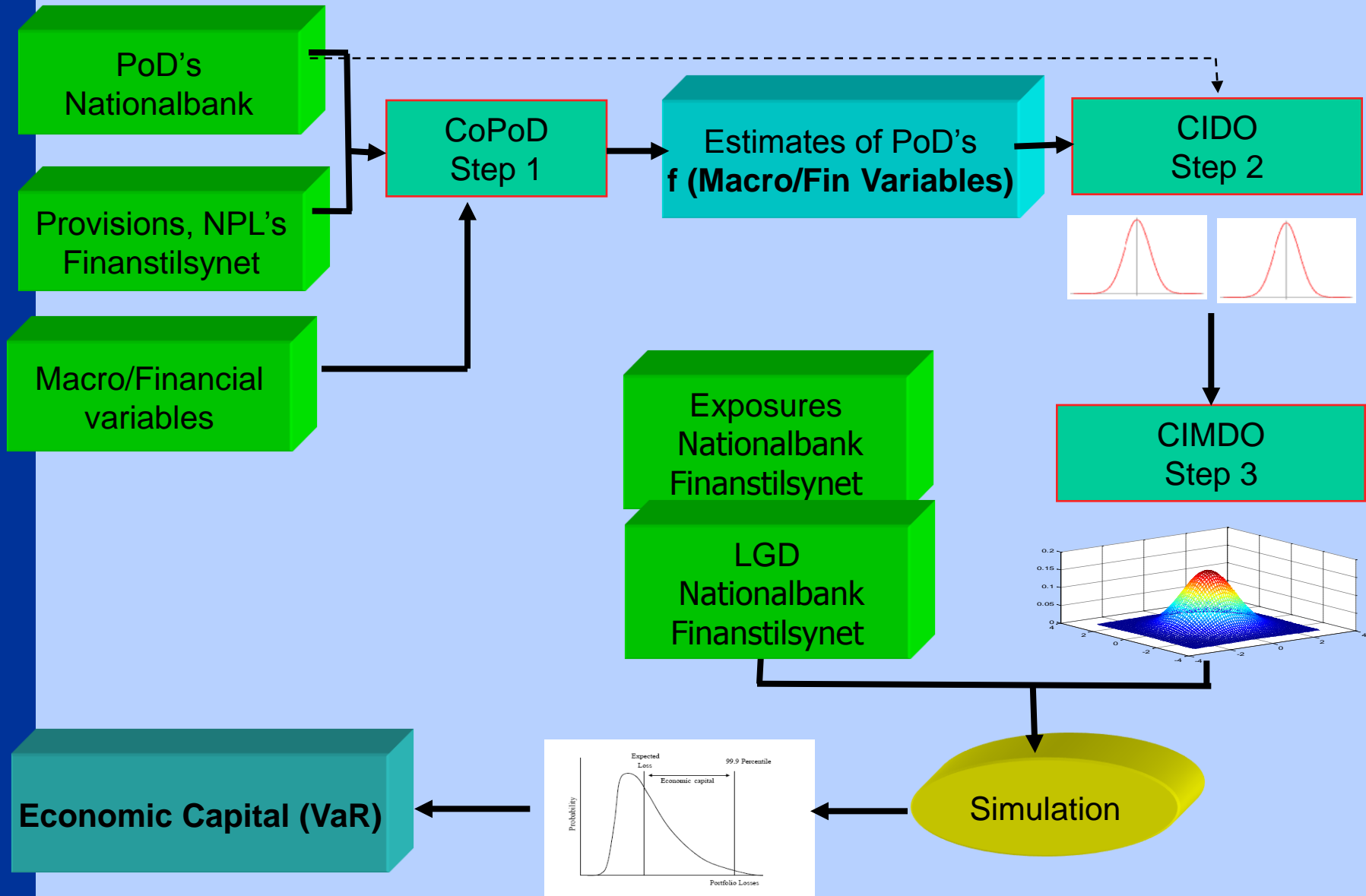
- ◆ Single factor shocks:
 - ◆ yield curve +250 / -100bp
 - ◆ stock market -30%
 - ◆ exchange rate +/-40%
 - ◆ property prices -30%
- ◆ 3 Macro risk scenarios:
 - ◆ Domestic shock: fall in houseprices
 - ◆ External shock: DKK↑, competitiveness and external demand↓
 - ◆ Full shock: domestic shock + ECB interest rate rise

Estimation methods/scope:

- ◆ Bottom-up estimates:
 - ◆ 5 biggest banks estimate impact with own models
 - ◆ 5 biggest insurance & pension firms
- ◆ Top-down estimates
 - ◆ IMF portfolio credit risk model (Segoviano), with input of PDs from DN failure rate model
 - ◆ DN simple reduced-form equation for losses



IMF portfolio credit risk model





IMF FSAP stress-test results

- ◆ Differences in estimated impact:
 - ◆ Banks' bottom-up < DN top-down < IMF
 - ◆ Banks: stable earnings, LGD only on unsecured EAD
 - ◆ IMF: 50% LGD, focus stressed ULs
 - ◆ Banks wary of read-across to Basel pillar II
- ◆ IMF FSAP recommendations:
 - ◆ Strengthen stresstest capabilities at DFSA
 - ◆ Cooperation with DN, major banks
- ◆ Local follow up:
 - ◆ DFSA stress-test: rating banks, risk-based supervision
 - ◆ DN development of models for macro stress testing the financial system



Evolution of our stress test models

Evolutionary development of stress-test models

was accelerated by 'shock' of IMF FSAP Future FS

