ON STRESS TESTS

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1. Stress Scenario

- How bad?
  - Is historical worst case a good guidance? (the world changes)
    - Loss rates can reach new heights
  - Data from other countries

- What’s exogenous? What’s endogenous?
  - Endogenous response leads to amplification mechanism/feedback loops/spirals
  - Second/third ... round effects
  - Endogenous mechanism is very model dependent
    - Non-linear effects are key
    - General Equilibrium effects
  - Is macro-scenario (unemployment rate) really exogenous?
2. Endogenous Response → Loops

- **Risk Topography** – *General Equilibrium perspective*
  - **Direct** responses to 5%, 10%, 15%, ... drop in factor to
    - $\Delta$Value
    - $\Delta$Liquidity Mismatch Index
  - Predict response
    - hold out - “fire sell” assets - credit crunch
  - Derive likely **indirect** equilibrium response to
    - this stress factor
    - other factors

*Non-linearities, externalities, multiple equilibria, amplification, mutually inconsistent planes, Fat tails, ...*
2. Liquidity is all about endogenous responses

<table>
<thead>
<tr>
<th>A</th>
<th>L</th>
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</thead>
<tbody>
<tr>
<td><strong>Market liquidity</strong></td>
<td><strong>Funding liquidity</strong></td>
</tr>
<tr>
<td>fire-sale price impact</td>
<td>maturity, haircut/margin spike</td>
</tr>
<tr>
<td>(Technological liquidity)</td>
<td></td>
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<tr>
<td>irreversibility</td>
<td></td>
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</tbody>
</table>

- *Leverage and maturity mismatch* not ideal measures

- LMI = Response indicator!
  - Counterparty/bank run
  - Collateral run
2. Further endogenous responses

- Predatory Trading
  - JP Morgan $2bn trading loss will become $6bn
  - Why not discovered during stress test????

- Uncertainty/risk
  - Single scenario might hide that agents don’t know true scenario → precautionary behavior

- Regulation: leverage ratio is counterproductive
  - Leverage constraint has two effects
    - Normal times: payouts are delayed to build up cushion → Small stabilizing effect
    - Crisis times: fire-sales → Large destabilizing effect
  - Payout restriction in good times!
3. Micro-prudent vs. macro-prudent

- **Fallacy of the Composition:**

<table>
<thead>
<tr>
<th>Balance sheet</th>
<th>action</th>
<th>micro-prudent</th>
<th>macro-prudent</th>
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<tbody>
<tr>
<td>Asset side</td>
<td>(fire) sell assets</td>
<td>Yes</td>
<td>Not feasible in the aggregate</td>
</tr>
<tr>
<td></td>
<td>no new loans/assets</td>
<td>Yes</td>
<td>Forces others to fire-sell + credit crunch</td>
</tr>
<tr>
<td>Liability side</td>
<td>raise long-term debt</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>raise equity</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
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- Macro: also include amplification in macro variables
3. Macro- vs. Micro-prudence

- Capitalization of whole financial sector matters!
  - Strong bank should not be allowed to pay out dividends if other financial institutions are weak (see e.g. BruSan10)

- Flight to safety capital flows
  - Dexia – ignored in EBA’s European stress test
  - Adverse scenario might vary from bank to bank a lot!
4. How to implement?

- **Transparency**
  - Stress test results can trigger a bank/collateral run
    - Bad stress test news can serve as coordination/synchronization device
  - Reveal bank specific or macro/aggregate data?
    - Commit ex-ante to transparency strategy
  - Snapshots vs. average?

- **Ex-ante back-up recapitalization plan**
  for the case that the stress test results are negative
Main messages, again

1. What should be part of exogenous scenario – what endogenously modeled?
2. Endogenous responses → loops → liquidity
   - How well can they be modeled?
   - Depends on regulation
   - Importance of “predatory trading”
   - Uncertainty changes behavior – can single scenario capture it?
3. Macro vs. Micro
   - Amplification is part of real economy! (endogenous)
4. Implementation
   - Transparency + recap back-up plan