BANQUE CENTRALE DU LUXEMBOURG

EUROSYSTÈME

Discussion:
Liquidity risk monitoring framework
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Motivation:

- monitor liquidity risk by comparing across

  1) peers

  2) time

  allows evaluation of relative degree of liquidity risk

Method:

- measure and pool risk factors according to balance sheet exposure and market exposure
- evaluate liquidity position relative to peers and time
- assess relevance of different risk factors for banking sector

Positive points:

- ★ helps supervisory to observe relative positions
- ★ singles out those factors that drive liquidity risk in Luxembourg

Points to discuss:

1. Measuring liquidity risk
2. What does the relative position really tell us?
3. Further remarks

4. (Style-related comments)

Liquidity

Liquidity is the ability of market participants to take risks on each other as they seek to fund asset purchases and meet obligations.

Liquidity risk

The likelihood of running out of funds to meet one‘s obligations.

Objective of measuring liquidity risk

Supervisory wants to have a high degree of confidence that the market participants can continue to meet their contractual obligations without interruption or assistance.

1. Measures of liquidity risk

Measure liquidity risk via balance sheet risk indicators and market risk indicators

Example (balance sheet, household deposit run)

(*step 1*) for each bank, for each t, calculate *iBRPS*

$$\frac{\text{(liquid assets – stress* deposits)}}{\text{(total assets – stress* deposits)}}$$

stress=s.d.(deposits)/mean(deposits)

(step 2) calculate bank distribution from *step 1* and allocate to each bank a 1 (best) to 9 (worst) according to position in distribution (*iBRPS→ BRPS*)

(step3) for each bank and t, calculate (normalized) weights *w=deposits* stress/liquid assets*

(step 4) arrive at final Peer Score measure

$$PS_{b,t} = \sum_i w_{i,b,t} BRPS_{i,b,t}$$

Balance sheet risk indicators:

You choose:

Freeze of interbank market, capital markets shock, retail run, private run, corporate run, withdrawals by funds, issuance problems, custodian operational issues, committed credit lines, foreign exposures, fiduciary deposits, off-shore centres, eurosystem refinancing, group liquidity

<u>But:</u>

Why not standard liquidity risk measures:

- ⋆ maturity mismatch
- ⋆ contingent (upon fundamentals) liquidity risk

(*step 1*) for each bank, for each t, calculate risk indicator

$$\frac{\text{(liquid assets – stress* deposits)}}{\text{(total assets – stress* deposits)}}$$

stress=s.d.(deposits)/mean(deposits)

F Stress parameters (α_i)

Freeze of interbank market	50%
Capital markets shock	see Annex A
Retail run in Luxembourg	$stdev(r_{i,b}) / \overline{r_{i,b}}$
Private run	$stdev(r_{i,b}) / \overline{r_{i,b}}$
Corporate run	$stdev(r_{i,b}) / \overline{r_{i,b}}$
Withdrawals by funds	$stdev(r_{i,b}) / \overline{r_{i,b}}$
Issuance problems	50%
Custodian operational issue	5%
Committed credit lines	$stdev(r_{i,b}) / \overline{r_{i,b}}$
Foreign exposures	10%
Fiduciary deposits	80%
Off-shore centers	80%
Eurosystem refinancing	50%
Group liquidity	80%

- Two interpretations:
  1) Accounting method – but then why use *stress*?
  2) You try to transform a backward-looking measure into a forward-looking one but then *stress* has little predictive value
- Where do the fixed stress parameters come from?
  (same for every type of bank?)
- Why do you not use a standard liquidity risk scenario for ease of comparison?
- Shouldn‘t there be a role for fundamentals?
  (e.g. economic situation, financial regulations, expectations)
- Volatility versus trend
- What about if several risk types tend to strongly correlate?
  (e.g. household deposit runs and corporate deposit runs)

(step3) for each bank and t, calculate (normalized) weights

$$W = \frac{deposits * s.d.(deposits)}{liquid\ assets * mean(deposits)}$$

wlog assume mean(deposits)=deposits

→ big banks will get w=0 and small ones w>0, even though proportion of deposits / liquid assets same.

(holds for banks that have a target rate of deposits)

→ By normalizing weights to add to 1 you allow risks to be substitutes
(shouldn‘t they be modeled as complements?)

→ You want to capture the relative importance of risk factors with step 3. Do you?
Why not simply deposits / liquid assets?
Again, how important are correlated risks?

2. What does the relative position really tell us?

- Time: danger of choosing an arbitrary benchmark (reference, status quo period)
  e.g. if the benchmark is in 2009 versus 2004
- Peer: relative peer position says little about liquidity risk (especially if commercial banks are mixed with custodian banks, debt-focused banks, local versus multinationals)
- Contagion effect not included: assume a high Peer Score bank; many very low Peer Score banks → market expectations bad → can quickly affect the high Peer Score bank

Further remarks:

→ In your peer effect you assume all banks belong to the same peer group: but depending on business line subject to different contagion effects

→ Chart 6: Time score is more volatile than peer score: because changes in peers are correlated or because time score includes market factors?

→ Chart 3: relation between same types of banks?

→ How much soft data (interview, on-sight visits etc..) did you use?
Different degree of quality: „Reports of non-performing loans are often widely inaccurate, for banks try to hide their problems for as long as possible.“ (Reinhart and Rogoff, 2010)

→ Which of the banks in your dataset really faced liquidity problems in 2008 /2009?
(Could be used as a check-up on the quality of your liquidity risk measures; e.g. where was Fortis Banque?)

→ Correlation between time and peer score?
(if contradictory results: choose which one for policy making?)

→ Forward versus backward looking indicators?
(e.g. foreign exposures or off-shore centres: should be related to predicted growth in foreign country; consumer confidence is somewhat forward-looking. Again: fundamentals)

A suggestion

Why not derive liquidity risk from basics?

Suggested approach:

A bank tries to minimize the probability of running out of liquidity given the historic distribution of changes in liabilities and assets that is estimated based on the fundamentals of the economy.

Could use:

Extreme value theory
Dynamic programming
non-parametric regressions

→ All depends on what the measures of liquidity risk should capture…

4. (Style-related comments)

Chart 7: present in percent of total

Chart 4: This is not the cumulative market share

Chart 1 and 2: maybe better to present the numbers instead of the charts, complicated to understand)

Equation 2-15: give these ratios a name (e.g. iBRPS^(b,t)_i)

Appendix B: explain the HH index fully

Define r with bar above