Risk and challenges of complex financial products: an analysis of SSM banks

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Agenda

- Overview of L2/L3 instruments
- Discretion in the regulatory frameworks and incentives for intermediaries to exploit it
- Risk profile of L2 and L3 instruments
- Conclusions
Overview of L2/L3 instruments
Description of L2 and L3 instruments

- Accounting rules: L2 and L3 are those financial instruments whose fair value is **not** observed in active markets.

- Their valuation normally requires assumptions and sometimes models (esp. for L3).

- L2 and L3 can be contracts involving several different instruments.

- Due to these features, some L2 and most L3 instruments can be described as **complex, opaque**, subject to **high valuation uncertainty**, and hence **illiquid**.
Fact #1: SSM banks’ holdings of L2 and L3 are very sizeable (Dec ‘16)

<table>
<thead>
<tr>
<th></th>
<th>Total assets (€ bn)</th>
<th>FV (€ bn)</th>
<th>L2 (€ bn)</th>
<th>L3 (€ bn)</th>
<th>Total L2 + L3 (€ bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td>22,208</td>
<td>6,720</td>
<td>3,390</td>
<td>189</td>
<td>3,579</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td>22,208</td>
<td>3,645</td>
<td>3,121</td>
<td>141</td>
<td>3,262</td>
</tr>
</tbody>
</table>

6,841
Fact #2: Information on L2 and L3 is scarce

- No readily available data on risk drivers & returns
- No breakdown between complex L2 vs plain vanilla L2 (would help to reduce range of valuation uncertainty)
- No indicators of book turnover, frequency of re-pricing, relevance of stale inputs (would help to assess liquidity)
- No statistics on Day-1 Profits, valuation adjustments, ... at desk or portfolio level (would help to identify potential mispricing issues and unheeded basis risk)
- Relatively limited literature on the subject
Discretion in the regulatory frameworks and incentives for intermediaries to exploit it
Definition: under IFRS, FV is ‘the price that would be received to sell an asset - or paid to transfer a liability - in an orderly transaction between market participants at the measurement date’

IFRS 13 establishes a hierarchy based on inputs used in valuation:

- **Level 1** inputs: quoted prices in active markets
- **Level 2** inputs: valuation inputs are observable, either directly (e.g. quoted prices for similar instruments in active or non active markets) or indirectly (e.g. implied volatilities)
- **Level 3** inputs: unobservable inputs (e.g. long-term volatilities)

Whenever unobservable inputs play a significant role, the instrument should be assigned to the most conservative classification (i.e. L3)
Main areas of discretion & incentives

- **Orderly transaction**: since L3 and complex L2 instruments are frequently bilateral contracts with no secondary active markets, to estimate FV banks may need to ‘simulate’ a market which does not actually exist, assuming the expected behavior of virtual participants

  ➜ the valuation process is discretionional

  ➜ intermediaries have incentives to bias valuation to their advantage

- **Active market**: to be inferred via frequency and volume of transactions, but no thresholds are prescribed

  ➜ classification of an instrument as L1 or L2 is to some extent discretionary

  ➜ intermediaries may have incentives to stretch the definition of “active market”
Observable vs unobservable inputs: IFRS do not provide a definition for “observable inputs”

- banks have room to interpret the concept

- market participants and rating agencies are aware that L3 instruments are risky; high L3/Total Asset, or L3/CET1 can create stigma. Furthermore, the incidence of L3 instruments contributes to the assessment of the complexity of Global Systemically Important status.

- banks have incentives to classify an input as observable - and the instrument as L2 rather than L3 - when possible
Significance of unobservable inputs: IFRS do not specify how “significance” of an input should be assessed

- banks must use discretion to assess significance
- banks have incentive to assess an unobservable input as insignificant - and the instrument as L2 rather than L3 - when possible

Hanley et al. (2017) find that holders of the same security in the same year report different FVs, particularly at Level 3, and agree on the level only 40% of the time
Main areas of discretion & incentives

- **Similar instruments**: there are no univocal criteria to identify similar instruments to use as proxies to value L2 instruments
  - choice of proxies is discretionary
  - by choosing a low volatility proxy banks may directly influence the FV and indirectly the VaR and capital absorption

- **Day 1 profits mechanism**: a price P recorded on a transaction in an active market need not always be the best estimate of FV
  - If FV – P > 0 the buyer can book a Day 1 profit
  - If the instrument is classified as L3, Day 1 profits cannot be booked
  - banks have incentive to classify the instrument as L2 rather than L3 - when possible

Overall, the boundary between L2 and L3 instruments is blurred
Main areas of discretion & incentives

- **Netting practices**: by invoking the ‘portfolio exception’ banks can value portfolios of instruments on a net basis. **Basis risk** arises whenever the instruments in the portfolio are not perfectly hedged.

  ➔ the netting approach has a sound economic basis, but introduces discretion.

  ➔ by overlooking basis risk banks can make profits and save capital.

- **Classification of instruments**: classification in the Trading book vs Banking book may be justified by a subjective trading intent. Example: Instrument booked in the Trading book; trading intent realized via a “synthetic sale” (an illiquid hedge, e.g. an insurance contract), the instrument can be kept for an indefinite period of time.

  ➔ discretion is allowed

  ➔ capital absorption can be “optimized”
**Incentives: focus on Additional valuation adjustments (AVAs)**

AVAs for a selected sample of SSM banks with a high incidence of L2/L3

- AVAs represent a very small percentage of L2+L3 (on average about 30 bps) and RWA (about 20 bps)
Risk profile of L2 and L3 instruments
Stock return distributions (left tail) for “High NPL banks” and “High L2-L3 banks” are similar; both differ from “Control Group”
Conclusions
Conclusions

- SSM banks own €6.8trn of L2 and L3 complex financial instruments (summing assets and liabilities). There are reasons to focus on the gross amount, and to look into L2 instruments.

- The regulatory framework leaves banks discretion on various fronts (observability and materiality of pricing inputs, netting, ...)

- Banks have incentives to use this discretion to optimize capital absorption and P&L. This contributes to increase valuation uncertainty of L2 and L3.

- Tail risk of L2 and L3 is unknown but likely material.

- There is room for enhancing the supervisory information and for further action in this field.
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