

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

**Paolo Angelini and Francesco Potente
Banca d'Italia**

**Bruegel event on BANK ASSETS AND BUSINESS MODELS:
ADDRESSING COMPLEXITY
Brussels, 21 March 2018**

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)

	Total assets (€ bn)	FV (€ bn)	L2 (€ bn)	L3 (€ bn)	Total L2 + L3 (€ bn)
Assets	22,208	6,720	3,390	189	3,579
Liabilities	22,208	3,645	3,121	141	3,262
					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

Fair value (FV) definition & hierarchy

- 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)

- **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 discretionary
 - 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

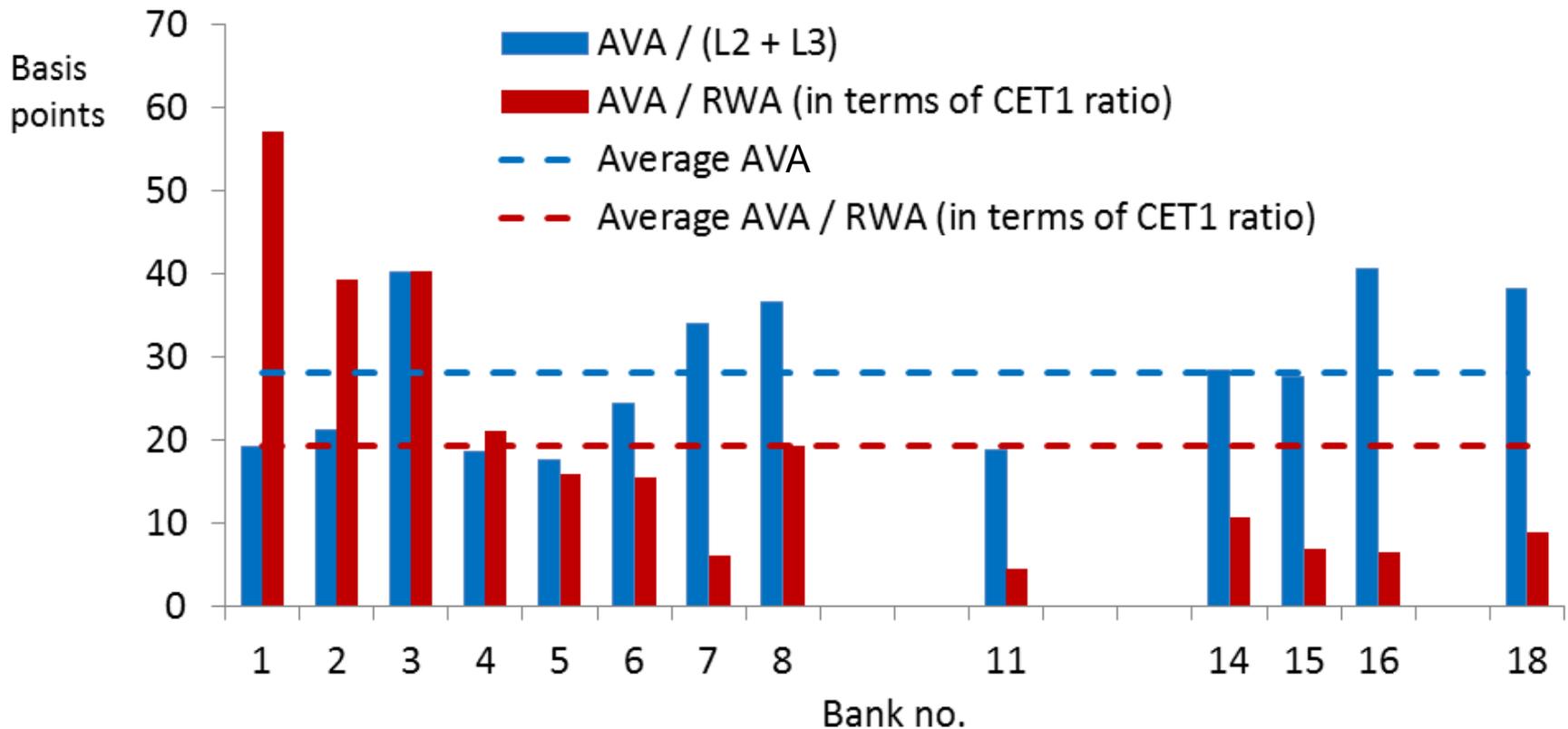
- **Similar instruments:** there are no univocal criteria to identify similar instruments to use as proxies to value L2 instruments
 - choice of proxies is discretionary
 - by choosing a low volatility proxy banks may directly influence the FV and indirectly the VaR and capital absorption
- **Day 1 profits 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

- **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

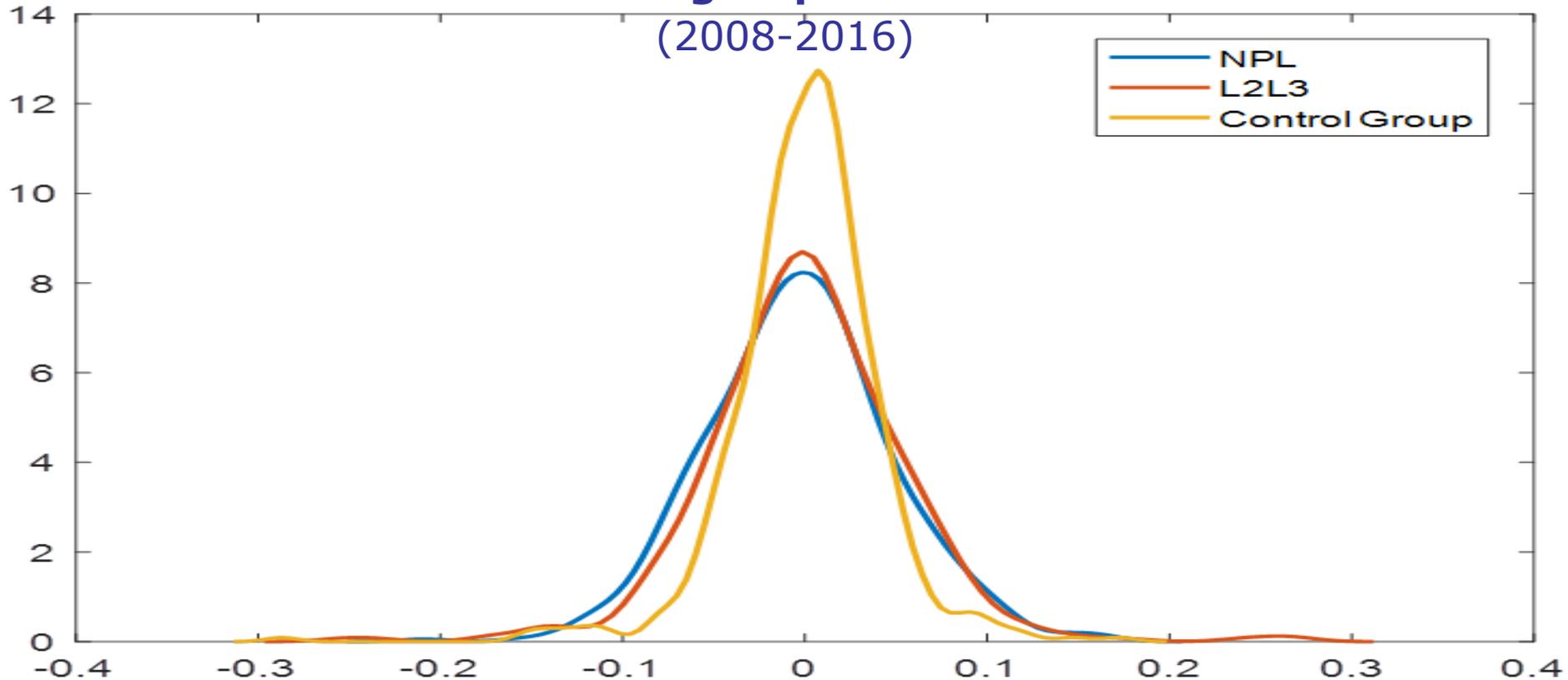


- AVAs represent a very small percentage of L2+L3 (on average about 30 bps) and RWA (about 20 bps)

Risk profile of L2 and L3 instruments

Comparison among risks: L2 – L3 vs NPLs

**Fig. 10 – Distribution of equity returns
for selected groups of SSM banks**



- 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

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

**Paolo Angelini and Francesco Potente
Banca d'Italia**

**Bruegel event on BANK ASSETS AND BUSINESS MODELS:
ADDRESSING COMPLEXITY
Brussels, 21 March 2018**