AIFIRM's Position Paper in response to the Basel Committee on Banking Supervision consultative document "Interest rate risk in the banking book", issued for comment on June 11, 2015

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Agenda

- Current vs proposed framework
- Pillar I vs Pillar II
- Interest rate shock scenario design
- Specification of minimum capital requirements
- Treatment of positions with behavioural options
- Disclosure

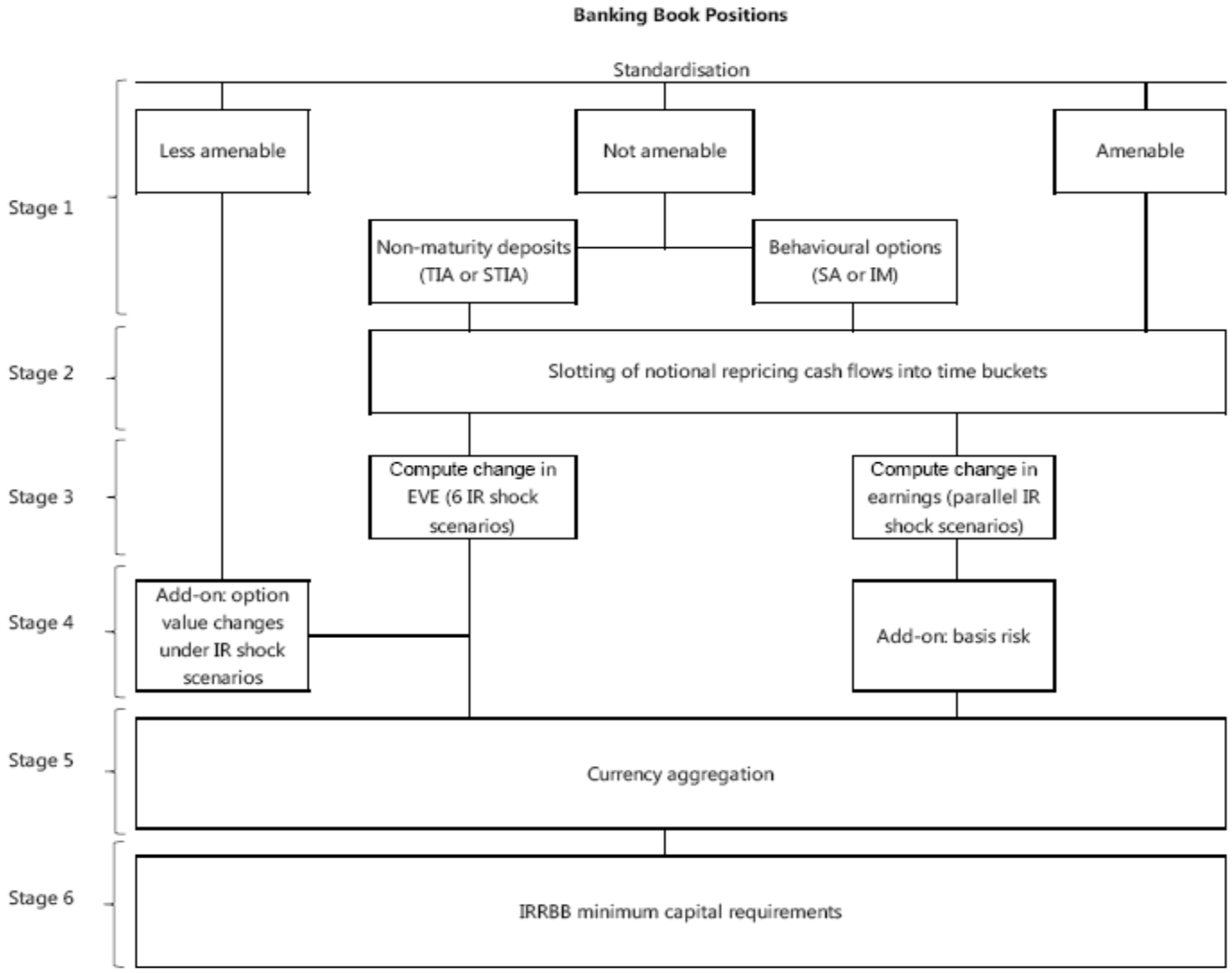
Current vs proposed framework (1)

Current regulatory framework: BCBS (2004) and Bank of Italy (2013)	Proposed framework: BCBS (2015)
• The treatment of IRRBB is included into the Pillar II of the Basel Accord and banks do not have to meet any capital requirement against this risk. However, banks use to set aside an amount of internal capital within ICAAP. • On and off balance sheet sensitive items are allotted into a maturity ladder of 14 time bands. • Specific treatment for the allotment of non-maturity deposits. • Floating rate mortgage loan with embedded caps and/or floors are allocated according to the criterion defined in Bank of Italy (2010) , Bollettino di Vigilanza n.6. • Class 1 and class 2 banks can develop internal models for measuring risk exposure.	• The consultative document presents two options for the regulatory treatment of IRRBB: a standardised Pillar 1 (minimum capital requirements) approach and an enhanced Pillar 2 approach (which also includes elements of Pillar 3 – Market discipline). • Maturity ladder with 19 time buckets classified in short, medium and long term. • Positions are allocated to one of three categories (amenable , less amenable and not amenable to standardisation). • For positions with embedded automatic options (less amenable to standardisation), the optionality should be ignored for the purpose of slotting notional repricing cash flows. • For positions that are not amenable to standardisation there is a separate treatment for a) non maturity deposits and b) behavioural options (term deposits, fixed rate loan commitments and prepayment).

Current vs proposed framework (2)

Current regulatory framework: BCBS (2004) and Bank of Italy (2013)	Proposed framework: BCBS (2015)
• Standardized shock given by a +/-200 basis point parallel shift and/or by the 1° and 99° percentile of observed changes in key-rates using one year holding period and a minimum five years of observation. • Non-negativity constraint. • Both the above methodologies measure interest rate risk exposure through a mathematical framework based on duration coefficients with a flat term structure of interest rates set equal to 5%. • The regulatory framework requires to calculate a risk indicator which is given by the ratio of the change in a bank's equity value to its supervisory capital, whose alert thresold is set equal to 20%. • Whithin the ICAAP banks set aside an amuount of internal capital corresponding to the change in their equity economic value (i.e., the numerator of the risk indicator).	• Six interest rate shock scenarios represented by i) parallel shock up; ii) parallel shock down; iii) steepener shock; iv) flattener shock; v) short rates shock up; and vi) short rates shock down. • Non-negativity constraint and other caps and floors to the changes in interest rates. • Interest rate risk exposure is calculated through a new mathematical framework based on continuous compounding. • Minimum capital requirement are measured based on the scenario that determines the largest decline in EVE and, where applicable, in NII. • In particular, the Committee has set four options to calculate minimum capital requirement: the first option takes into account only the EVE measure whereas the other three incorporate in various forms the earming overlay mechanism to better reflect short term risk.

IRRBB minimum capital requirements



The limit of the current regulatory framework (1)

Duration coefficients

- Both the +/- 200 basis point parallel shift and percentiles methods measure interest rate risk exposure via unrealistic duration coefficients, which are based on a flat term structure of interest rates set equal to 5%.
- The drawbacks associated with these durations coefficients have been investigated by Fiori and Iannotti (2007). The Authors develop a Value at Risk (VaR) methodology to modeling interest rate changes, which is able to account for both asymmetry and kurtosis of their distribution. Based on the evidence which concerned 18 major Italian banks under the parallel shifts method, the Authors found that, if the duration coefficients set by the Committee are calibrated through the market data observed on the evalutaion date, their results are consistent with the estimate of risk exposure.

Interest rate shock scenarios

- The parallel shift is set regardless of the changes in the key-rates actually observed, whereas the percentiles method is based on the distribution of actual changes of the key-rates term structure. Neverthless, since the changes might have occured on different days for the various nodes of the term structure, this method does not account for the actual correlations among the annual changes in key-rates.
- Under both the parallel shift and percentiles methods, the estimate of a bank's risk exposure is obtained by assuming that all the key-rates move togheter in the same direction. However, banks are exposed to a wide set of adverse scenarios that can be characterized by changes with different signs and magnitude across the 14 nodes of the key-rates term structure.

The limit of the current regulatory framework (2)

Risk-neutrality phenomenon

- Based on the evidence referred to a sample of 130 Italian banks over the period 2006-2013, Cocozza et al. (2015b) show that, when market rates are quite low, the regulatory methodologies might lead to an unrealistic conclusion about banks' risk exposure: some banks, which the Authors define as "risk-neutral" credit institutions, appear to experience a raise in their EVE, whether interest rates decrease or increase.

Risk-neutrality phenomenon under Parallel shifts method

- The non-negativity constraint is responsible for the risk-neutrality phenomenon. In detail, under the current regulatory framework, by applying a -200bp parallel shock not adjusted to account for the non-negativity constraint, a bank exposed to decreasing interest rates would experience a reduction in its EVE that would be equal, in absolute value, to the increase associated with a +200bp parallel shock.
- Actually, when the parallel scenario of -200bps is adopted, the non-negativity constraint can weaken the reduction associated with the negative net positions arising in the time bands ranging from 1 to 5 years, where, on average, rate-sensitive liabilities are greater than rate-sensitive assets, mainly because of the allotment of non-maturity deposits. This can make the bank risk-neutral.

Risk-neutrality phenomenon under Percentiles method

- The same logic can be easily extended to the percentiles method, though Cocozza et al. (2015b) show that, under this latter method, risk-neutrality can occur also in periods that are not characterized by low interest rates, even if with a lower frequency. When it does not depend on the non-negativity constraint, risk-neutrality is caused by the combined effect of the particular scenarios of changes in the key-rates and the specific structure, in terms of both sign and size, of some banks' net positions across the time bands of the regulatory maturity ladder.

AIFIRM's position

Current vs proposed framework

- AIFIRM welcomes the consideration of multiple scenarios. These scenarios are a step forward in the comprehension of risk determinants and could help to prevent the risk-neutrality phenomenon.
- The new mathematical framework allows to obtain a measure of risk exposure that is more consistent with the level of interest rates observed on the evaluation date and, therefore, represents an important improvement, if compared with the current one, which is based on unrealistic duration coefficients.
- The increase in the number of time bands improves the accuracy of the estimate and the classification of time bands in short, medium and long term is useful for risk mapping, given the relationship between this classification and interest rate shock scenarios.
- In addition to non-negativity constraint, it could be appropriate not to add any other restriction in order to afford the key-rates the freedom to change. Both historically and recent episodes have shown that the key-rates' term structure can assume characteristics and dynamics which, ex ante, would have been deemed unrealistic.

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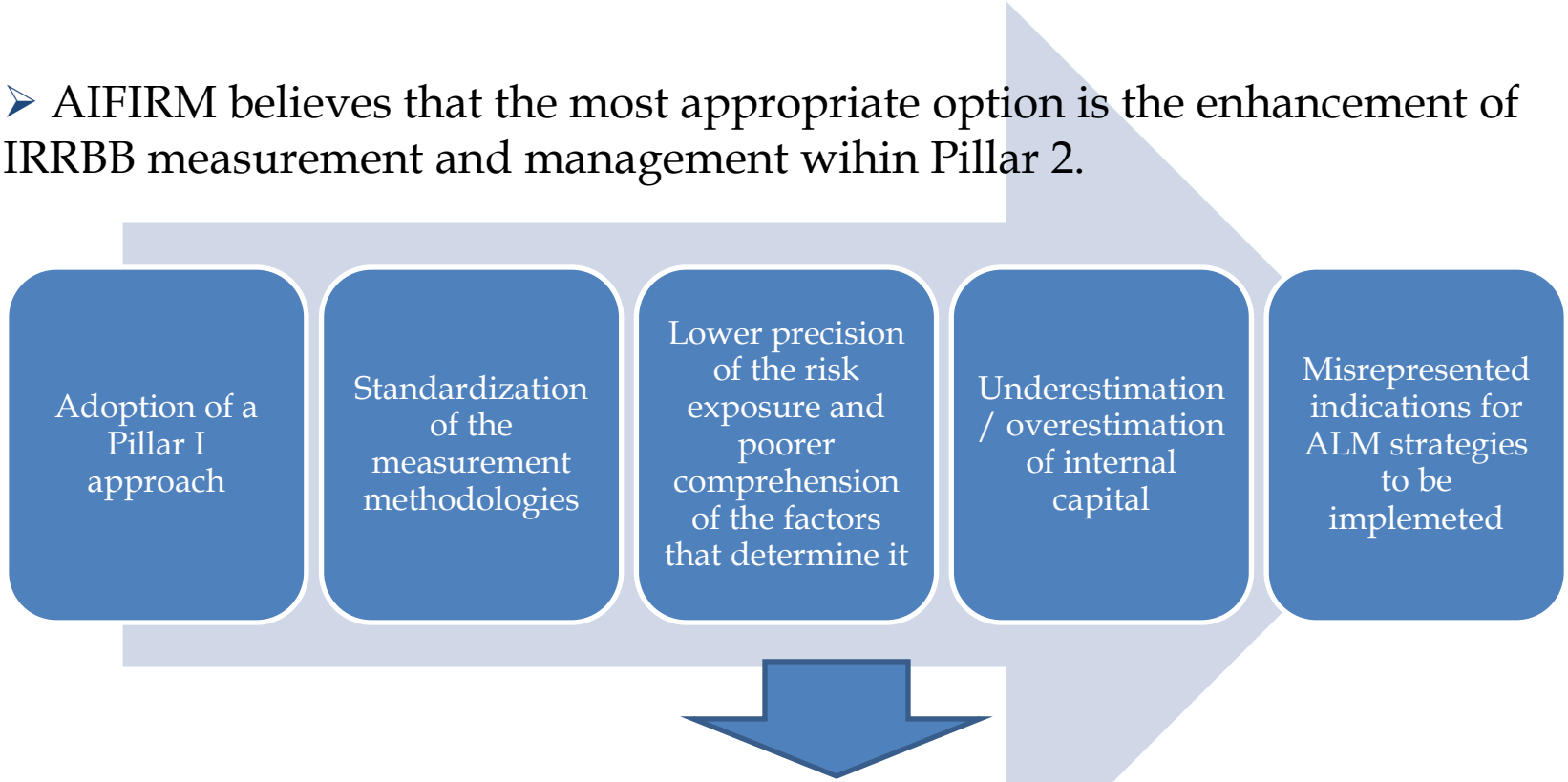
Pillar 1 vs Pillar 2

- AIFIRM believes that the most appropriate option is the enhancement of IRRBB measurement and management wihin Pillar 2.



- The methodological framework specified by the Committee within the Pillar 1 option contains some interesting elements that could be useful from a Pillar 2 perspective.

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Interest rate shock scenario design

- The six interest rate shock scenarios for the Pillar 1 capital framework for IRRBB are:
  1. Parallel shock up;
  2. Parallel shock down;
  3. Steepener shock (short rates down and long rates up);
  4. Flattener shock (short rates up and long rates down);
  5. Short rates shock up;
  6. Short rates shock down.

- Interest rate shock scenarios are broken into the product of three elements:
  i. a measure of current local risk-free rate $R_c(t_k)$ averaged in each time bucket k and where t_k is the tenor midpoint of bucket k expressed in years;
  ii. a global shock parameter a_j that reflects the average observed volatility across all currencies under interest rate shock scenario representation j, with j=(parallel, short and long);
  iii. a scalar $S_j(t_k)$ that reflects the characteristics of shock scenario representation at each time bucket midpoint t_k

$$\Delta R_{j,c}(t_k) = R_c(t_k) \cdot a_j \cdot s_j(t_k)$$

Shock scenario	Global shock parameter			Scalar
	Values		Time bucket used (tenor)	
Parallel	$a_{parallel}$	60%	3m, 6m, 1Y, 2Y, 5Y, 7Y, 10Y, 15Y, 20Y	$1-t_k/t_K$
Short rate	a_{short}	85%	3m, 6m, 1Y	1
Long rate	a_{long}	40%	10Y, 15Y, 20Y	t_k/t_K

Further technical issues

Percentiles method

- The global shock parameters are calculated through the percentiles method, which is applied to data referred to a time horizon ranging from January 2000 to April 2014.
- A long observation period is set by the Committee to warrant some stability in the international standard.
- For a single currency they are calculated as simple averages of the 99th and the absolute value of the 1st percentile for all tenors set by the Basel Committee, in the case of parallel shift and, separately, for the short and long-term tenors of the yield curve for the rest of the interest rate shock scenarios.

Holding period

- A six-month holding period is set for the interest rate calibration to be suitable for IRRBB capital purpose because most institutions appear to have the ability to adjust their asset/liability profile in a period much shorter that the one-year holding period currently in force.

Overlapping tecnique

- In order to calculate the distribution of the changes in the key-rates, the Committee confirms the use of the overlapping technique, according to which these changes are calculated by subtracting from the rates observed on a certain day of a given year the rates observed six months before.

AIFIRM 's position

Interest rate shock scenario design

- AIFIRM believes that the percentiles method cannot be the only methodology used to estimate interest rate risk exposure owing to its drawbacks. However, the Association recognizes that it could be used for calculating interest rates shock scenarios that should be compared with those obtained through advanced methodologies within banks' internal models.
- AIFIRM has doubts about the opportunity to use a 14-year time horizon to assess global shock parameters and supports further analysis aimed at investigating the criteria to identify the length of the time horizon that ensures the best solution to the trade-off between stability and responsiveness to current market conditions.
- AIFIRM questions whether or not it is more appropriate to estimate the global shock parameters by alternatively considering the 99th and the 1st percentile, depending on whether or not the interest rate shock scenario taken into account is, respectively, characterized by an increase or a decrease in interest rates.
- Given the advantages and disadvantages associated with the different methodologies used to calculate the distribution of the changes in key-rates (overlapping technique vs. square root rule), it is AIFIRM's opinion that the overlapping technique is the most appropriate solution for the definition of the regulatory interest rate shock scenarios and can also be easily used by banks in advanced methodologies within internally modeled approaches.

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Specification of minimum capital requirements (1)

Option 1

- The first option is based on the pure EVE-based measure under the prescribed six interest rate shock scenarios.
- EVE results across curriencies are aggregated under a given interest rate shock scenario to recognise prudent partial offsetting between net EVE reductions and increases.

$$MRC1 = \max_{i \in \{1,2,...6\}} \left\{ \max\left(0; \sum_{c \Delta EVE_{i,c} > 0} \Delta EVE_{i,c}^{\text{loss in currency } c} + w \cdot \sum_{c \Delta EVE_{i,c} < 0} \Delta EVE_{i,c}^{\text{gain in currency } c} \right) \right\}$$

- Where c is the number of currencies, w is the parameter for recognizing a partial off-setting, that ranges from 0 to 1. The view of the Committee is that w should not take values higher than 0.5 and has decided that the preliminary value of w is 0.25.
- The main benefit of this approach is its simplicity. However, such an approach does not consider potential short-term gains or losses in earnings across scenarios, which could offset or exceed the EVE loss.
- Consequently, such an approach might generate adverse incentives for banks to change the repricing profile of their banking book in order to drive the duration of assets towards zero (and hence minimum capital requirements) at the expense of greater earnings volatility.

Specification of minimum capital requirements (2)

Option 2

- Under the second option, the Pillar I capital requirements would be the maximum between the capital associated with the change in the EVE and earnings measure, allowing for partial offsetting across currencies within each measure.

$$MRC_2 = \max\left[MRC_1; MRC_{NII}\right]$$

$$MRC2 = \max_{i\in\{1,2\}}\left\{\max\left(0; \sum_{c\Delta EVE_{i,c}>0} \Delta NII_{i,c} + w\cdot \sum_{c\Delta EVE_{i,c}<0} \Delta NII_{i,c}\right)\right\}$$

$$\text{loss in currency } c \qquad \text{gain in currency } c$$

- This option addresses the concerns about incentives to capture short-term risk to earnings. The NII measure is fairly simplistic in that it derives many of its inputs from the EVE framework and only considers up and down parallel shocks.
- Distortions from the EVE framework are lessened but are still likely to be dependent on open calibration issues as the appropriate time horizon T for determining the general NII measure has not yet been set. There are trade-offs between a shorter horizon of one year versus a longer horizon of up to five years.

Specification of minimum capital requirements (3)

Option 3

- Under the third option, short-term gains may offset losses associated with the change from EVE, conditional scenario consistency.

$$MRC3 = \max\left[\max_{i\in\{1,2,..6\}}\left[0; \sum\nolimits_{c\,\Delta<EVE_{i,c}^{benefit}>0} \underbrace{\Delta EVE_{i,c}}_{loss\,in\,currency\,c} + w\cdot \sum\nolimits_{c\,\Delta<EVE_{i,c}^{benefit}>0} \underbrace{\Delta EVE_{i,c}}_{loss\,in\,currency\,c}\right]; MRC_{NII}\right]$$

$$\Delta EVE_{i,c}^{\ benefit} = \Delta EVE_{i,c} + \min\left[\Delta NII_{i,c}^{\ benefit}; 0\right]$$

- The benefit is represented by the EVE measure augmented to allow for offsets for short-term gains.
- NII is measured under the shock scenario that is most consistent (parallel up or down) with the EVE loss-based measure. If the measure is positive, i.e., it generates a loss, it will not be considered.
- This option improves upon the recognitions of short-term gains but this comes with and increased complexity and additional distortions.
- There are possibilities to reduce these distortions from the NII measure such that non parallel interest rate shocks could be applied as well.

Specification of minimum capital requirements (4)

Option 4

- In the fourth option a risk-based threshold is introduced. Below this threshold there will be no capital requirements. This approach recognizes greater potential earnings, measured by net interest profit (NIP).

$$MRC4 = \max\begin{bmatrix} 0; \\ MRC_1 - \max[NIP;0]; \\ MRC_{NII} - \max[NIP;0] \end{bmatrix}$$

- NIP is a proxy for banking book earnings that are expected based on locked-in margins in the near future after adjusting for expenses and costs associated with banking book activities. Since the NIP is subtracted from the minimum capital requirements associated with the change in EVE and earnings, it functions as a risk-sensitive threshold.
- The main benefit with this approach is that it does not capitalize a portion of the highest minimum capital requirements based on EVE losses or NII measures.
- The main drawback is whether the determination of NIP raises complexity or is too reliant on accounting information.
- Currently, the Committee believes that NIP should be some fraction of a bank's recent net interest income in the banking book to be tested further.

AIFIRM 's position

Specification of minimum capital requirements

- AIFIRM recognizes the need for a criterion to determine minimum capital requirements that takes both EVE and NII approaches into account, based on their respective peculiarities.
- AIFIRM wonders whether or not the use of the scenario associated with the largest decline in EVE and, where applicable, NII, is the most appropriate one. This choice is certainly functional to ensure, from a micro perspective, a bank's soundness and, from a macro perspective, the global financial stability. However, at the same time, such a choice might have negative implications on banks' credit supply.
- Given this background, the Association believes that option 4 is the best-suited among those proposed by the Committee because it allows for the inclusion of future margin levels (NIP) in the minimum capital requirements calculation associated with the change to EVE and earnings.
- Following this method, minimum capital requirements are more consistent with banks' actual riskiness and banks' credit supply is calibrated in a more appropriate way. However, AIFIRM believes that further discussions and analyses on the NIP calculation are necessary.

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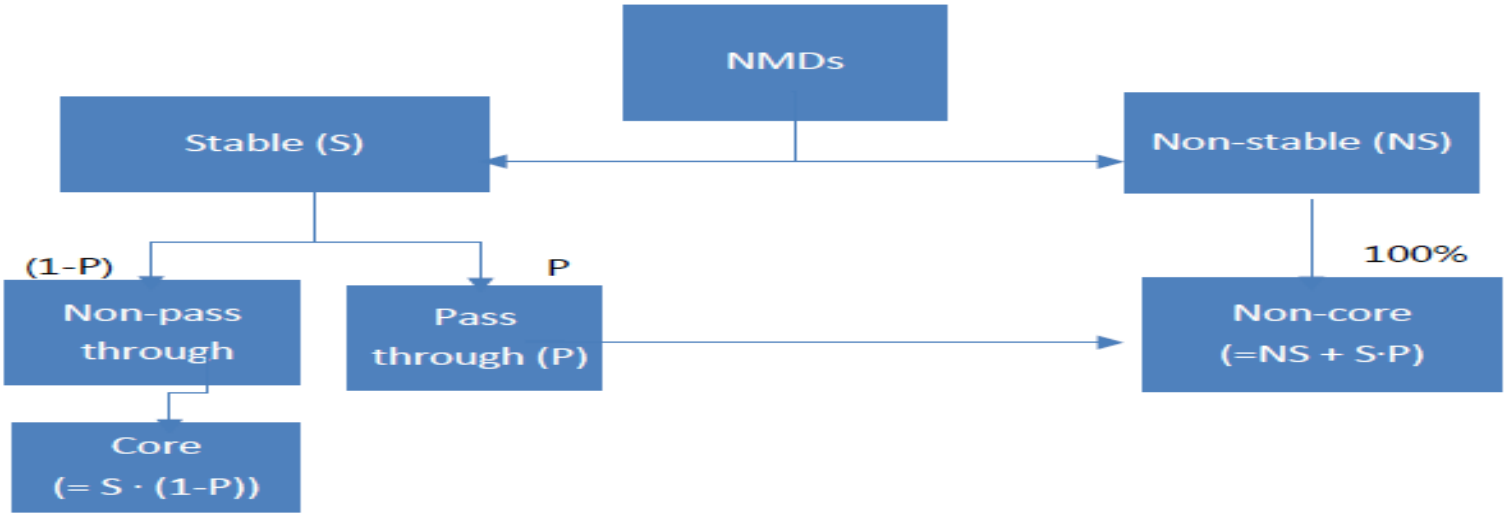
Time Series Approach (TIA) (1)

- The first step is to distinguish between the stable and non-stable parts of NMDs using observed volume change over the past 10 years. The stable NMD portion is the portion that is found to remain undrawn with a high degree of likelihood.

- In the second step, the stable subset of NMDs is further broken down into a core componenent and non-core component. To achieve this, a pass-through rate concept is applied to determine the rate-sensitive part of the stable subset. Core deposit are the proportion of stabel NMDs that do not reprice.



Time Series Approach (TIA) (2)

- Banks are required to estimate their level of core deposits using a two-step procedure for each deposit category, and then to aggregate the results to determine the overall volume of core deposits subject to imposed category-dependent stability caps and pass-through floors as shown in the following table.

Stability caps and pass-through floors for NMDs by category

	Stability cap	Pass-through floor	Implied cap
Retail / transactional	80	25	60
Retail/ non transactional	70	30	49
Wholesale	65	50	33

- **Non core NMDs:** reprice immediately and accordingly must be placed into the overnight time bucket

- **Core NMDs:** must be slotted into time buckets of no longer than six years using two alternative approaches:
  - uniform approach: deposits balances are allocated uniformly to each bucket up to six years;
  - discretionary approach: core deposits must be slotted across time buckets up to six years at the bank's discretion provided that the average maturity weighted by notional repricing cash flows of core deposits does not exceed three years.

Simplified TIA (STIA)

i. Banks must estimate core NMDs as a proportion of total NMDs based on one year of internal data on NMD subject to the caps set in the following table. Finally, banks must use the uniform slotting approach defined for the TIA to slot notional repricing cash flows of the resulting core deposits. Non-core deposits must be slotted into the overnight time bucket.

Proportion of NMD amounts elegible to core NMDs in the STIA (alternative 1)

	Retail	Wholesale
Eligible core NMDs	40%	20%

ii. NMDs are segmented according to the deposit volume per depositor. Deposit amounts are based on the banks' last reporting date and need to be provided for all six segments, as defined in the following Table. Notional repricing cash flows of core NMDs must be slotted according to the uniform slotting approach.

Proportion of NMD currency equivalent amounts eligible to core NMDs in the STIA (alternative 2)

	Retail				Wholesale	
	<= €20.000	>20.000 to <=€100.000	>100.000 to <=€500.000	>€500.000	<=€500.000	>€500.000
Eligible core NMDs	65%	45%	30%	20%	30%	15%

AIFIRM's position (1)

The treatment of non-maturity deposits

- AIFIRM believes that the proposed standardized treatment of NMDs, which is constrained by both pass-through floors and stability parameters and maximum maturities of core NMDs, is far too restrictive and does not enable to a realistic representation of the interest rate sensitivity of deposits.
- AIFIRM recognizes the utility of introducing some constraints in modeling NMDs, even in case of banks' own internal representations, since they could contribute to reduce the model risk. However, they seem to be too conservative giving rise, even in the discretionary approach, to a unique representation of NMDs.
- According to AIFIRM: i) the allocation of the repricing component of NMDs might be led by interest rate pass-through that follows a change in the reference market rate and ii) the core component of NMDs should include not only the fraction of non-maturity deposits that are stable, but also the portion that reprice, with a certain sluggishness, when the reference market rate changes.

AIFIRM's position (2)

The treatment of non-maturity deposits

- It is AIFIRM's opinion that behavioral model could provide crucial indications for the treatment of NMDs. In particular, supervisory authorities may make their own estimates based on available system-wide data. This would allow for the replacement of methods deemed «too simplistic» to allot core NMDs, such as the uniform approach that fails to adequately consider these deposits' actual behaviour.

- In recognizing the importance of a sufficiently long time series of data to provide adequate estimates of the stable/core portion of NMDs. AIFIRM has questions regarding possible drawbacks stemming from the difference in the length of the two time periods 10 years and 1 year under, respectively, TIA and STIA. According to AIFIRM this may be an undesired result of the proposed regulatory discipline that: i) constitutes a significant bias in the regulation, entailing a disparity of treatment between large banks and small and medium sized credit institutions and ii) neglects the greater stability of the deposits characterizing the latter group of banks, which is due to their stronger relationship with local customers.

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Qualitative and quantitative disclosure

Qualitative disclosure

- IRRBB risk profile.
- Periodicity of IRRBB measurement.
- Governance and risk management framework (policies and procedures) for IRRBB.
- Behavioural assumptions and hedging strategies.
- Scenario used for IRRBB measurement.
- IRRBB measurement assumptions for both economic value and earnings.
- Other key qualitative assumptions.

Quantitative disclosure

- The increase/decline in economic value (earnings) according to the bank's internally selected interest rate shock scenarios measuring IRRBB, broken down by significant currencies.
- Banks should complement the qualitative disclosure on model assumptions above with quantitative disclosure over key model parameters (i.e., average prepayment rates, average redemption rations, average pull-through ratios).

Quantitative information

- For each of the supervisory interest rate shock scenarios, banks must report:
  i. the percentage change in the ratio of the change in the economic value of equity to Common Equity Tier 1;
  ii. the percentage change in projected net interest income measure;
  iii. the result of the fallback standardized framework.

	ΔEVE/CET1(%)		ΔNII/NII(%)		Standardised framework	
	T	T-1	T	T-1	T	T-1
Scenario 1						
Scenario 2						
Scenario 3						
Scenario 4						
Scenario 5						
Scenario 6						
Maximum						

AIFIRM's position

Disclosure

- It's AIFIRM's conviction that an appropriate level of timely disclosure will provide benefits for well-run banks, investors and depositors, and will contribute to ensure general financial stability and to support the effective and efficient operations of the capital markets from a broader perspective.
- As for the quantitative information, if appropriate public disclosure is important, disclosure of standardized calculation might be misleading. By using the standardized calculation the proposed Pillar 2 approach is not different from that of Pillar 1. In supporting a "true" Pillar 2 approach, AIFIRM believes that banks' internal measurement and management of IRRBB should be the ones to be disclosed.
- Furthermore, AIFIRM suggests to report not only the increase/decline in economic value and earnings, corresponding to each interest rate shock scenario and based on the bank's internal measurement systems, but also the term structure of bank's net positions. Given the interest rate shock scenario, it can provide an immediate view of possible imbalances affecting the term structure of the bank's balance sheet.