MONTE DEI PASCHI DI SIENA
BANCA DAL 1472

Update AIRB models

Direzione CRO

Area Lending Risk Officer

April 2019

Summary

During 4Q2018 and 1Q2019, the Bank updated and reviewed internal rating system through recalibration of PD models and full re-estimation of LGD models.
The interventions carried out were aimed at:

1. update of the time series selection or PD e Danger Rate model in order to guarantee the' likely range of variability' and 'Through the cycle' estimates ensuring the compliance with the regulatory legislation;
2. a new methodology is proposed for the estimation of ELBE and the LGD Defaulted Asset in order to request the authorization to remove the IMI40 limitation on these issues;
3. new approach for Incomplete Work-Out for LGDS model;
4. exclusion of data generated by the disposals of NPE loans from RDS LGD as authorized by BCE;
5. resolve part of the findings detected during the inspection IMI40 2015 and TRIM IMI 2017;
6. introduce specific Margin of Conservatism in order to cover part of the uncertainty of estimation of risk parameters.

The first 3 changes are configured as an overall «material model change» and a first communication was sent to the Supervisory Authority on 28 February 2019; therefore, after the internal authorization by the CGR, pre-application package will be sent to ECB by the end of April 2019 and the formal request for «material model change» by the end of June 2019.
The model changes will be communicated to the first Board of May.
In order to verify the interventions made, the Supervisory Authority has already communicated that an on-site IMI will be carried out in the - 3Q2019.

Interventions on PD models

PD	PD1) Review of the data time series length, according with internal policy for definition of "Likely range of variability of default rates" **TRIM2017 Finding 9**
	PD2) Removal of two pools of PD11 (POOL RETAIL - with overdraft evidence)
	PD3) Removal of internal definition of technical past due
	PD4) Introduction treatment of multiple *default* -**TRIM2017 Finding 15**
	PD5) Introduction of specific treatment for forborne exposures - **IMI40 Finding 8**
	PD6) Introduction of MOC C
	PD7) Calibration of application retail model with 90 days past due definitiondefault -**TRIM2017 Finding 7**

Following the interventions introduced, PD changes from 1.92% to 2.62% (+36%) with an impact of+ 3.544 €/mln on RWA. The greatest impact is related to the removal of internal past due definition, only marginally mitigated by the introduction of treatment of multiple defaults.

The intervention on forborne exposure produces an increase of 22 bps on average PD and + 420 €/mln on RWA. Finally MOC C produces an increase of 4 bps on average PD (+1.38%) and of 191 €/mln on RWA (+12%).

					Delta vs as is	
Sim	**Intervention on PD calibration**	**PD**	**RWA PE**	**Shortfall PE**	**RWA**	**Shortfall**
	AS IS	1,92%	23.429	-225		
a	Shift time series	1,87%	23.465	-225	36	0
b	1) review of the data time series length 2) removal of two pools of PD11 (POOL RETAIL - with overdraft evidence)	1,58%	22.169	-280	-1.260	-55
c	3) removal of internal definition of technical past due	2,45%	26.470	-136	3.041	89
d	4) treatment of multiple default	2,36%	26.361	-152	2.932	73
e	5) Introduction of specific treatment for forborne exposures	2,58%	26.781	-117	3.352	108
f	6) Introduction of MOC C	2,62%	26.972	-110	3.544	115

Interventions on LGD models

LGDDR (Danger Rates)	LGDDR1) Review of the data time series length in accordance with PD calibration database
	LGDDR2) Improvement of Danger Rate model Resolution weaknesses of the Cure Rate model (**TRIM2017 Finding 1**) and general review of the calculation of the LGD for the not Sofferenza status Consistency between danger rate used for performing model and probability of first entrance in the default status Review of exposure driver of the cure rates models
	LGDDR3) Removal of internal definition of technical past due
	LGDDR4) Introduction of treatment of multiple default in accordance with PD calibration database (**TRIM2017 Finding 15**)
	LGDDR5) Introduction of downturn
	LGDDR6) Introduction of vintage driver for LGD defaulted asset
	LGDDR7) Introduction of MOC C
LGDS	LGDS1) Review of the data time series length
	LGDS2) Exclusion of data generated by the 'one-off' disposal of NPE loans from RDS LGD as authorized by BCE
	LGDS3) Allocation of indirect cost not null to all the records (**IMI40 Finding 12**), removal of two filters: EADS>30 and product different from "NON CLASSIFICATO" (**TRIM2017 Finding 17**) and review of LGDS drivers,
	LGDS4) Review of methodology for the quantification of the time to work out
	LGDS5) Adoption of a revised methodology for the quantification of the impact of an economic downturn on LGD estimates (**IMI40 Finding 13)**
	LGDS6) Inclusion of all the incomplete workout in the calibration with future recoveries (**IMI40 Finding 14 and TRIM2017 Finding 18)**
	LGDS7) Introduction of vintage driver for LGD defaulted asset
	LGDS8) Introduction of MOC C
ELBE	Review of the methodology for the quantification of ELBE following ECB requests (**IMI40 Finding 21 and TRIM2017 Finding 19)**

Impact of LGD models

All then changes introduced implies the following numbers: LGD PE from 25,51% a 26,32%; LGD NPE from 47,24% a 53,83%; RWA PE increasing of 793 €/mln while RWA NPE decreasing of 205 €/mln; shortfall/excess NPE is negative for -220 €/mln.

									Delta vs AS IS			
Sim	LGD Danger rate	LGD Bad Loans	LGD PE	LGD NPE	RWA PE	RWA NPE	Shortfall PE	Shortfall NPE	RWA PE	RWA NPE	Shortfall PE	Shortfall NPE
	AS IS	AS IS	25,51%	47,25%	23.429	3.561	- 225	- 725				
a	1) Review of the data time series length 2) Resolution weaknesses and general review Consistency between DR used for PE Model model and probability of first entrance in NPE Review of exposure driver	1) Review of the data time series length 2) Waiver of 2018 disposal as authorized by BCE 3) Allocation of indirect cost not null to all the records Removal filters and review od drivers 4) New methodology for time to work out definition	32,34%	53,48%	29.223	3.561	- 137	393	5.795	-	88	1.118
b	3) Removal internal definition of techical past due		23,33%	53,44%	21.232	3.561	- 253	387	- 2.197	-	- 28	1.112
c	4) Treatment of multiple default		26,20%	53,46%	23.987	3.561	- 211	388	558	-	13	1.113
d	5) Introduction of downturn	5) New methodology for downturn on LGDS estimates	25,04%	51,55%	22.879	3.561	- 229	233	- 550	-	- 4	958
e		6) Inclusion of all the IWO with estimation of future rec	26,26%	54,26%	24.154	3.561	- 209	523	725	-	16	1.247
f	Review of the methodology for ELBE	Review of the methodology for ELBE	26,26%	54,26%	24.154	4.249	- 209	- 19	725	687	16	706
g	5) Introduction of vintage driver for LGD DA	7) Introduction of vintage driver for LGD DA	26,26%	53,73%	24.154	3.177	- 209	- 12	725	- 384	16	713
h	6) Introduction of MOC C	8) Introduction of MOC C	26,32%	53,83%	24.222	3.356	- 208	- 12	793	- 205	17	713

Impacts are estimated on december 2018 portfolio, pro-forma excluding Morgana disposal.

Simulation ‘a’ includes interventions on model review that make LGD both PE and NPE increase significantly implying an impact of +5795 €/mln of RWA; this impact is mainly due to the update of the time series with worst cure and recovery rates observed in the early years, and also to the review of Danger Rate drivers. The removal of internal past due definition, also with the introduction of multiple default treatment (simulation ‘c’), brings back LGD PE and RWA PE to the as is levels (the increase of past due absorbe the increase of LGD NP on RWA PE).
New downturn methodology implies a decrease compared to the current approach and so LGD value decreases (simulation ‘d’).
With the inclusion of all the IWO with estimation of future recoveries (simulation ‘e’), LGD NPE increases of -2,7% with consequent increase of LGD PE determining a NPE shortfall level of +523 €/mln.

New ELBE/DA approach identifies ELBE with the Long Run Average (‘f’) and brings back NPE shortfall to a negative value (-19 €/mln) and a RWA NPE value similar to as is. With the introduction of a vintage driver for ELBE/DA (simulation ‘g’) the impact is +341 €/mln on RWA and with the introduction of the MOC C the final impact is +588 €/mln (+2% c.a) on RWA.

Model change overall impact

The overall impact vs pro-forma December 2018 (excluding Morgana disposal) taking into account all interventions on PD and LGD models amount to + 4.408 €/mln for RWA PE and -205 €/mln for RWA NPE, NPE shortfall increases from -950 €/mln to -100 €/mln. The estimated CET1% decreases from 13.77% to 12.84% (-93 bps). The MOC C on PD and LGD models leads to an impact of +1,5% in terms of RWA and to a decrease of 9 bps of CET1%.

												Delta vs pro forma			
PD	LGD	PD	LGD PE	LGD NPE	RWA PE	RWA NPE	Shortfall PE	Shortfall NPE	Shortfall total	CET1%	TCR%	RWA PE	RWA NPE	CET1%	TCR%
pro-forma	pro-forma	1,92%	25,51%	47,25%	23.429	3.561	- 225	- 725	- 950	13,77%	15,24%				
Pre MOC C	Pre MOC C	2,58%	26,26%	53,73%	27.563	3.177	- 97	- 12	- 109	12,93%	14,20%	4.134	- 384	-0,84%	-1,04%
Finale	Finale	2,62%	26,32%	53,83%	27.837	3.356	- 88	- 12	- 100	12,84%	14,10%	4.408	- 205	-0,93%	-1,14%

Impacts are estimated on december 2018 portfolio, pro-forma excluding Morgana disposal. Shortfall included also Specialised Lending portfolio.

The overall impact vs as is of December 2018 is -102 bps on CET1% and -109 bps on TCR%.

												Delta vs AS IS			
PD	LGD	PD	LGD PE	LGD NPE	RWA PE	RWA NPE	Shortfall PE	Shortfall NPE	Shortfall total	CET1%	TCR%	RWA PE	RWA NPE	CET1%	TCR%
as is	as is	1,92%	25,51%	47,25%	23.429	3.674	- 225	- 898	- 1.123	13,74%	15,21%				
Finale	Finale	2,62%	26,32%	53,83%	27.837	3.975	- 88	- 118	- 206	12,72%	14,12%	4.408	301	-1,02%	-1,09%

Shortfall included also Specialised Lending portfolio.

RWA Italian Benchmarking with RWA density

	MPS						UCI				ISP				B BPM				UBI			BPER		
	% EAD	RW %	RW MC %	PA%	PA MC%	LGD	% EAD	RW %	PA%	LGD	% EAD	RW %	PA%	LGD	% EAD	RW %	PA%	LGD	% EAD	RW %	LGD	% EAD	RW %	LGD
Corporate	**41,2%**	**60,4%**	**66,0%**	**60,3%**	**14,4%**		**64,9%**	**41,7%**	**2,3%**		**56,6%**	**52,3%**	**4,6%**		**52,9%**	**39,4%**	**9,0%**		**53,3%**	**55,6%**		**49,2%**	**43,0%**	
SME	**60,0%**	**54,0%**	**57,5%**	**74,6%**	**19,8%**	**34,1%**	**24,2%**	**39,4%**	**8,9%**	**30,3%**	**33,2%**	**55,5%**	**13,4%**	**40,7%**	**53,0%**	**37,9%**	**15,9%**	**31,5%**	**33,4%**	**46,3%**	**n.d.**	**52,5%**	**30,6%**	**n.d**
PE	63,2%	66,0%	76,1%	3,3%	1,4%		84,3%	42,5%	0,5%		84,6%	59,5%	1,0%		67,9%	44,1%	0,9%		84,8%	50,4%		73,1%	38,3%	
NPE	36,8%	33,4%	25,5%	96,7%	51,5%	49,2%	15,7%	22,8%	54,1%	55,6%	15,4%	50,7%	81,7%	52,9%	32,1%	24,8%	47,6%	49,6%	15,2%	23,3%	36,8%	26,9%	9,5%	53,8%
Other corporate	**40,0%**	**70,0%**	**78,9%**	**25,4%**	**11,2%**	**41,0%**	**75,8%**	**42,4%**	**2,7%**	**36,4%**	**66,8%**	**22,0%**	**3,1%**	**33.3%**	**47,0%**	**41,0%**	**3,3%**	**25,1%**	**66,6%**	**60,3%**	**n.d.**	**47,5%**	**56,7%**	**n.d.**
PE	81,8%	80,4%	92,7%	5,3%	0,9%		95,4%	43,4%	0,3%		93,0%	52,9%	0,4%		91,9%	42,5%	0,5%		90,7%	64,4%		89,7%	62,4%	
NPE	18,2%	23,0%	16,7%	94,7%	57,6%	50,6%	4,6%	21,7%	52,5%	53,7%	7,0%	22,0%	39,2%	40,3%	8,1%	24,0%	34,7%	36,6%	9,3%	19,9%	44,3%	10,3%	7,1%	51,9%
Retail	**58,8%**	**17,9%**	**24,5%**	**39,8%**	**8,3%**		**35,1%**	**27,2%**	**4,6%**		**43,4%**	**19,9%**	**4,0%**		**47,1%**	**16,6%**	**3,8%**		**46,7%**	**18,9%**		**50,8%**	**14,8%**	
SME Secured	**12,2%**	**34,0%**	**39,7%**	**10,8%**	**6,7%**	**20,0%**	**4,7%**	**20,6%**	**5,1%**	**18,0%**	**4,3%**	**25,2%**	**5,5%**	**24,0%**	**11,3%**	**25,9%**	**5,0%**	**17,2%**	**11,4%**	**28,1%**	**n.d.**	**13,4%**	**17,6%**	**n.d.**
PE	83,4%	34,9%	42,1%	9,0%	0,9%		86,9%	21,2%	0,5%		84,7%	27,2%	0,6%		85,4%	27,9%	0,9%		77,0%	23,7%		80,5%	19,6%	
NPE	16,6%	29,6%	28,0%	91,0%	35,8%	33,5%	13,1%	16,6%	35,6%	36,7%	15,3%	14,2%	32,3%	33,4%	14,60%	14,29%	28,6%	29,7%	23,0%	42,8%	45,6%	19,5%	9,4%	40,7%
No SME Secured	**57,7%**	**9,9%**	**15,0%**	**4,2%**	**0,8%**	**11,6%**	**69,0%**	**25,1%**	**3,4%**	**22,1%**	**69,5%**	**17,0%**	**0,9%**	**16,2%**	**54,6%**	**9,4%**	**2,1%**	**11,9%**	**75,0%**	**15,7%**	**n.d.**	**51,0%**	**13,1%**	**n.d.**
PE	97,3%	10,2%	14,4%	19,8%	0,2%		93,3%	23,8%	0,5%		97,8%	16,4%	0,2%		94,5%	8,9%	0,2%		93,1%	13,8%		97,3%	12,2%	
NPE	2,7%	-	38,3%	80,2%	25,1%	14,6%	6,7%	43,8%	43,8%	47,2%	2,2%	41,3%	31,3%	41,3%	5,5%	18,6%	36,5%	38,0%	6,9%	41,5%	39,9%	2,7%	45,0%	40,1%
QR	**0,2%**	**8,9%**	**18,3%**	**0,0%**	**1,1%**	**22,8%**	**1,9%**	**10,1%**	**1,5%**	**44,3%**					**2,1%**	**16,3%**	**1,0%**	**29,7%**						
PE	99,4%	8,9%	17,8%	67,2%	0,8%		98,3%	10,1%	0,3%						99,4%	16,3%	0,7%							
NPE	0,6%	-	104,8%	32,8%	48,2%	23,6%	1,7%	9,6%	65,3%	61,9%					0,6%	16,1%	44,1%	45,4%						
Other SME	**23,1%**	**31,7%**	**38,4%**	**62,5%**	**22,6%**	**42,1%**	**13,1%**	**31,1%**	**12,4%**	**43,5%**	**10,6%**	**22,4%**	**17,4%**	**43,0%**	**28,4%**	**26,3%**	**5,7%**	**33,6%**	**13,6%**	**28,7%**	**n.d.**	**15,1%**	**19,9%**	**n.d.**
PE	68,0%	38,8%	45,1%	4,6%	1,8%		82,7%	31,7%	1,1%		73,9%	25,3%	0,9%		92,8%	25,9%	1,1%		87,3%	31,1%		76,5%	23,1%	
NPE	32,0%	16,6%	24,3%	95,4%	66,8%	57,7%	17,3%	28,4%	66,5%	68,6%	26,1%	14,4%	64,3%	65,5%	7,2%	32,5%	65,0%	67,6%	12,7%	12,5%	71,3%	23,5%	9,6%	71,5%
Other No SME	**6,9%**	**11,0%**	**30,0%**	**20,9%**	**26,4%**	**22,9%**	**11,3%**	**41,2%**	**3,7%**	**60,2%**	**15,6%**	**29,9%**	**8,3%**	**37,1%**	**3,5%**	**19,1%**	**11,2%**	**24,4%**				**20,5%**	**13,7%**	**n.d.**
PE	46,6%	23,7%	31,0%	1,0%	0,9%		96,6%	41,6%	0,7%		89,6%	31,9%	0,8%		84,4%	16,9%	1,5%					96,4%	13,5%	
NPE	53,4%	-	29,1%	99,0%	48,6%	36,4%	3,4%	29,8%	88,4%	88,4%	10,4%	13,1%	72,9%	73,9%	15,6%	31,1%	63,8%	66,3%				3,6%	18,2%	63,3%
Totale		**35,4%**	**41,6%**	**10,4%**	**11,6%**			31,4%	4,9%			32,6%	6,0%			25,3%	7,6%			31,8%			25,5%	
PE		38,6%	45,9%	0,5%	0,8%			31,9%	0,5%			33,3%	0,5%			25,1%	0,6%			32,8%			27,7%	
NPE		23,2%	25,1%	48,3%	53,2%			25,1%	58,5%			24,9%	65,9%			26,1%	49,5%			23,1%			11,7%	

Values calculated on MPS EAD volumes

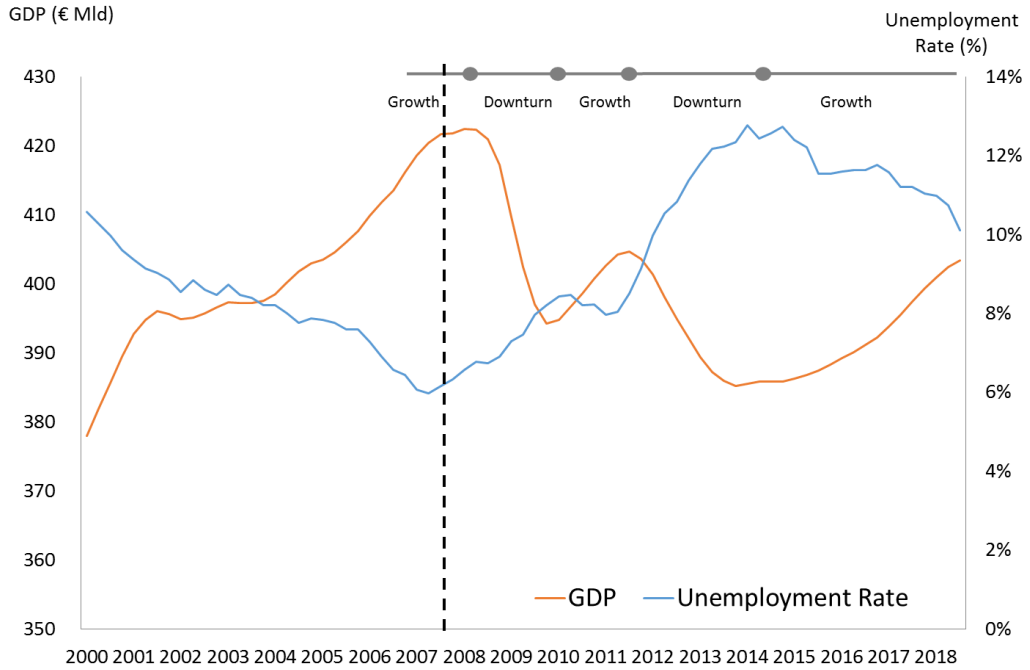
Appendix

PD-LGDDR Time series

PD1 DR1

With reference to relevant regulation for the definition of data time series for PD and LGD estimates, the Bank adopted a time series of 10 years and 8 months for PD and Danger Rate which takes into account:

- likely range of variability of the observed default rates;
- the presence of an adequate mix of expansive and recessive periods as inferred by the evolution of macroeconomic indicators (GDP and unemployment rate) ;
- inclusion of at least one downturn period as requested by EBA guidelines.



Old definition

7 years for Corporate and 5 years for Retail for PD and Danger Rate

New definition

10 years-8 months (01/2008-09/2018) development time series for both Corporate and Retail for PD, Cure Rate

Finding n.9 TRIM2017	Likely range of variability of DRs within the historical observation period is not assessed.

PD- removal of two pools from PD13 (pool retail)

PD2

The PD11 model pools (POOL RETAIL - with overdraft evidence) has been modified taking into account the following aspects:

- Low materiality in term of counterparties, n. 689, and exposure, 13,24 €/mln (data referring to December 2018)
- Simplification of segmentation, reducing the cases of migration between different models, also taking into account the feedback which emerged during the 2017 TRIM 2017 on retail models

PD 11- POOL RETAIL:	Old Methodology	New Methodology
No credit granted Overdraft duration<=30 days and Exposure<=500 €	PD 11- POOL RETAIL	PD 11- POOL RETAIL
No credit granted Overdraft duration<=30 days and Exposure>500 €	PD 11- POOL RETAIL	PD 11- POOL RETAIL
No credit granted Overdraft duration>30<=60 days and Exposure<=500 €	PD 11- POOL RETAIL	PD 11- POOL RETAIL
No credit granted Overdraft duration>30<=60 days and Exposure>500 €	PD 11- POOL RETAIL	PD 11- POOL RETAIL
No credit granted Overdraft duration>60 days and Exposure<=500 €	PD 11- POOL RETAIL	PD 11- POOL RETAIL
No credit granted Overdraft duration>60 days and Exposure>500 €	PD 11- POOL RETAIL	PD 11- POOL RETAIL
Credit granted Overdraft duration>60 days and Exposure/Limit<=102% Statistical Rating worse than B3	PD 11- POOL RETAIL	Retail statistical PD model according to type of counterparties (PD9 Retail Individuals, PD10 Retail Joint Accounts
Credit granted Overdraft duration>60 days and Exposure/Limit>102% Statistical Rating worse than B3	PD 11- POOL RETAIL	Retail statistical PD model according to type of counterparties (PD9 Retail Individuals, PD10 Retail Joint Accounts

PD-LGDDR Default definition: past due

PD3 DR3

The following definition of default was used for internal models estimation purposes:

Bad loans;

Unlikely to pay;

Past-Due > 90 days.

The GL EBA 2016/07 redefined the concept of technical past due, which now applies to positions that can be ascribed to technical circumstances (mistakes in data or systems, failures in the payments system etc.) rather than the financial situation of the debtor.

For the calibration of PD model and estimation of Danger Rate model, the old internal definition of technical past due was removed and all the past due were classified as defaulted

The complete re-estimation of IRB model with new DoD will be carried out in 2019-2020 according to the action plan reported to the Board on 10/12/2018

Old definition

Past due > 90 days classified as “technical” according with internal definition only for estimation purpose (compliant with Circ. BKI 263)

New definition

The Bank defines as default all past due > 90 days with these thresholds:
- absolute threshold 1 €;
- relative threshold 5%.

PD-LGDDR Multiple default

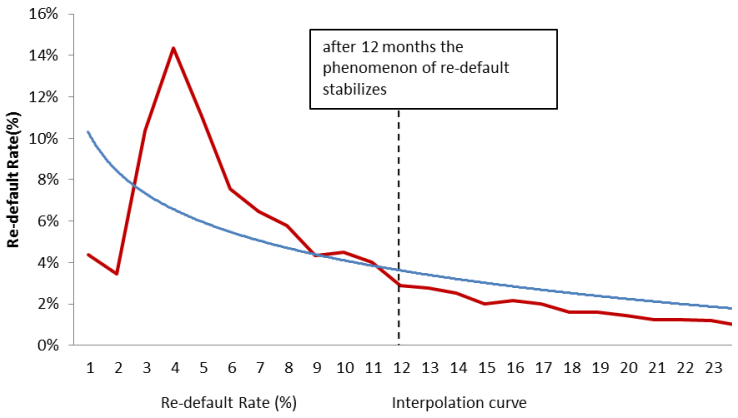
PD4 DR4

According with the current regulation, institution shall adopt an internal methodology for the treatment of the multiple default; in particular a period of time has to be defined in order to recognise as a single default all the multiple default occurrences observed within that period. The same treatment of multiple default has to be adopted for the purpose of LGD, PD .

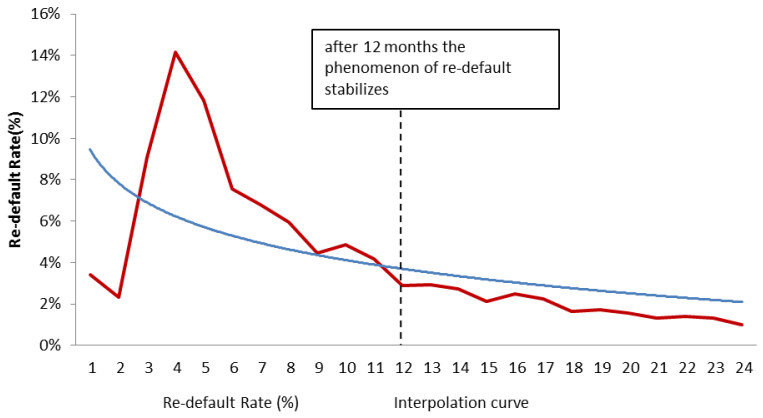
The analyses showed that a period of 12 months captured the large part of re-default occurrences. Consequently the Bank decided, according also with the approach required by the regulatory guidelines, to consider a defaulted exposure that, after returning to non-defaulted status has been classified as defaulted again within a period of time of 12 months, should be treated as constantly defaulted from the first moment the default occurred.

Comparison between re-default rates and number of months after which the re-default occurred

CORPORATE



RETAIL



Old definition

No specific treatment for multiple default

New definition

Time period of 12 months for the treatment of multiple default

Finding n.15 TRIM2017	Current treatment of multiple defaults is not aligned with the approach covered in the EBA GLs on PD/LGD.

Anchor Point

The following tables show anchor point calculated with a 10 years and 8 months time series, after the removal of internal definition of technical past due, the treatment of multiple defaults and the introduction of a specific treatment for forborne exposures. The interventions carried out on PD models produce an increase of the Anchor Point, except for SME, Small SME and Multiyears models, mainly due to the removal of internal technical past due definition.

PD Model	AP As Is	AP To Be
PD1 - LARGE CORPORATE	1.48%	1.78%
PD2 - CORPORATE	2.81%	3.02%
PD3 - SME	4.63%	4.14%
PD4 - SME - Small	5.59%	5.19%
PD5 - MULTIYEAR	9.77%	9.43%
PD6 - SMALL BUSINESS	6.71%	6.90%
PD7 - SOLE PROPRIETORSHIPS	6.14%	6.56%
PD8 - PARTNERSHIPS	5.58%	5.99%
PD9 - INDIVIDUALS	1.87%	3.16%
PD10 - JOINT ACCOUNTS	1.59%	2.49%

Pool Models

PD Model	AP As Is	AP To Be
PD 14- POOL CORPORATE Granted>0 Drawn=0 for 24 months	0.09%	0.30%
PD 13- POOL CORPORATE No credit granted Overdraft duration<=30 days and Exposure<=500 €	6.31%	22.12%
PD 13- POOL CORPORATE No credit granted Overdraft duration<=30 days and Exposure>500 €	6.31%	16.03%
PD 13- POOL CORPORATE No credit granted Overdraft duration>30<=60 days and Exposure<=500 €	31.63%	45.00%
PD 13- POOL CORPORATE No credit granted Overdraft duration>30<=60 days and Exposure>500 €	31.63%	45.00%
PD 13- POOL CORPORATE No credit granted Overdraft duration>60 days and Exposure<=500 €	45.00%	45.00%
PD 13- POOL CORPORATE No credit granted Overdraft duration>60 days and Exposure>500 €	45.00%	45.00%

PD Model	AP As Is	AP To Be
PD 12- POOL RETAIL Granted>0 Drawn=0 for 24 months	0.13%	0.13%
PD 11- POOL RETAIL No credit granted Overdraft duration<=30 days and Exposure<=500 €	6.31%	16.03%
PD 11- POOL RETAIL No credit granted Overdraft duration<=30 days and Exposure>500 €	6.31%	9.95%
PD 11- POOL RETAIL No credit granted Overdraft duration>30<=60 days and Exposure<=500 €	31.63%	45.00%
PD 11- POOL RETAIL No credit granted Overdraft duration>30<=60 days and Exposure>500 €	31.63%	45.00%
PD 11- POOL RETAIL No credit granted Overdraft duration>60 days and Exposure<=500 €	45.00%	45.00%
PD 11- POOL RETAIL No credit granted Overdraft duration>60 days and Exposure>500 €	45.00%	45.00%

PD Specific treatment of Forborne

PD5

GMPS decided to modify the approach for the treatment of the “moratoria” in order to achieve the following aims:

- to simplify the procedure for defining the calibration population without modifying or eliminating the original RDS information that may produce problems of representativeness of the development population (finding No.8 IMI40, obligation No.5);
- to take into account the change in the internal regulatory framework of the GMPS: in the first half of 2015 the internal regulatory document "1030D01991 GMPS Policy on classification and credit assessment" was published, which provides for greater severity in the detection of the default and in the classification of exposures forborne. The new process, implemented in November 2015, allows a more accurate classification of counterparties with forbearance.

The new methodology is based on the new forborne credit classification observed since November 2015 and assigns a rating aligned with the higher risk observed on forborne portfolio.

Old definition

Specific treatment modifying RDS for estimation

New definition

Calibration with a dummy variable to differentiate parameter for counterparties with forborne exposure.
Introduction of a minimum floor equal to the anchor point model (MOC B)

PD Model	MOC Forborne
PD1 - LARGE CORPORATE	1.59%
PD2 - CORPORATE	3.99%
PD3 - SME	3.99%
PD4 - SME - Small	6.31%
PD5 - MULTIYEAR	9.95%
PD6 - SMALL BUSINESS	9.95%
PD7 - SOLE PROPRIETORSHIPS	6.31%
PD8 - PARTNERSHIPS	6.31%
PD9 - INDIVIDUALS	3.99%
PD10 - JOINT ACCOUNTS	2.42%

Finding n.8 IMI40

The Supervised Entities use an approach aimed at classifying the forborne exposures through an ex-post rule in the calibration phase. This approach determines the exclusion of a significant share of counterparties for whom the observation period is not over yet. In order to offset this data exclusion, the Supervised Entities defined an add-on on the PDs. Although the internal validation function expressed a positive opinion on this calibration process, a challenger model was not put in place by the internal control function to confirm the accuracy of the add-on. According to the understanding of ECB, the Supervised Entities do not fulfil the legal requirements set out for this finding since the data used to calibrate the model is not fully representative of the actual exposures of the institution. This understanding is reflected in Article 40 (2) of EBA/RTS/2016/03

PD Models for first loans to retail customers

PD7

Default definition
The default definition has been aligned to the default definition used for other models (past due> 90 days) and treatment of multiple defaults within 12 months as remarked by **TRIM 2017 finding 7** ;

Application perimeter
The current model is applied both for first granting loans and for granting loans following the first. The following granted loans are covered by behavioural model before new granting application, by application model for 5 months after new granting date and by behavioural model again after 6 months. In order to avoid this temporary migration model, the Bank has defined a new perimeter:
- application model only for first granting loans
- behavioural model for granting loans following the first

Time series
The time series cover the period from July 2013 until September 2017. The long run average (Anchor Point) is defined as the mean of monthly deault rate.

Impact
The table shows impact of impact of new calibration simulated on first loans portfolio as of Semptember 2018. The overall impact amounts to +55 €/mln.

Model	First loans	DR first loans	Other loans	DR other loans
COI	67292	1.40%	55491	6.87%
SPF	100934	3.28%	147120	8.87%

Model	Current AP	New AP
COI	0.60%	1.74%
SPF	1.16%	3.69%

Model	EAD(mln)	RWA(mln)	RWA new (mln)
COI	851.6	83.3	127.1
SPF	639.9	80.9	92.6

Finding n.7 TRIM 2017	Definition of default is not consistent across all involved models

PD MOC C

PD6

The Margin of Conservatism of type C (MoC C) is a margin which should reflect general estimation error. Then MoC C is applied through an increase of the PD using the following criterion:

- **Low Default Portfolio**: the value PD+MoC C is given by

$$\frac{1}{1+e^{-(\alpha+score)}}+\frac{\sqrt{\sum_{j=1}^{J} N_j * {s_j}^2}}{N}$$

where the second term is the value of the MoC: in particular N_j is the cardinality of the j-esim rating class, N is the cardinality of the population and ${s_j}^2$ is the variance within of the j-esim class. This is given by

$${s_j}^2 = \frac{N_j}{N_j - 1} * (PD_j - TD_j)^2$$

where PD_j is the PD of the j-esim class in the Master Scale and TD is the default rate of the same class.

- **High Default Portfolio**: the value PD+MoC C is given by

$$\frac{1}{1+e^{-(\alpha+\sigma_\alpha+\beta*score)}}$$

where σ_α is the standard error of α.

Old definition

No MOC C in place

New definition

The MoC C is estimated with an mixed approach depending on the models.
In case of LDP, MoC C is estimated directly on the PD parameter, adding a “within” variance.
In the other portfolios, MoC C is estimated as a worsening of one of the logit parameters.

Estimation of ELBE and LGD in default with a new approach 1/3

CRR Art 153 (2), 154 (1) and 181(1)(h): for defaulted exposures (PD=1): where institutions use own estimates of LGD, Risk Weights is not calculated with the bonis formula, but shall be:

$$RW_{def\ asset} = Max\ [0;\ 12{,}5\ *\left(LGD_{in-default}\ -\ EL_{BE}\right)]$$

EBA/RTS/2016/03: […] competent authorities shall verify that the institution uses one of the following approaches:

- direct estimation of LGD ('LGD in-default') and EL_{BE} for defaulted exposures;
- direct estimation of EL_{BE} and estimation of LGD in-default as the sum of EL_{BE} and an add-on capturing the unexpected loss related with exposures in default that might occur during the recovery period

The Bank adopted the second approach: direct estimation EL_{BE} and estimation of an add-on to capture the unexpected loss.

The long run average LGD represents the best estimate of EL: infact the length of time series for the development of LGD includes both recessive and expansive period consistent with the recovery process. Furthermore, credit risk adjustment policy is based on the LGD parameter as it is considered the best internal estimate of credit loss: the provisions for NPL exposure inferior to 500 k/€ are determinated on the basis of LRA LGD and, as well, business plans for big ticket NPL are developed using LRA LGD evidence (in the absence of a business plan validated).

The downturn component is adopted as add-on unexpected of loss in order to capture additional loss due to less recoveries observed in a recessive period.

The approach adopted represents a italian market practice.

Old definition

LGD in default= ELBE

Approach adopted	Direct estimation of: • ELBE for defaulted exposures • Add-on Unexpected Loss (UL): capturing the unexpected loss related with exposures in default that might occur during the recovery period
ELBE	Long-run average LGD
Add-on Unexpected Loss	Downturn component
LGD in-default	LGD in-default = ELBE + downturn comp.

Estimation of ELBE and LGD in default with a new approach 2/3

ELBE: on the basis of the new approach, Long Run Average LGD represent the ELBE.
LGD defaulted asset: the downturn component is adopted as add-on unexpected of loss to add to ELBE in order to capture additional loss due to less recoveries observed in a recessive period; MOC C is also included.

The estimation of ELBE/DA has the same methodological approach and reference data sets used for the estimation for non defaulted exposures (only some precaution is taken as shown in the table below).
In ELBE/DA estimations vintage driver has been introduct with the aim to obtain a value more aligned to the recovery prospects on files with different ageing of staying in default: for LGDS vintage goes from 1 to over 10 years from the date of entrance in Sofferenza status; for Danger Rate vintage goes from 1 to over 5 years from the date of entrance in default in the RDS untile the entrance in an absorbing status or the date of the analysis.

Topic	LGD for non defaulted asset	ELBE	LGD for defaulted asset
RDS, time series	=	= with integration PDU→UTP in Danger Rates	= with integration PDU→UTP in Danger Rates
Definition of time to work-out	=	=	=
Approach for direct and indirect costs	=	=	=
Approach to include Incomplete work-out	=	=	=
Driver selection	= for MUTUI use of Danger Rate calculated only on counterparts with at least one mortgage	=	=
Vintage driver		✓	✓
Downturn methodology	=		=
MOC C	=		=

LGDS1 LGDS2 LGDS3

Topic	Old Methodology	New Methodology
LGDS1) Review of the data time series length	Open files since 01/01/1999 to 31/12/2014 with recovery process closed since 01/01/2005 or with recovery process open but defined substantially closed with no more recoveries.	Open files since 01/10/2002 to 30/09/2018 with recovery process closed since 01/10/2002 or with recovery process open but defined substantially closed with no more recoveries.
LGDS2) Exclusion of data generated by the 'one-off' disposal of NPE loans from RDS LGD as authorized by BCE		Waiver for all the files included in Valentine and for the files in Merlino and Morgana with exclusion of the flow of 2017
LGDS3) Allocation of indirect cost not null to all the records	The methodology is based on the application of the ratio between the cost for the recovery process of the exercise and the gross amount handled at the end of the year to the gross amount of each file at the end of the same year. If the file is opened at the end of the year the percentage is fully applicated as it was handled for the whole year; if a file is opened and closed in the same year the cost is zero	The methodology is the same but for the files with zero indirect cost the average percentage of indirect cost of the rest of database (ratio between indirect cost amount and exposure at default) is applicated.
LGDS3) No application of the two filters: EADS>30 and product different from "NON CLASSIFICATO"	EADS<=30 euro and product "NON CLASSIFICATO" are excluded	"NON CLASSIFICIATO" has been included in shirt term driver on the basis of both quantitative then qualitative analysis

LGDS New drivers

For MPS model the drivers have been revised.

The domain of Real Estate Mortgages VTL has been merged from three values to two values:
- 100-200 (including the former 100-140 and 140-200)
- >=200

This new domain make more significant the lowest grade.

The domain Product has been merged from four values to two values:
- Mortgages
- Rest (including all the loans not mortgages)

This new domain make stronger the granularity of the grid.

Confidi is differentiated only by Segment and Area.

LGDS3

1st Lev. Clustering	2nd Lev. Clustering	3rd Lev. Clustering	4th Lev. Clustering	5th Lev. Clustering
Segment	Geographical Area	Credit protection	Product	Exposure
Corporate	Northern Italy	Real Estate Mortgages by VTL 100-140-200	Mortgages	
Retail	Central Italy	Consortia	Short term loans	0 – 20 €/ths
	Southern Italy and Islands	Personal	Medium-long term loans	20 – 100 €/ths
	Not parted	Unsecured	Other loans	> 100 €/ths

ASIS

1st Lev. Clustering	2nd Lev. Clustering	3rd Lev. Clustering	4th Lev. Clustering	5th Lev. Clustering
Segment	Geographical Area	Credit protection	Product	Exposure
Corporate	Northern Italy	Real Estate Mortgages by VTL 100-200	Mortgages	
Retail	Central Italy		Rest	0 – 20 €/ths
	Southern Italy and Islands	Personal		20 – 100 €/ths
	Not parted	Unsecured		> 100 €/ths
		Consortia		

NEW

LGDS

LGDS4 LGDS6 LGDS7 LGDS8

Topic	Old Methodology	New Methodology
LGDS4) Adoption of a revised methodology for the quantification of the time to work out and	Files with recovery process open are defined substantially closed if: they are older than 15years or they have a coverage ratio at least equal to 99%.	Files with recovery process open are defined substantially closed if they are older than the time to workout: this maximun length period has been identified with analysis as 9 years.
LGDS6) inclusion of all the incomplete workout in the calibration with future recoveries	Incomplete workout with future recoveries is not included in the calibration of LGD.	Incomplete workout not yet included as closed has been considered with a future recovery calculated as a percentage of the gross amount to be collected: average LGD by vintage has been used for all the iwout files except of the NPL disposal perimeter for which the assigned price of the disposal has been used
LGDS7) Introduction of vintage driver for LGD defaulted asset	No vintage	For defaulted asset a vintage driver has been introduced from 1 to 10. The estimate is based on taking the original records with vintage 1 and using the files with more than one year of recovery process also for vintage 2 but with EADS calculated at the new date, the files with more than two year of recovery process also for vintage 3 but with EADS calculated at the new date etc.
LGDS8) Introduction of MOC C	No MOC C	The MOC C has been estimated through a Monte Carlo simulation, modifying the LGDS estimation RDS at each iteration (filtering a random 5% of the database). The aim is to estimate multipliers at aggregate cluster level, the same level used to estimate downturn multipliers. 10,000 simulations have been carried out in order to obtain mean, variance and standard deviation for each cluster of the LGDS average with cap and floor. The MOC C is calculated as: MOC_C = (mean (LGDS) + std (LGDS)) / (mean (LGDS)) The MOC C takes the form of a multiplier to be applied to the Bad Loan LGDS and varies from +0,2% to +1%.

LGDS New downturn methodology

LGDS5

Topic	Old Methodology	New Methodology
Identification of downturn	The definition of downturn periods adopted by the Bank based on subjective evaluations of the current period of global economic crisis together with the examination of the Italian GDP time series. The downturn period was identified on the GDP average annual variations (removing the year 2009 as an outlier), including in the downturn period the quarters during which have been carried out credit disposals.	Definition of downturn periods based on the examination of the Italian GDP time series and for secured files on the examination of Commerciale Real Estate Index for Corporate and Residential Real Estate Index for Retail. The Bank decided to identify the downturn period as technical recession identified when two consecutive negative variations of the average of the quarterly index occur; only the the years of peak have been considered (2015 for CRE, 2013-2014 for RRE, 2009-2010 for GDP considering also the influence of unemployment index)
Recovery Rate downturn	Only the exposures with a “closed” recovery process were included. The downturn recovery rate was determined considering all the exposures having the closing data included in the downturn period.	All exposures are included to quantify the comprehensive recovery rate (both closed and open files). The downturn recovery rate is determined considering all the exposures having recoveries during the identified downturn periods
Downturn coefficient	The downturn effect is calculated on each individual cell, on the basis of the observed LGD in the downturn periods, as indicated above.	The downturn effect is calculated as the difference between the marginal Recovery Rate during downturn and the same value computed over the comprehensive sample for each semester of recovery. The semestral effects are cumulated using the number of negative semester registrered in the index series used (12 for CRE, 14 for RRE and 9 for GDP). The final downturn coefficient is quantified as the product between the estimated cumlated effect and the LGD long run.

LGD Danger rate: improvement of model

DR2

Topic	Old Methodology	New Methodology
Resolution weaknesses of the Cure Rate model (TRIM2017 Finding 1)	1 - use of LGDS not inclusive of indirect costs in the estimation of the conversion factors for all the status 2 - two absorbing status (performing, bad loans) with estimation of the loss for cured exposure applying a part of the Cure Rate (identified with PD Condizionata) to the LGDS 3 – Danger Rate and loss components estimated on the counterparts Use of numerosity ponderated with the evolution of the exposure	1 - use of LGDS inclusive of indirect costs in the estimation of the conversion factors for all the status 2 - three absorbing status (performing, bad loans, but also ending in a default status not Sofferenza) with estimation of the loss for cured and intermediate exposures using the average of observed write-offs 3 - for performing model, for LGDS MPS mortgage driver application of Danger Rate and loss components estimated on only the counterparts with at least one exposure in mortgage at the date of first entrance in default Use of DeltaQ factor applied to LGDDS to consider the evolution of the exposure
Consistency between danger rate used for performing model and probability of first entrance in the default status	No consistency because Danger Rate used for performing model are the same used for default with the integration in first default Incaglio of all the records with first entrance Past Due and direct entrance in Incaglio	Consistency thanks to using for performing model Danger Rate estimated on the first entrance in default
Review of exposure driver of the cure rates models	Driver class of exposure: - MPS with threshold 3000 euro at the beginning of the cohort - LF without dimensional driver	Driver class of exposure 0-20k, 20k-100k, over 100k for all the entities

LGDDR

DR4 DR5 DR6

Topic	Old Methodology	New Methodology
LGDDR4) Introduction of downturn	No downturn	Downturn approach based on PIL index (years of peak 2009-2010) and the quarter of entrance in default.
LGDDR5) Introduction of vintage driver for LGD defaulted asset	No vintage	Vintage 1-5years linked to the ageing in default before the absorbing status or the data analysis for incomplete workout
LGDDR6) Introduction of MOC C	No MOC C	The MOC C has been estimated through a Monte Carlo simulation, modifying the original Danger Rate estimation RDS at each iteration (filtering a random 5% of the database). The aim is to estimate multipliers at segment level. 10,000 simulations have been carried out in order to obtain mean, variance and standard deviation for each cluster of the Bad Rate (DeltaQ factor * % of entrance in Sofferenza status respect to all the records). The MOC C is calculated as: MOC_C = (mean (BR) + std (BR)) / (mean (BR)) The MOC C takes the form of a multiplier to be applied to the conversion factors and varies from +0,1% to +2%.

Model change impact by regulatory exposure class

Exposure class		as is 31/12/2018*								Model change					
€/mln	Status	EAD	CRA	PD	LGD	EL	Shortall	RWA	RWA/EAD	PD	LGD	EL	Shortall	RWA	RWA/EAD
CORPORATE-OTHER	PE	10306	65	1,6%	41,0%	65	0	8285	80,4%	2,2%	41,9%	90	25	9549	92,7%
	NP	2232	1163		50,3%	1123	-41	522	23,4%		58,2%	1270	106	360	16,1%
CORPORATE-SME	PE	11949	194	3,1%	34,1%	118	-76	7892	66,0%	4,0%	35,9%	162	-32	9091	76,1%
	NP	6431	3527		48,6%	3124	-403	2250	35,0%		51,8%	3221	-306	1349	21,0%
RETAIL-SEC SME	PE	4557	84	3,3%	20,0%	31	-54	1589	34,9%	4,6%	19,2%	42	-42	1917	42,1%
	NP	910	309		34,3%	312	4	269	29,6%		38,0%	325	17	255	28,0%
RETAIL-UNS SME	PE	7055	104	3,0%	42,1%	87	-16	2735	38,8%	4,0%	44,2%	124	20	3181	45,1%
	NP	3005	1884		57,9%	1740	-144	519	17,3%		67,5%	1977	93	647	21,5%
RETAIL-SEC NOSME	PE	25254	68	0,9%	11,6%	26	-42	2580	10,2%	1,3%	11,8%	39	-29	3636	14,4%
	NP	704	137		15,0%	106	-31	0	0,0%		28,2%	177	40	270	38,3%
RETAIL-UNS NOSME	PE	1436	11	2,1%	22,8%	7	-5	340	23,7%	3,5%	24,4%	13	1	446	31,0%
	NP	1631	729		39,3%	641	-88	0	0,0%		50,7%	790	61	474	29,1%
RETAIL-QRE	PE	91	0,2	1,5%	22,8%	0,3	0,04	8,1	8,9%	2,8%	27,0%	0,7	0,5	16,2	17,8%
	NP	1	0,2		23,6%	0,1	-0,02	0	0,0%		56,6%	0,3	0,1	0,6	104,8%
Total net Corporate SL	PE	60649	526	1,9%	25,5%	334	-193	23429	38,6%	2,6%	26,3%	470	-56	27837	45,9%
	NP	14913	7749		47,2%	7046	-702	3561	23,9%		53,8%	7760	11	3356	22,5%

*** Impacts are estimated on December 2018 portfolio, pro-froma performed considering end of the year loans disposals.**

Risk parameters rises for all portfolio, in particular PD and LGD Non Performing which increases between +4% and +10%. RW% (RWA/EAD) increases significantly for Performing Portfolio. The new LGD DA approach leads to RW% for DA varying from 16% to 30%, with an overall average of 22,5%.

Model change impact by business unit and default status

Business unit		as is 31/12/2018*							Model change					
€/mln	Status	EAD	CRA	PD	LGD	EL	Shortall	RWA	RWA/EAD	PD	LGD	EL	Shortall	RWA	RWA/EAD
MPS	PE	54590	443	1,8%	24,8%	285	-157	19273	35,3%	2,5%	25,7%	406	-37	23262	42,6%
	NP	11792	6117		46,9%	5534	-583	2551	21,6%		54,4%	6242	125	2191	18,6%
MPS CS	PE	3007	37	2,7%	30,8%	23	-13	2273	75,6%	3,7%	24,2%	24	-13	1964	65,3%
	NP	2144	1067		47,0%	1008	-59	723	33,7%		48,2%	999	-68	419	19,5%
MPS LF	PE	3052	47	2,6%	32,5%	25	-22	1883	61,7%	3,4%	39,0%	40	-7	2610	85,5%
	NP	978	564		51,6%	504	-60	287	29,4%		59,1%	518	-46	746	76,3%
Total net Corporate SL	PE	60649	526	1,9%	25,5%	334	-193	23429	38,6%	2,6%	26,3%	470	-56	27837	45,9%
	NP	14913	7749		47,2%	7046	-702	3561	23,9%		53,8%	7760	11	3356	22,5%

Default status	as is 31/12/2018*								Model change					
€/mln	EAD	CRA	PD	LGD	EL	Shortall	RWA	RWA/EAD	PD	LGD	EL	Shortall	RWA	RWA/EAD
Performing	60649	526	1,9%	25,5%	334	-193	23429	38,6%	2,6%	26,3%	470	-56	27837	45,9%
Past due	135	28		26,0%	35	7	21	15,4%		31,6%	41	13	27	20,2%
Unlikely to pay	6993	2935		36,8%	2575	-360	2241	32,0%		47,2%	3104	168	2439	34,9%
Bad loans	7785	4786		57,0%	4436	-350	1299	16,7%		60,2%	4615	-170	890	11,4%
Total net Corporate SL	75562	8275	1,9%	29,8%	7380	-895	26990	35,7%	2,6%	31,8%	8230	-45	31193	41,3%

*** Impacts are estimated on December 2018 portfolio, pro-froma performed considering end of the year loans disposals.**

Model change perimeter: regulatory exposure classes

Exposure class		as is 31/12/2018*		%model change perimeter	
€/mln	Status	EAD	RWA	EAD	RWA
CORPORATE-SL	PE	1474	1419	0%	0%
	NP	334	0	0%	
CORPORATE-OTHER	PE	10306	8285	100%	100%
	NP	2232	522	100%	100%
CORPORATE-SME	PE	11949	7892	100%	100%
	NP	6431	2250	100%	100%
RETAIL-SEC SME	PE	4557	1589	99%	99%
	NP	910	269	100%	100%
RETAIL-UNS SME	PE	7055	2735	99%	99%
	NP	3005	519	100%	100%
RETAIL-SEC NOSME	PE	25254	2580	100%	100%
	NP	704	0	100%	
RETAIL-UNS NOSME	PE	1436	340	100%	100%
	NP	1631	0	100%	
RETAIL-QRE	PE	91	8	100%	100%
	NP	1	0	100%	
Total	PE	62122	24848	97%	94%
	NP	15247	3561	98%	100%
Total net Corporate SL	PE	60649	23429		
	NP	14913	3561		

*December 2018 portfolio, pro-froma performed considering end of the year loans disposals (without Morgana).

The perimeter of model change includes all the IRB models except of first granting small business models and slotting criteria for specialized lending exposure; the model change involves 97% of IRB performing portfolio 98% of IRB non performing portfolio in terms of EAD and regards the following regulatory exposure classes: **Corporate - Other; Corporate - SME; Retail - Other non-SME; Retail - Other SME; Retail - Qualifying revolving; Retail - Secured by real estate non-SME; Retail - Secured by real estate SME** and the following legal entities: **Banca Monte dei Paschi di Siena Spa; Mps Capital Services Banca per Le Imprese Spa; Mps Leasing & Factoring Spa.**

Model change perimeter: rating models

Rating system		as is 31/12/2018*		%model change perimeter	
€/mln	Status	EAD	RWA	EAD	RWA
1 LC	PE	3590	2603	100%	100%
	NP	530		100%	
2 Corporate	PE	1891	1705	100%	100%
	NP	539		100%	
3 Sme	PE	9708	7040	100%	100%
	NP	2035	1061	100%	100%
4 Sme small	PE	4507	2129	100%	100%
	NP	1308	588	100%	100%
5 Multiyear	PE	2428	1665	99%	100%
	NP	1992		100%	
6 Small Business	PE	7134	3570	98%	99%
	NP	4067	1912	100%	100%
7 Sole proprietorship	PE	2784	1064	99%	99%
	NP	1199		100%	
8 Partnership	PE	1793	713	99%	99%
	NP	906		100%	
9 Pool Corporate overdraft	PE	17	11	100%	100%
	NP	2		100%	
10 Pool Corporate undrawn	PE	16	1	100%	100%
	NP			100%	
11 Individuals	PE	12503	1244	100%	100%
	NP	1147		100%	
12 Joint Account	PE	14239	1671	100%	100%
	NP	1148		100%	
13 Pool Retail overdraft	PE	28	13	100%	100%
	NP	41		100%	
14 Pool Retail undrawn	PE	11	0,2	100%	100%
	NP			100%	

The perimeter of model change includes 100% of exposure for all rating models except of a marginal share of exposure of small business model (PD5, PD6, PD7 and PD8) covered by first granting small business models which have not been updated.

*December 2018 portfolio, pro-froma performed considering end of the year loans disposals (without Morgana).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