Risk section KID (Annex II & III)

COM Workshop: KID for PRIIPs – 11/07/2016

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Outline

1. Categorisation
2. Market risk Measure
   i. MRM Category 2
   i. MRM Category 3
   ii. MRM Category 4
3. Credit risk Measure
4. Other topics
   i. Aggregation
   ii. Liquidity risk
   iii. Presentation

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Presentation of the Risk and Reward work stream

- **RRWS** to feed into the PRIIPs Subgroup on the different risk and reward disclosure aspects of the PRIIPs Regulation

- **Chair**: AFM

- **9 members** (ACPR, AMF, BaFIN, BdP, CNMV, CONSOB, FCA (UK), FSMA, MNB (central bank of Hungary) + EIOPA)

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Categorization

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PRIIP categories for the purpose of the market risk assessment

Categorization depends on the pay-out structure of the PRIIP

- Category 1 -> pre-defined classification
- Category 2 -> constant multiple products
- Category 3 -> non-linear products
- Category 4 -> (partly) dependent on factors not observable in the market

Questions on the PRIIPs Categories
Annex II, Part 1 point 3-7

Specification of PRIIP categories for the purposes of the market risk assessment

- Categorization of unconditional capital protection– Category 2 or 3?
- What is an unconditional capital protection?
- Voluntarily in Category 1?
- When does a product qualify as a Category 4 product?
- Could leveraged products also be Category 2 PRIIPs?
- What about Credit Linked Notes?

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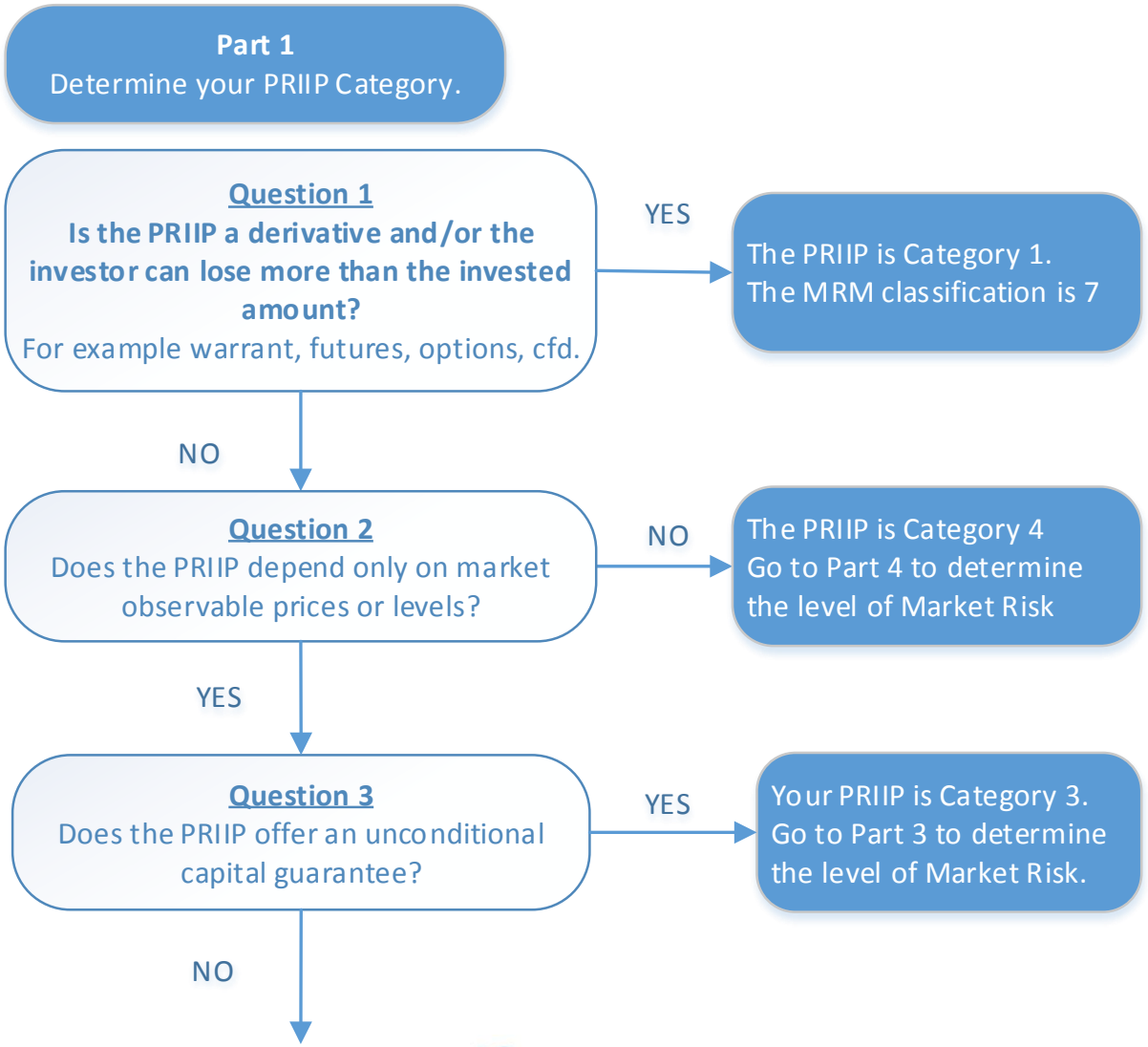
Part 1
Determine your PRIIP Category.
Question 1
Is the PRIIP a derivative and/or the investor can lose more than the invested amount?
For example warrant, futures, options, cfd.
YES
The PRIIP is Category 1.
The MRM classification is 7
NO
Question 2
Does the PRIIP depend only on market observable prices or levels?
NO
The PRIIP is Category 4
Go to Part 4 to determine the level of Market Risk
YES
Question 3
Does the PRIIP offer an unconditional capital guarantee?
YES
Your PRIIP is Category 3.
Go to Part 3 to determine the level of Market Risk.
NO

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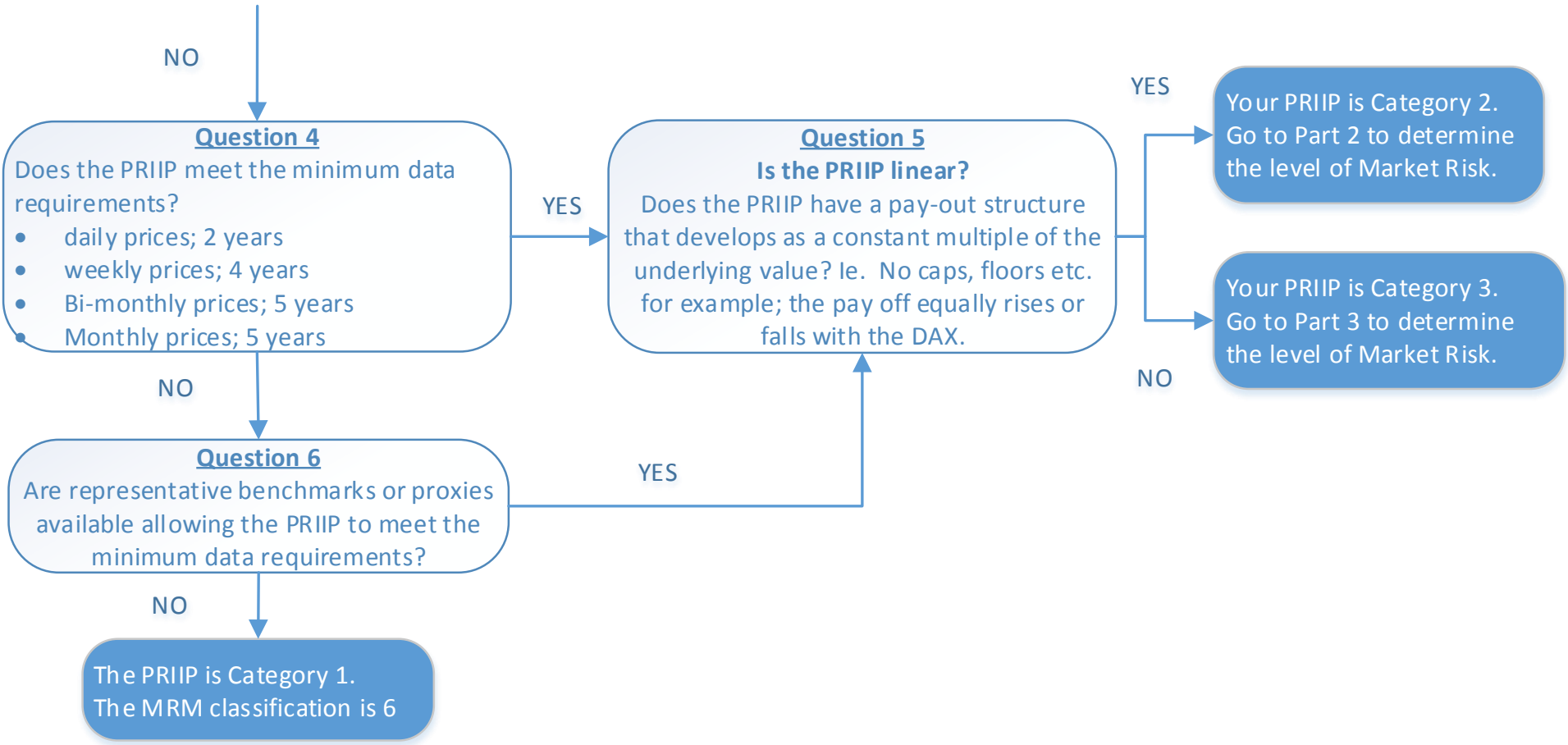
NO
Question 4
Does the PRIIP meet the minimum data requirements?
daily prices; 2 years
weekly prices; 4 years
Bi-monthly prices; 5 years
Monthly prices; 5 years
YES
Question 5
Is the PRIIP linear?
Does the PRIIP have a pay-out structure that develops as a constant multiple of the underlying value? Ie. No caps, floors etc. for example; the pay off equally rises or falls with the DAX.
YES
Your PRIIP is Category 2. Go to Part 2 to determine the level of Market Risk.
NO
Your PRIIP is Category 3. Go to Part 3 to determine the level of Market Risk.
NO
Question 6
Are representative benchmarks or proxies available allowing the PRIIP to meet the minimum data requirements?
YES
NO
The PRIIP is Category 1.
The MRM classification is 6

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Market Risk Measure (MRM)

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Summary Risk Indicator

- **SRI based on assessment of market and credit risk**

  Annex II

- **Liquidity risk explained in a narrative**

  Annex II Part 4 and Annex III

- **Presentation SRI on a numerical scale (1-7) and SRI related narratives**

  Annex III

- **Warning with respect to SRI and the recommended holding period (RHP)**

  Annex III

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MRM for Category 2

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Questions on the PRIIPs MRM
Annex II, Part 1 point 3-7

- How to calculate the SRI when there is a lack of historical data?
- Questions on the formulas
- Is paragraph 14 also applicable with insufficient data or no history?
- PCA – is this also applicable if the reference rate is a single interest rate?
- Automatic early redemption products; which T would be applied to calculate the MRM?

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Part 2: MRM for linear products

Category 2

Question 1
Are historical prices of the PRIIP available on;
- **A daily basis?**
- **A weekly basis?**
- **A bi-monthly basis?**
- **A montly basis?**

Is 5 years of historical prices available?

YES → Use the full data set

NO → **Question 2**
Is the minimum requirment available? For:
- daily prices; 2 years
- weekly prices; 4 years
- Bi-monthly prices; 5 years
- Monthly prices; 5 years

YES → Use what is available with a minimimum of;
2 years for daily prices
4 years for weekly prices
5 years for monthly prices
All data exceeding the minimum until 5 years should be included in the calculation.

NO → **Question 3**
Are representative benchmarks or proxies available allowing the PRIIP to meet the minimum data requirements?

NO → The PRIIP is Category 1.
The MRM classification is 6

YES → The existing price data shall be concatenated with the data of the representative benchmark to meet the minimum data requirements. Go to Step 4

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Category 2

Step 4

To calculate the VaR Return Space using the Cornish Fisher expansion, you need the history of observed returns of the PRIIP. The returns are calculated by taking the natural logarithm of the price at the end of the current period divided by the price at the end of the previous period.

Step 5

Now the formula can be applied to the data;

$VaR_{\text{Return Space}} = \sigma \sqrt{N} * (-1.96 + 0.474 * \mu_1 / \sqrt{N} - 0.0687 * \mu_2 / N + 0.146 * \mu_1^2 / N) - 0.5\sigma_2 N.$

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Simplified calculation example for Category 2

Time	Price	Return
26-10-2015	3414,6	r_i
27-10-2015	3381,01	-0,009885874
28-10-2015	3421,09	0,011784732
29-10-2015	3413,39	-0,002253281
30-10-2015	3418,23	0,001416941
02-11-2015	3434,5	0,004748481
03-11-2015	3442,68	0,002378883
04-11-2015	3439,16	-0,001022982
05-11-2015	3447,49	0,002419175
06-11-2015	3468,21	0,005992181
09-11-2015	3418,36	-0,014477707

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Simplified calculation example for Category 2

Days per year *N*	252	$\sqrt{N}$
M0	10	Number of days in sample
M1	0,0001101	Mean return in sample (daily)
M2	5,24191E-05	Variance $\sigma^2=E(X^2)-[E(X)]^2$
M3	-2,19698E-07	Third Momento $M_3=\sum_i (r_i-M_1)^3/M_0$
M4	7,55966E-09	Fourth Moment $M_4=\sum_i (r_i-M_1)^4/M_0$

Annual Return	0,027733811		
0,000110055			
5,24191E-05			
	Skew	-0,578884117	$\mu_1=M_3/M_2^{1,5}$
	Excess Kurtosis	-0,248788456	$\mu_2=(M_4/M_2^2)-3$

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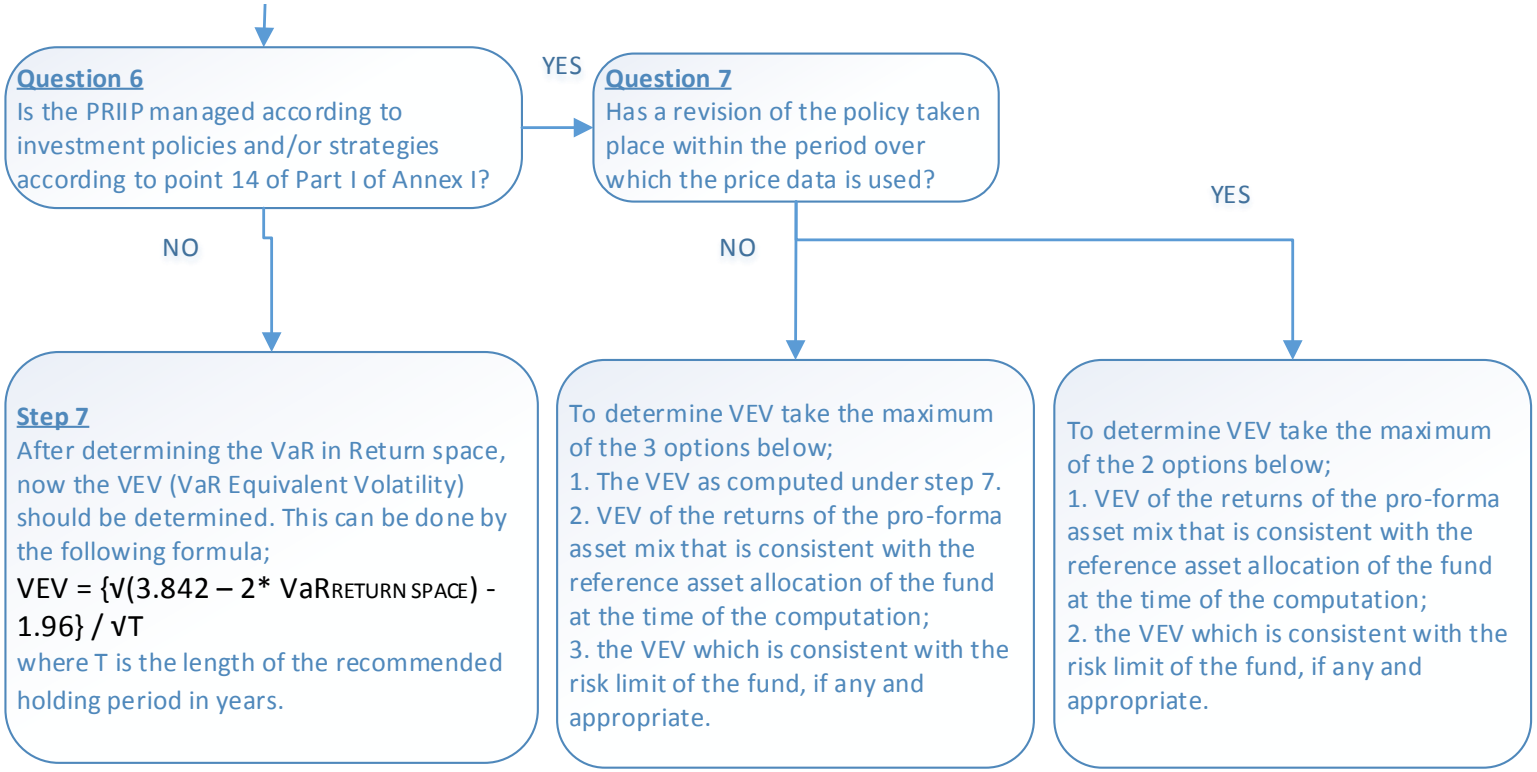
Category 2



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Simplified calculation example for Category 2

Daily σ	0,007240101
confidence level	2,50%
z_α	-1,959963985
Annualized Volatility $\sigma\sqrt{N}$	11,49%
$(z_\alpha^2-1)/6$	0,47357647
$(z_\alpha\text{^}3-3z_\alpha)/24$	-0,068717874
$(2z_\alpha\hat{}3-5z_\alpha)/36$	-0,146067276

RHP	Number of Days	VaR (Return Space)	VaR (Price Space)	VEV Return Space	VEV Price Space
1	252	-0,234	0,792	0,116	0,116
3	756	-0,412	0,662	0,115	0,115
5	1260	-0,539	0,584	0,115	0,115
10	2520	-0,780	0,458	0,115	0,115
20	5040	-1,141	0,319	0,115	0,115
50	12600	-1,925	0,146	0,115	0,115

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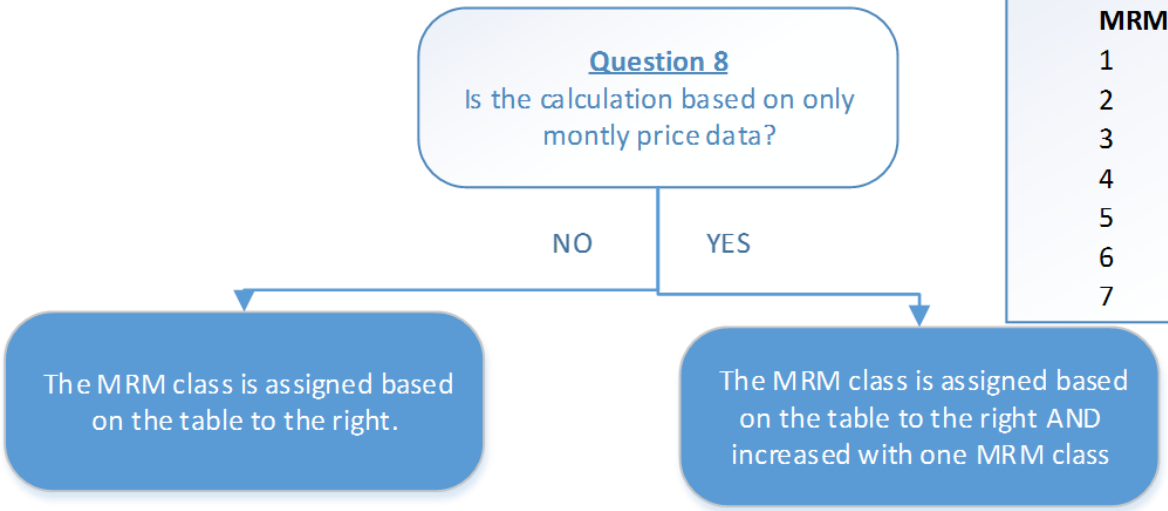
Category 2



MRM class	Annualised volatility (VEV)
1	< 0.5 %
2	0,5 % - 5.0 %
3	5.0 %-12 %
4	12 %-20 %
5	20 %-30 %
6	30 %-80 %
7	>80 %

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MRM for Category 3

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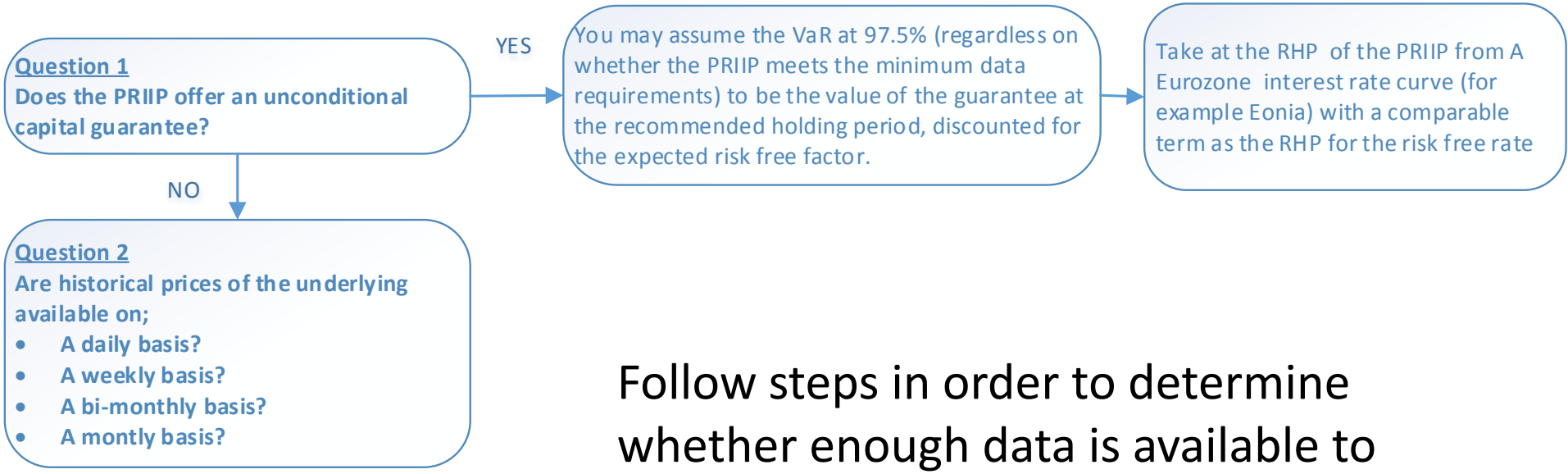
Category 3



Follow steps in order to determine whether enough data is available to calculate (same as for Category II)

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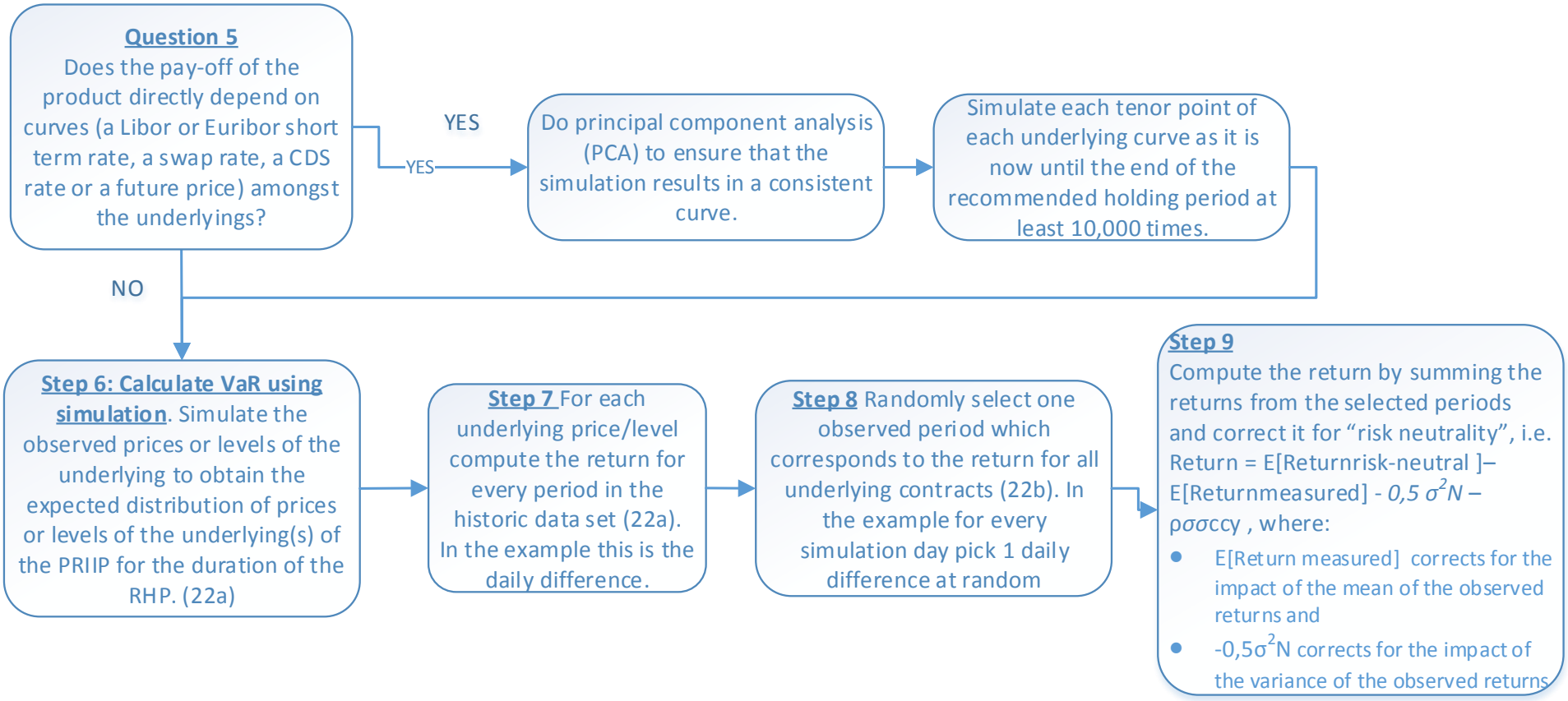
Category 3



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Simplified calculation example for Category 3

Step 7: INPUT DATA 10 days		
DATE	VALUE	Daily dif
15-nov-10	1235,37	
16-nov-10	1212,56	-0,01864
17-nov-10	1214,57	0,001656
18-nov-10	1234,12	0,015968
19-nov-10	1235,33	0,00098
22-nov-10	1231,42	-0,00317
23-nov-10	1210,65	-0,01701
24-nov-10	1221,91	0,009258
25-nov-10	1223,73	0,001488
26-nov-10	1210,36	-0,01099
	AVG RETURN:	-0,00227
	RETURN STDDEV:	0,011552
	DATA COUNT:	9

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Simplified calculation example for Category 3

Step 8: RUN 10.000 SIMULATIONS		
EXAMPLE SIMULATION (Period= RHP= 10 days) **ONLY 10 SIMULATIONS ARE SHOWN**		
SIMULATION DAY	RETURN ID	RE TURN
1	2	0,001656
2	7	0,009258
3	2	0,001656
4	8	0,001488
5	3	0,015968
6	6	-0,01701
7	7	0,009258
8	4	0,00098
9	5	-0,00317
10	7	0,009258
Step 9: Calculate the simulated return		
SUM of Simulated Return		0,029342
RISK FREE RATE (%/yr):	1,2	
SIMULATED RETURN:	1,057013249	3
RHP LENGTH:	10 DAYS	

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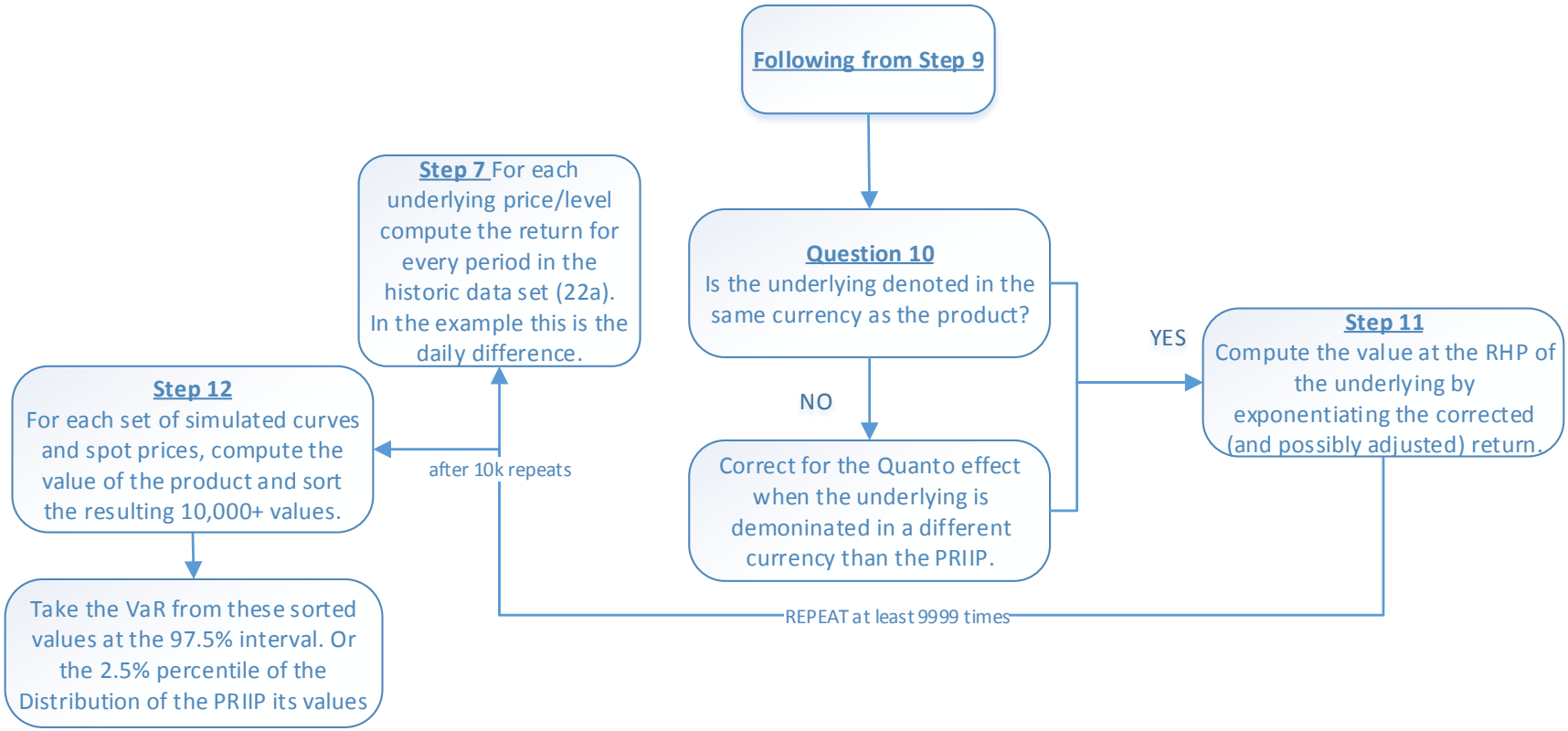
Category 3



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Simplified calculation example for Category 3

Step 12: DISTRIBUTION OF SIMULATIONS	
GENERATED BY PRODUCING AT LEAST 10.000 SIMULATIONS- TO CLARIFY PRESENTATION ONLY 10 SIMULATIONS ARE SHOWN	
RANK	VALUE
5	1,042468
6	1,017994
7	1,017078
8	0,993796
9	0,981104
1	1,099921
2	1,060105
4	1,04339
10	0,960412
3	1,053225

Step 13: CALCULATE VAR and VEV	
PERCENTILE:	2,5
TRADING DAYS PER YEAR:	261
INV NORMAL:	-1,959964
USED RANK:	10
VaR (price space):	0,96041244
VEV:	0,10473867

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Category 3

Step 13
The VaR-equivalent volatility (VEV) is given by:
VEV = {√(3.842 – 2* ln(VaRPRICE SPACE)) -1.96} / √T

where T is the length of the recommended holding period in years (17).

Only in cases where the product is called or cancelled before the RHP according to the simulation, the period in years until the call or cancellation is used.

Question 14
Is the calculation based on only monthly price data?

NO

The MRM class is assigned based on the table to the right (2)

YES

The MRM class is assigned based on the table to the right (2 and 18) AND increased with one MRM class

MRM class	Annualised volatility (VEV)
1	< 0.5 %
2	0,5 % - 5.0 %
3	5.0 %-12 %
4	12 %-20 %
5	20 %-30 %
6	30 %-80 %
7	>80 %

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MRM for Category 4

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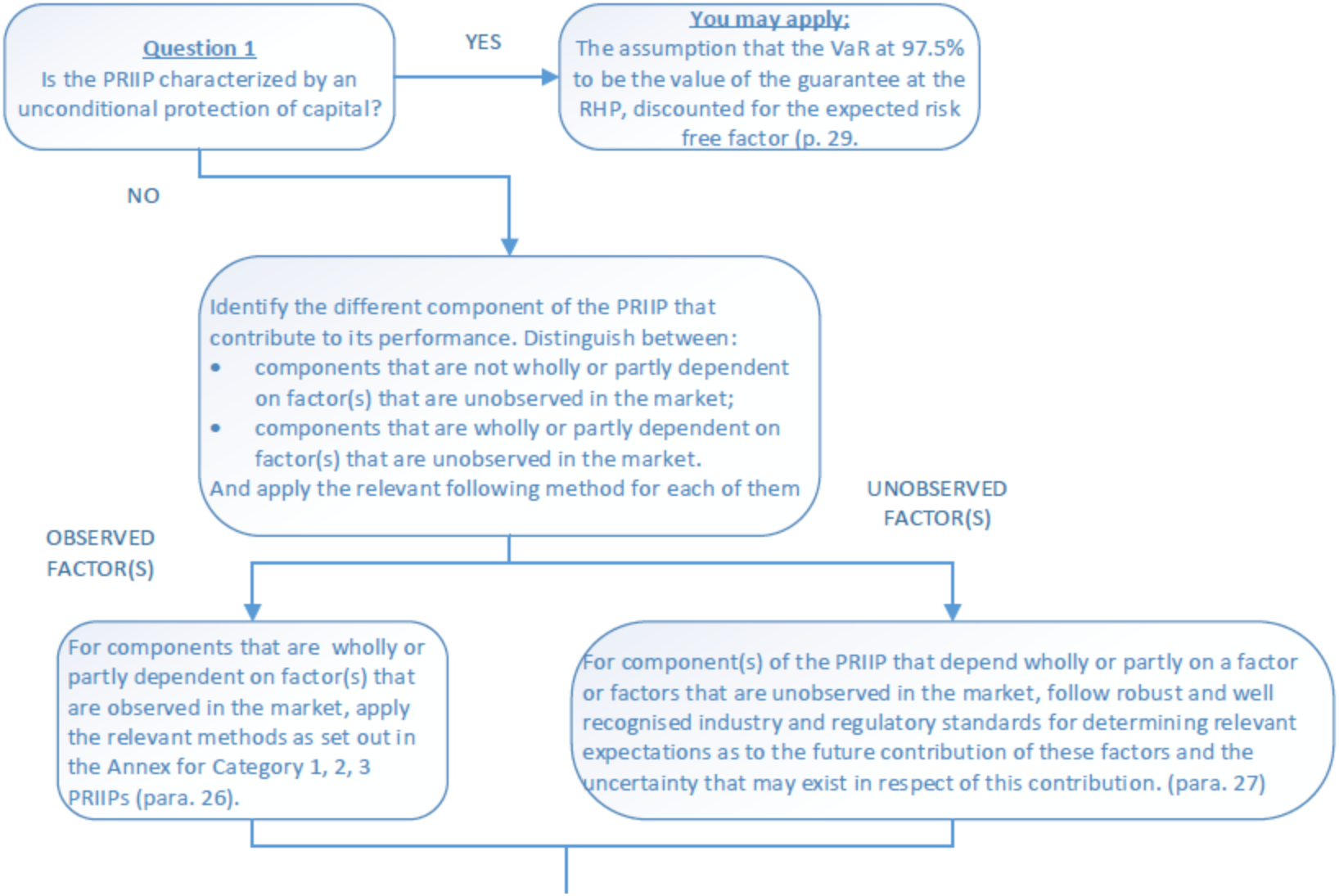
Category 4



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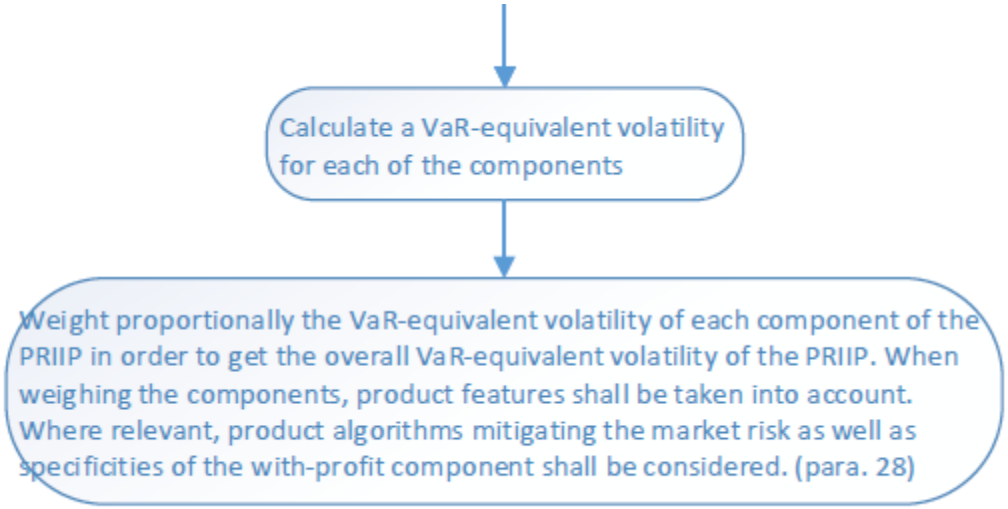
Category 4



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Credit risk measure(CRM)

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Credit Risk Measure (CRM)

Credit risk is only determined where relevant and aims at capturing the probability of default of related entities to the PRIIP and its impact on the value of investors' return.

Credit Risk assessment is based on:

- Ratings, whenever available
- Default credit assessment otherwise
- Adjusted, where necessary, with maturity and mitigating or escalating factors, as applicable.

Credit quality steps are translated into credit risk measure, over a 1 to 6 scale

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Questions on the PRIIPs CRM
Annex II, Part 2

- How credit risk assessment applies to specific product?
- What is the relation between credit ratings and credit quality Steps?
- How adjusting credit risk based on mitigating factors?
- What if you have MRM 6?

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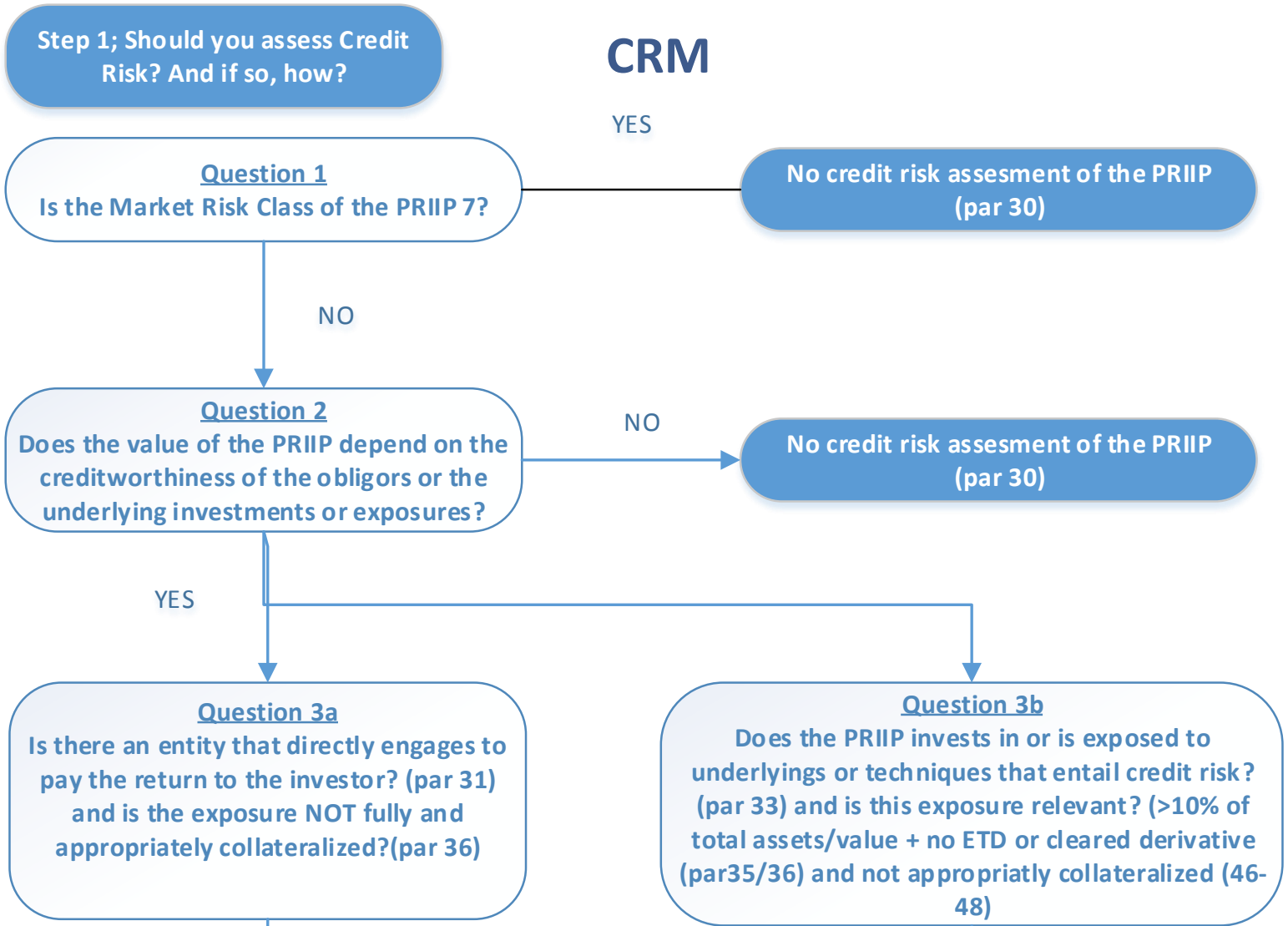
CRM


Step 1; Should you assess Credit Risk? And if so, how?
YES
Question 1
Is the Market Risk Class of the PRIIP 7?
No credit risk assesment of the PRIIP (par 30)
NO
Question 2
Does the value of the PRIIP depend on the creditworthiness of the obligors or the underlying investments or exposures?
NO
No credit risk assesment of the PRIIP (par 30)
YES
Question 3a
Is there an entity that directly engages to pay the return to the investor? (par 31) and is the exposure NOT fully and appropriately collateralized?(par 36)
Question 3b
Does the PRIIP invests in or is exposed to underlyings or techniques that entail credit risk? (par 33) and is this exposure relevant? (>10% of total assets/value + no ETD or cleared derivative (par35/36) and not appropriatly collateralized (46-48)

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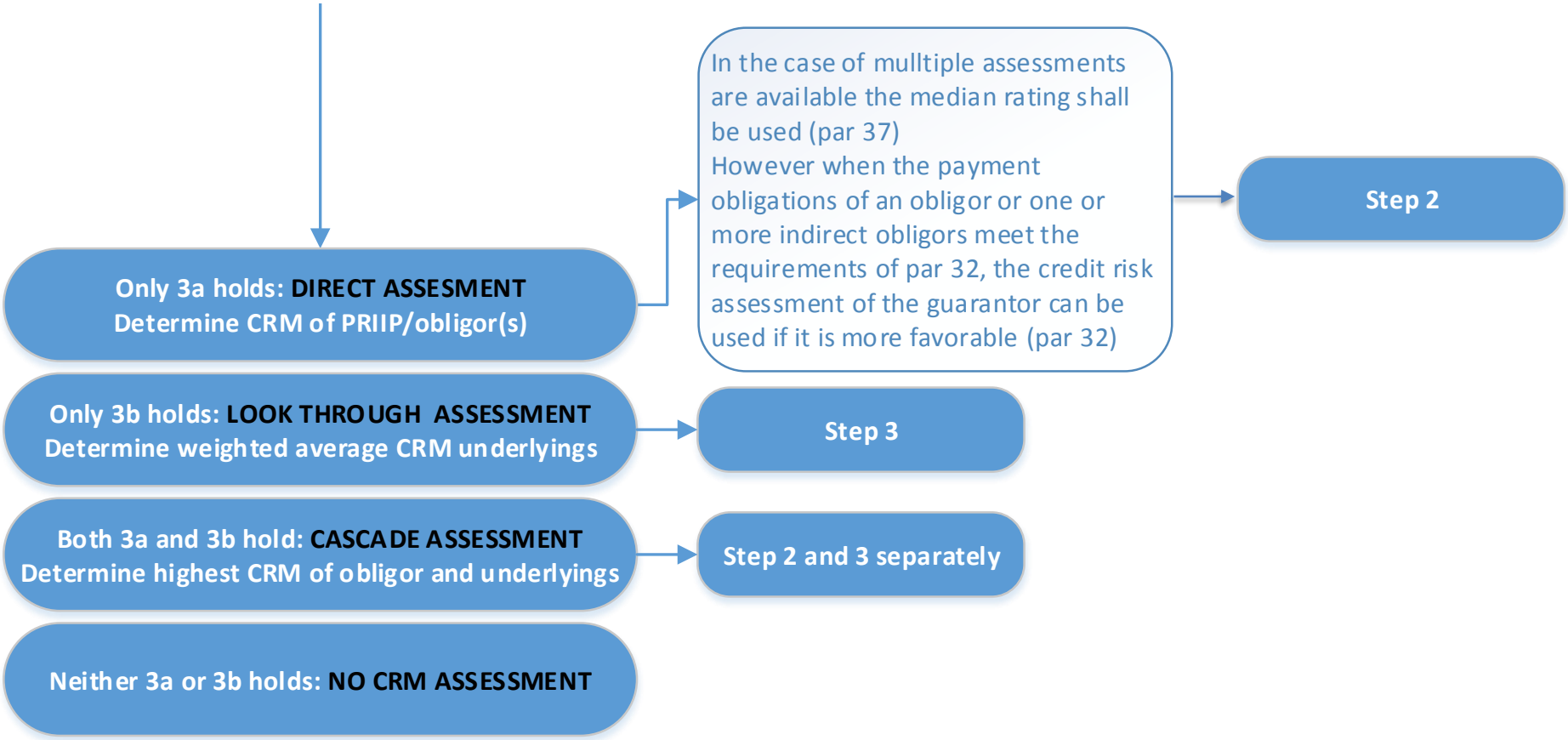
CRM


Only 3a holds: DIRECT ASSESMENT
Determine CRM of PRIIP/obligor(s)
In the case of mulltiple assessments are available the median rating shall be used (par 37)
However when the payment obligations of an obligor or one or more indirect obligors meet the requirements of par 32, the credit risk assessment of the guarantor can be used if it is more favorable (par 32)
Step 2
Only 3b holds: LOOK THROUGH ASSESSMENT
Determine weighted average CRM underlyings
Step 3
Both 3a and 3b hold: CASCADE ASSESSMENT
Determine highest CRM of obligor and underlyings
Step 2 and 3 separately
Neither 3a or 3b holds: NO CRM ASSESSMENT

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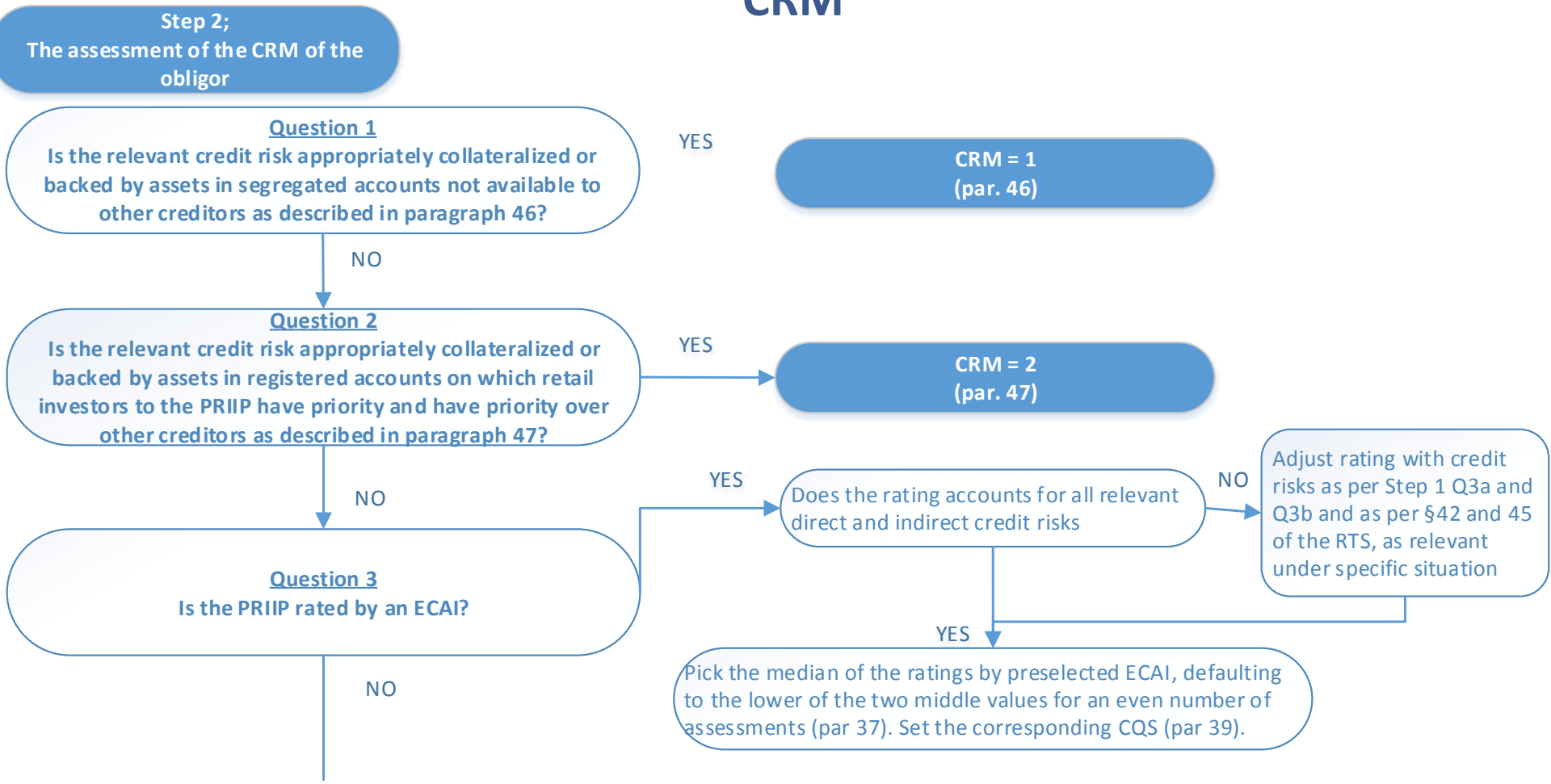
CRM


Step 2;
The assessment of the CRM of the obligor
Question 1
Is the relevant credit risk appropriately collateralized or backed by assets in segregated accounts not available to other creditors as described in paragraph 46?
YES
CRM = 1
(par. 46)
NO
Question 2
Is the relevant credit risk appropriately collateralized or backed by assets in registered accounts on which retail investors to the PRIIP have priority and have priority over other creditors as described in paragraph 47?
YES
CRM = 2
(par. 47)
NO
Question 3
Is the PRIIP rated by an ECAI?
YES
Does the rating accounts for all relevant direct and indirect credit risks
NO
Adjust rating with credit risks as per Step 1 Q3a and Q3b and as per §42 and 45 of the RTS, as relevant under specific situation
YES
Pick the median of the ratings by preselected ECAI, defaulting to the lower of the two middle values for an even number of assessments (par 37). Set the corresponding CQS (par 39).
NO

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CRM

Question 4
Is there a rating of an ECAI for the relevant obligor? If unconditionally guaranteed by another entity, apply assessment to guarantor if more favourable

YES

Pick the median of the ratings by preselected ECAI, defaulting to the lower of the two middle values for an even number of assessments (par 37). Set the corresponding CQS (par 39).

NO

Question 5
Is the obligor regulated as a credit institution or insurance undertaking under applicable EU regulation AND would the Member state where institution is domiciled be allocated in CQS 3 or lower? (par 43a)

YES

CQS = 3

NO

CQS = 5

Convert the CQS into a CRM measure according to the table in par 45

Adjust the CQS dependent on the term of the PRIIP (par 42)

Credit quality step pursuant to point 38	Adjusted credit quality step, in the case where the maturity of the PRIIP, or its RHP when a PRIIP does not have a maturity, is up to one year	Adjusted credit quality step, in the case where the maturity of the PRIIP, or its RHP when a PRIIP does not have a maturity, ranges from one year up to twelve years	Adjusted credit quality step, in the case where the maturity of the PRIIP, or its RHP when a PRIIP does not have a maturity, exceeds twelve years
0	0	0	0
1	1	1	1
2	1	2	2
3	2	3	3
4	3	4	5
5	4	5	6
6	6	6	6

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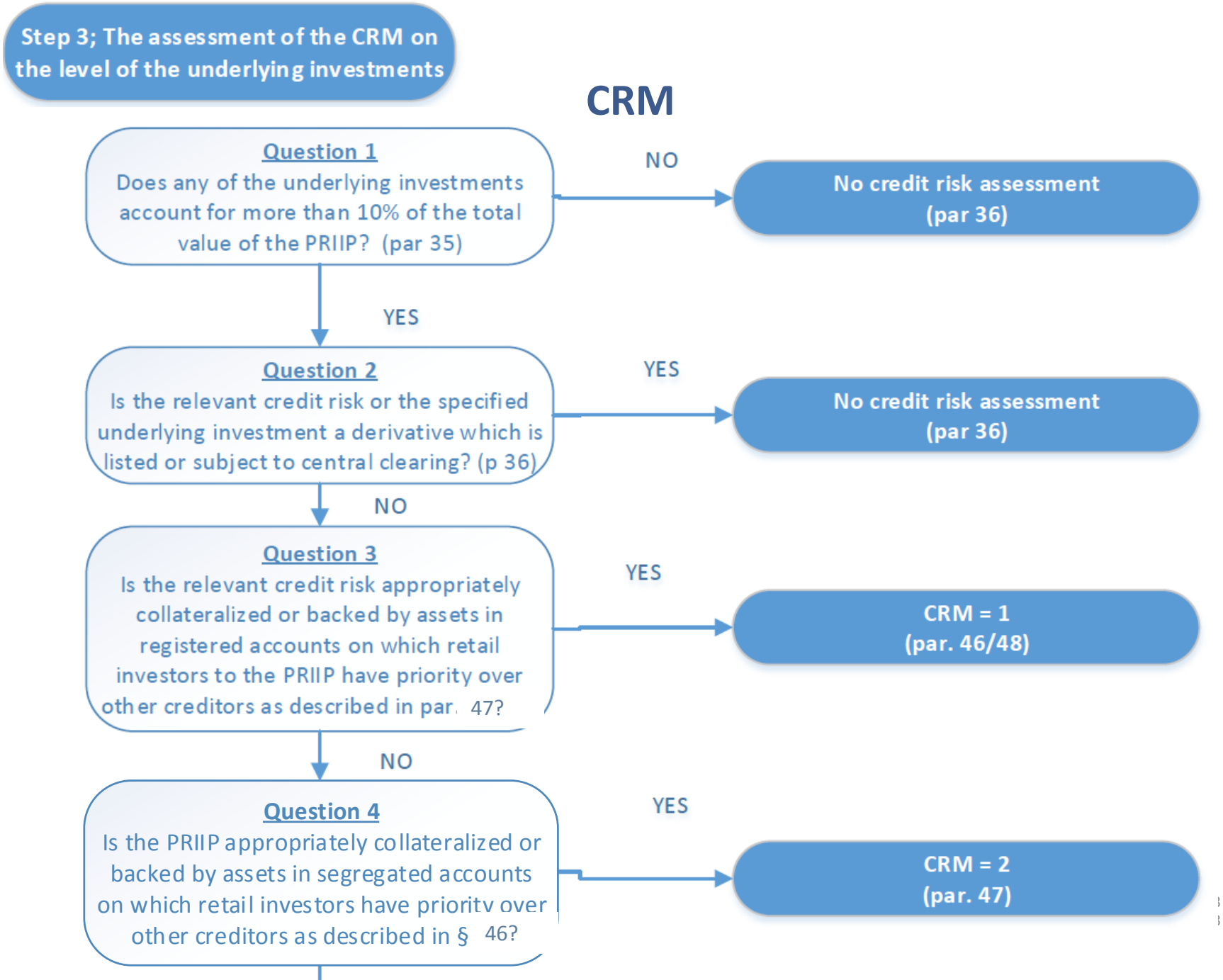
Step 3; The assessment of the CRM on the level of the underlying investments
CRM
Question 1
Does any of the underlying investments account for more than 10% of the total value of the PRIIP? (par 35)
NO
No credit risk assessment (par 36)
YES
Question 2
Is the relevant credit risk or the specified underlying investment a derivative which is listed or subject to central clearing? (p 36)
YES
No credit risk assessment (par 36)
NO
Question 3
Is the relevant credit risk appropriately collateralized or backed by assets in registered accounts on which retail investors to the PRIIP have priority over other creditors as described in par. 47?
YES
CRM = 1 (par. 46/48)
NO
Question 4
Is the PRIIP appropriately collateralized or backed by assets in segregated accounts on which retail investors have priority over other creditors as described in § 46?
YES
CRM = 2 (par. 47)

CRM

Question 5
Are there investments which are rated by an ECAI?

YES

Pick the median of the ratings by preselected ECAI, defaulting to the less favourable of the two middle values for an even number of assessments (par 37). Set the corresponding CQS (par 39).

NO

Question 6
Is there a rating of an ECAI for the relevant obligor of the underlying investment? If unconditionally guaranteed by another entity, apply assessment to guarantor if more favourable

YES

NO

Question 6
Is the obligor regulated as a credit institution or insurance undertaking under applicable EU regulation AND would the Member state where institution is domiciled be allocated in CQS 3 or lower? (par 43a)

YES

NO

CQS = 3

CQS = 5

Adjust the CQS dependent on the term of the PRIIP (par 42)

Convert the CQS into a CRM measure according to the table in par 45

credit quality step	credit risk measure
0	1
1	1
2	2
3	3
4	4
5	5
6	6

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Other topics

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Aggregation

- SRI is the aggregation of the MRM and CRM, reflecting potential losses as of RHP.
- CRM may only adjust the MRM upwards

	MRM class						
CRM class	MR 1	MR 2	MR 3	MR 4	MR 5	MR 6	MR 7
CR1	1	2	3	4	5	6	7
CR2	1	2	3	4	5	6	7
CR3	3	3	3	4	5	6	7
CR4	5	5	5	5	5	6	7
CR5	5	5	5	5	5	6	7
CR6	6	6	6	6	6	6	7

- How shall I revise my MRM over time?

Other

Liquidity risk

- Could you provide more clarification on 56 a, b and c?

Presentation SRI

- What if the text does not match the product?

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Questions…

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