EIOPA-BoS-19-593
16 December 2019

Report on insurers' asset and liability management in relation to the illiquidity of their liabilities

EIOPA — Westhafen Tower, Westhafenplatz 1 — 60327 Frankfurt — Germany — Tel. + 49 69-951119-20;
Fax. + 49 69-951119-19; email: info@eiopa.europa.eu site: www.eiopa.europa.eu

Contents

Executive summary

In April 2018, the European Commission submitted a request to the European Insurance and Occupational Pension Authority (EIOPA) for information ([1]) on insurers' asset management in relation to the illiquidity of their liabilities.

The request for information was made with the review of the Solvency II Directive 2009/138/EC by the end of 2020 in mind, especially in relation to the availability of long-term guarantees in insurance products, the behaviour of insurers as long-term investors and, more generally, financial stability. According to the request for information, it is important that insurers contribute to building a Capital Markets Union, unlocking funding for Europe's growth, and that insurers are able to offer Pan European Personal Pension products (PEPP).

The information requested by the European Commission is meant to supplement the information provided in EIOPA's annual reports on long-term guarantee measures and this information covers four areas:

- information on insurance liabilities;
- information on the asset management of insurers;
- information on long-term guarantee measures;
- information on the market valuation of insurance liabilities.

Data and process

In responding to the request for information, several data sources have been used, including the quantitative reporting templates provided regularly to EIOPA. In addition, information was collected separately from undertakings in spring 2018 and spring 2019. EIOPA also issued a questionnaire to national supervisory authorities on the areas of tax incentives and lapse rates. EIOPA wishes to thank undertakings and national supervisory authorities for their participation.

This report is a factual response to the European Commission's request for information. EIOPA published a consultation paper on its opinion ([2]) on the 2020 review of the Solvency II Directive. The information contained in this report will also be drawn upon by EIOPA as it develops technical advice. One aspect it will consider is the extent to which the prudential framework acknowledges the treatment of assets that are held against liabilities that are long term and illiquid.

The principle features of the information in EIOPA's report are outlined below.

Illiquidity of insurance liabilities

EIOPA has investigated the illiquidity of insurance undertakings from two different perspectives: a total-balance-sheet approach with a focus on how undertakings can hold on to their investments and a liability perspective that focuses on the predictability of the timing of the cash flows. These approaches are interconnected

([1]) https://eiopa.europa.eu/Publications/Requests%20for%20advice/Request%20for%20information%202018-04-25.pdf.
([2]) https://eiopa.europa.eu/Pages/Consultation-Paper-on-the-Opinion-on-the-2020-review-of-Solvency-II.aspx.

in the sense that illiquid (i.e. predictable) cash flows enable undertakings to hold on to their investments. However, being able to hold on to specific investments does not automatically imply illiquid liabilities, as the availability of cash or other liquid investments may enable undertakings to hold on to their other, illiquid, investments, as these liquid investments cover the risks stemming from liabilities that are not illiquid. Indeed no correlation is found between the extent to which insurers are able to avoid forced selling under stressed conditions and the proportion of liabilities that are illiquid.

EIOPA identifies features of insurance products that influence the illiquidity of liabilities. Such features include the existence of contractual options to redeem a contract, the exposure to lapse risk in general and the size of lapse rates, the existence of disincentives to redeem, the coverage of biometric risk and the contractual maturity.

EIOPA finds that the proportion of liabilities, measured on the basis that there are no surrender or cancellation options, is 15% of the best estimate. EIOPA finds that the average modified duration of insurance liabilities is 11.9 years. As might be expected, there is considerable variation in duration between lines of business, notably between non-life and life and other long-term businesses. Modified duration also varies between Member States depending on the proportion of long-term business.

In addition to the assessment based on contractual features, EIOPA also measured a 'degree' of illiquidity based on the sensitivity of cash flows to certain underwriting shocks in the Solvency II standard formula. Based on that methodology, EIOPA finds that the degree of illiquidity of the liabilities amounts to 72%. Again, there is variation across lines of business and between Member States.

Asset management

A key distinction is made between the length of an investment in individual assets and of an investment in an asset class when establishing the holding period of assets.

Regarding the former, EIOPA finds that, in general, insurers are not long-term investors in individual assets. For example, on average, over the course of a year, insurers sell 29% of their equities, 15% of their corporate bonds and 16% of their government bonds.

However, undertakings tend to set investment targets (e.g. that a certain percentage is kept in equity or bonds). These targets are typically rather stable.

Furthermore, a distinction is made between actual observed investment practices in the past and undertakings' capacity to hold on to investments in times of distress, which may be more relevant from an (il)liquidity perspective.

In this respect, EIOPA found that, if needed, 58% of insurers can hold on to their equity investments for at least 5 years under instantaneous stress.

It was however observed that the majority of undertakings follow an active investment strategy focusing on specific target returns to achieve higher returns than the market. This was observed for all types of undertakings.

It would however be expected that the asset and liability management of insurers would be dependent on the economic environment.

Long-term guarantee measures

Matching adjustment

The matching adjustment (MA) is applied only in Spain and the UK. In the UK, 58% of MA assets are corporate bonds and 21% are government bonds. Mortgages and loans account for 15%. In Spain, government bonds represent more than 80% and are predominantly issued in the own country.

Assets held in special purpose vehicles account for just under 10% in the UK. Derivatives used in UK portfolios relate to the management of interest rate risk, currency risk and inflation risk. In the Spanish market, derivatives (swaps) are used for the management of interest rate risk and are important in several undertakings to adjust the matching among assets and liabilities.

In the UK, around 66% of all MA assets are externally rated and 31% are internally rated. The overwhelming majority of internally rated assets originate from undertakings with approved internal models for credit risk. In the Spanish market, there are no internal ratings in the MA portfolios. Most of the MA assets are of quality step 2 (70%), followed by assets of quality step 3.

Volatility adjustment

In the currency representative portfolios, most of the assets are denominated in euros: 86% of government bonds and 79% of corporate bonds. Assets denominated in pounds sterling and US dollars amount to a further 10% of government bonds and 14% of corporate bonds. In the corporate bond portfolios, direct corporate bond investments constitute around 60% of assets, followed by collective investment undertakings (CIUs) and mortgages and loans.

In the corporate bond portfolios, more than 40% of assets carry no rating or credit quality step information. For the remaining part, most assets are contained in credit quality steps 0 to 3, with less than 1.5% of assets with credit quality 4 or less.

For CIUs, a look-through approach is applied if the sum of the Solvency II values of the reported underlying assets matches the Solvency II value of the CIU asset. This is the case in 71% of all CIU assets.

Actual yield

At the European level, and for all of the corporate and government bonds included in the analysis, the average total gain or loss reported by the undertakings for 2018, in relation to the asset values at the beginning of the year, amounts to 0.9%, compared with 2.2% in 2017. This decrease is mainly driven by a decrease

in unrealised gains and losses in 2018, which was triggered by a more adverse development of spreads during that year.

For the MA, the gross redemption yield on the portfolios amounts to, on average, 2.55% in the UK and to 2.15% in Spain. During 2018, only a few cases of defaults or downgrades of assets in MA portfolios were observed, no one of them in Spain.

Dynamic volatility adjustment

Some insurers using internal models implemented a dynamic volatility adjustment (DVA), that is, they anticipate volatility adjustment (VA) changes in the 1-year forecast for the Solvency Capital Requirement (SCR) calculation. Such models were approved only if all credit risks were modelled, including sovereign risk. Insurers using the SCR standard formula have to assume a constant volatility adjustment (CVA), but do not have to consider credit risk (especially not spread risk) on European government bonds.

The weighted average 'net DVA impact' (i.e. subtracting ([3]) the impacts of CVA and of introducing sovereign risk beyond standard formula requirements) is –3.3% relative to the SCR without VA for solo undertakings and is –4.9% for groups. For 75% of the solo sample, the effect is weaker than –10%. Single data points with a net impact stronger than –10% were found to have comparably strong credit spread calibrations before DVA.

The weighted average gross DVA impact (i.e. from 'switching on' the VA) is –23.6% for solo undertakings and –20.3% for groups under the baseline year-end 2018 and ranges from +0.1% to –61.2% for solo undertakings. These relative reductions were also analysed under a spread-widening scenario and a spread-tightening scenario.

The variation on the solo entity level was analysed regarding several dimensions, but no obvious pattern was observed.

Market valuation of insurance liabilities

For portfolios that remain both open and closed to new business post transfer, the figures provided do not show systematic miscalibration of the technical provisions compared with transfer values.

For portfolios in run-off post transfer, the reason for the deviation between the value of assets and liabilities is the individual particularities of each transfer. EIOPA observed more divergence for transactions of books that will remain open to new business post transfer. The value of assets transferred is higher than the technical provisions in all cases.

Owing to the limited number of transactions available (44 since the introduction of Solvency II), care should be taken in drawing any conclusions.

([3]) Please note that this calculation is indeed a subtraction of impacts and is not determined using a model configuration in which the DVA would be used without sovereign risk.

Glossary

Acronym	Description
AHP	average holding period
ALM	asset and liability management
BEL	best-estimate liability
bps	basis points
CfI	call for information
CIU	collective investment undertaking
CQS	credit quality step
CVA	constant volatility adjustment
DVA	dynamic volatility adjustment
EEA	European Economic Area
EIOPA	European Insurance and Occupational Pension Authority
FDB	future discretionary benefit
GRY	gross redemption yield
GWP	gross written premium
LTG	long-term guarantee
MA	matching adjustment
NSA	national supervisory authority
QRT	quantitative reporting template
SAA	strategic asset allocation
SCR	Solvency Capital Requirement
SPV	special purpose vehicle
VA	volatility adjustment
YTM	yield to maturity

Introduction

EIOPA is responding to the European Commission's request for information on insurers' asset and liabilities under the Communication from the Commission to the European Parliament and the Council — Implementation of Article 290 of the Treaty on the Functioning of the European Union (the '290 Communication'), the Regulation of the European Parliament and of the Council establishing a European Insurance and Occupational Pensions Authority (the EIOPA Regulation), the Framework Agreement on relations between the European Parliament and the European Commission (the 'Framework Agreement') and the inter-institutional agreement on better law-making.

List of figures

List of tables

1. Information on insurance liabilities

The request for information from the European Commission in February 2019 asked, in section 3.1, for information on insurance liabilities, as follows:

> EIOPA is asked to provide detailed information on the liquidity of insurance undertakings' liabilities, taking into account at least the following:
> - Contractual options to (partially) redeem those liabilities before maturity;
> - The related contractual penalties;
> - The related tax incentives;
> - The coverage of biometrical risks;
> - Their average duration in practice.
>
> This information should be provided at a sufficient level of granularity, and as a minimum it should be broken down by different types of products. In addition, regional diversification should be reported on where relevant divergence can be observed.

Key to the Solvency II Directive is to ensure policyholder protection and make sure that insurers fulfil their commitments. Solvency II intends to ensure that via a market-consistent balance sheet (with technical provisions being calculated on a transfer value basis) and by requiring insurers to hold sufficient capital to cope with a 1 in 200 stress event.

The main intent of a framework based on a market-consistent valuation reflecting risk-sensitive capital requirements is to ensure that liabilities can always be transferred owing to sufficient assets being available covering the insurance obligations. Risk-sensitive capital requirements thereby ensure that even if a 1 in 200-year stress event occurs, insurance business can still be performed.

The market-consistent valuation of the balance sheet implies that all changes in asset prices and other market/interest rate risks that an undertaking is exposed to are reflected in the own funds of the insurance undertakings. An insurance undertaking that invests in assets for the longer term experiences volatility in its own funds because of this exposure to market risks. A question is if this volatility in own funds adequately reflects the risks of long-term investing by insurance undertakings. However, even when assets and liabilities are determined on the basis of current market values and the risk measurement is based on a 1-year time horizon, Solvency II ensures that risks are adequately managed over time, in particular for long-term business, as it makes all risks transparent and thus allows early reaction. In addition, because undertakings have an interest in stabilising their solvency position, they have to actively cope with their risks (e.g. by managing their asset and liability management (ALM) mismatch).

That said, it is not sufficient to only analyse the assets and their actual holding period to assess the risks an undertaking is exposed to. Instead, it has to be considered if insurers — owing to the characteristics of their liabilities — are able to hold on to their assets in the future. This reinstates the necessity to assess the insurance liabilities and their characteristics: **which characteristics enable**

undertakings to hold on to their assets or, vice versa, do some characteristics of insurance liabilities limit the ability of insurers to invest long term?

A key consideration is therefore to identify characteristics of liabilities that enable insurers to invest long term (i.e. by allowing them to decide the time of buying and selling), avoiding situations of forced sales of assets — the so-called illiquidity characteristics of insurance liabilities.

A definition of illiquidity in the context of insurance liabilities is proposed as follows:

> **Insurance liabilities are considered illiquid over a given period when they allow the insurer to hold assets for this period with a very low risk of forced selling. This property depends on the timing and the predictability of the liability cash flows that in turn are influenced by product features such as surrender options.**

As a first step, potential illiquidity characteristics of the insurance liabilities were identified. Therefore, these characteristics would have an impact on the extent to which insurance liabilities are predictable in amount and time. In particular, the following characteristics were identified.

Contractual options to redeem: when insurance contracts include options to withdraw money from the undertaking (e.g. by cancelling or surrendering), this has direct implications on insurers' ability to hold on to assets. Undertakings therefore need to be aware of insurance contracts' characteristics and the existence of such options and their concrete design.

Disincentive to redeem: the existence of any disincentives to cancel or surrender a contract has implications on the number of redemptions either because it limits the occurrence of the lapse events or because it limits their effect (e.g. when undertakings need to pay less when a contractual penalty applies). The following list of disincentives are considered:

- the related contractual penalties;
- the related tax incentives;
- other disincentives.

Exposure to lapse risk: this characteristic is related to the first one, as the existence of contractual options to surrender or cancel a contract has implications on the insurance undertaking's exposure to lapse risk, which has implications on the amount and timing of cash flows.

Lapse rates: the lapse rates are a direct indicator of the exposure to lapse risk and can also be assessed separately.

Coverage of biometrical risks: when contracts cover material biometrical risks, not only does the contract contain a savings component, but also the policyholder loses coverage of biometrical risks when cancelling or surrendering the contract. This can have the consequence that the policyholder reconsiders lapsing, as it may not be easy to find immediate insurance cover as a replacement. The existence of

biometrical risk coverage may therefore have an influence on the risk of policyholders cancelling or surrendering the contract. In addition, the existence of biometrical risks has a direct impact on the predictability of cash flows and their timing. When these materialise, cash flows can occur earlier than expected.

Average duration in practice: the average duration of insurance liabilities is reflective of the expected liability profile, including expected lapse rates and other underwriting risks. It is used by undertakings in their ALM directly and influences investment decisions.

Actual contractual maturity: the maturity of a contract and the perspective with which a policyholder signs a contract may also have an impact on lapse risk. Therefore, it has direct implications on the ALM and investment decisions, similar to the duration.

Share of future discretionary benefits and future premiums: future discretionary benefits (FDBs) typically vary with financial markets changing and are thus less predictable than guaranteed benefits. Still, the presence of FDBs can serve to limit liquidity constraints and may therefore have a positive impact on undertakings' ability to hold their assets. Future premiums expose the undertaking to an additional risk, namely that the policy is turned into a paid up status. This risk is different from the surrender of a contract and may make a difference in view of liquidity considerations.

Information on these individual characteristics is provided in section 1.1. Then, in section 1.2, EIOPA proposes a method for measuring the illiquidity of insurance liabilities to condense that information.

1.1. Characteristics of insurance liabilities

Several data sources have been used to assess the characteristics of insurance liabilities as outlined above. Some of the information was directly taken or derived from information that is available in the regular quantitative reporting template (QRT) (e.g. the information on the duration of liabilities that was derived on the basis of the cash flow information in S.13 and S.18). Other information, such as the exposure to lapse risk or the existence of tax disincentives, is not available in the QRT. This was assessed by the help of information requests.

Information requests to undertakings

EIOPA collected information from undertakings in spring 2018 and spring 2019, jointly with the information requests put forth by the long-term guarantees (LTGs) PG. For confidentiality reasons ([4]), the level of granularity of the information provided in this report depends on the number of submissions per country and the type of undertakings.

The scope of participants of the information request in 2018 was identical to the scope of participants of the information request on products whose results were reflected in the LTG report 2018. The information collected provides useful

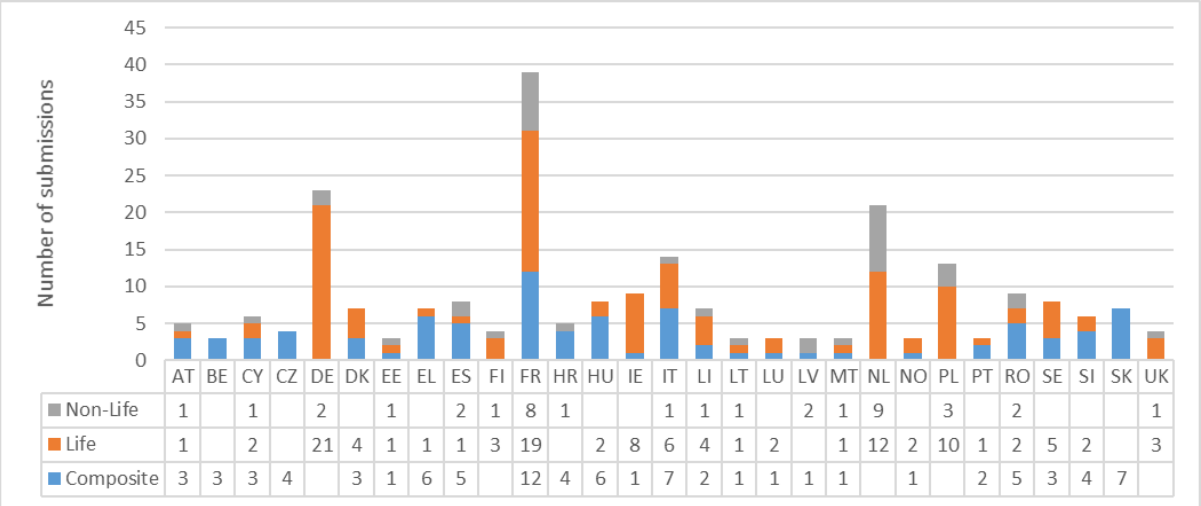
([4]) When information is provided for less than three undertakings, information is not disclosed.

information, such as typical contractual maturity, if products face lapse risk, the typical time to the first opportunity for cancellation/surrender by policyholders, the annual cancellation/surrender rates and the disincentives for exercising cancellation/surrender options. The collected information is based on year-end 2017 and covers life, composite and reinsurance undertakings. As a result, 235 solo undertakings from 26 countries participated in the first information request ([5]).

In spring 2019, EIOPA launched another information request with a different scope: the sample of participants was selected such that at least 50% of the total best estimate would be covered in each national market and would extend to other types of undertakings (not non-life undertakings). As a result, 238 solo undertakings from 30 countries participated in the information request. The sample is composed of 114 life, 38 non-life and 86 composite undertakings. It should be noted that, for some countries (e.g. UK), the sample is not considered sufficient to provide representative results.

The number of submissions per country and the lines of business of the undertakings covered in that information request are displayed in Figure 1.

Figure 1: Number of submissions per country and the lines of business (EIOPA request for information 2019)



	AT	BE	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LI	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	UK
Non-Life	1		1		2		1		2	1	8	1			1	1	1		2	1	9		3		2				1
Life	1		2		21	4	1	1	1	3	19		2	8	6	4	1	2		1	12	2	10	1	2	5	2		3
Composite	3	3	3	4		3	1	6	5		12	4	6	1	7	2	1	1	1	1		1		2	5	3	4	7	

Table 1 displays, for the undertakings submitting results for the information request, the relevance of each line of business, measured in terms of best-estimate liabilities (BELs) ([6]).

([5]) See also page 64 of the LTG report 2018: https://eiopa.europa.eu/Publications/Reports/2018-12-18%20_LTG%20AnnualReport2018.pdf.
([6]) Total best-estimates as reflected in R0030 in S.12.01.01 and R0060 and R0160 in S.17.01.01 in the QRT.

Table 1: BELs per line of business (EIOPA request for information 2019)

	Billion euros	Percentage
Insurance with profit participation	2,707.6	69
Index-linked and unit-linked insurance	700.0	18
Other life insurance	269.8	7
Accepted reinsurance	55.1	1
Annuities stemming from non-life contracts	14.9	0.4
Health insurance	62.3	2
Health reinsurance	5.1	0.
Best-estimate claim provisions (gross)	123.9	3
Best-estimate premium provisions (gross)	12.5	0.3
Total	3,951.2	100

As can be seen from the results, the major focus in this information request was on life undertakings. However, non-life undertakings were also included. The best estimate is predominated by insurance with profit business but also a relevant share of unit- and index-linked business. However, the sample varies by country.

Finally, to better understand the tax disincentives in each jurisdiction and the interaction between tax disincentives and lapse rates, per line of business, national supervisory authorities (NSAs) were asked for input. EIOPA sent a questionnaire to NSAs and collected that information.

Contractual options to redeem a contract

Presence of surrender/cancellation options and related disincentives

This section outlines the results provided in the spring 2019 information request, in which undertakings were asked to provide information on the share of their best estimate, by line of business, when:

i. no surrender/cancellation options exist;
ii. the surrender value never exceeds the value of the assets ([7]);
iii. surrender/cancellation options exist and no disincentives apply ([8]);
iv. surrender/cancellation options exist, but tax disincentives apply ([9]);
v. surrender/cancellation options exist and surrender penalties apply ([10]);
vi. surrender/cancellation options exist and other disincentives apply ([11]).

The information request in 2018 also assessed the existence of disincentives to surrender. As the information request in 2019 is more granular and allows an assessment in terms of the volume of the best estimate, the following analysis in this section is exclusively based on the data received from the information request in 2019.

Tables 2-5 and Figure 2 outline the lines of business, measured as best estimates, with the different surrender and cancellation characteristics (i-vi) outlined above.

Table 2 provides information on the share of businesses for which no options to surrender or cancel the contract is possible (option i). Figure 2 includes a visualisation of the results for the most relevant lines of business.

([7]) Surrender/cancellation is possible, but the surrender value will never exceed the value of the assets covering the obligations when the surrender option is exercised.
([8]) Surrender/cancellation is possible and no disincentives to surrender (factors that make exercising a surrender/cancellation option less attractive for the policyholder) exist.
([9]) Surrender/cancellation is possible, but a less favourable tax treatment exists or the policyholder would suffer a loss of subsidies from the state.
([10]) Surrender/cancellation is possible, but a discount applies (surrender/cancellation penalty).
([11]) Surrender/cancellation is possible, but other disincentive(s) than those mentioned above (tax disincentives, surrender/cancellation penalty) apply.

Table 2: Share of total BELs ([12]) with no surrender cancellation options

	Line of business ([13])								
	Total	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total	**15%**	**12%**	**12%**	**32%**	**36%**	**73%**	**95%**	**51%**	**73%**
AT	**15%**	10%	19%	–17%	n/a	n/a	89%	n/a	100%
BE	**10%**	2%	0%	n/a	n/a	n/a	50%	n/a	100%
CY	**0%**	0%	0%	32%	n/a	n/a	–1%	n/a	0%
CZ	**12%**	2%	0%	–2%	n/a	n/a	n/a	n/a	100%
DE	**15%**	10%	6%	7%	99%	n/a	110%	n/a	133%
DK	**6%**	11%	1%	40%	n/a	n/a	9%	n/a	n/a
EE	**15%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
EL	**8%**	5%	1%	0%	n/a	n/a	15%	n/a	48%
ES	**6%**	0%	37%	6%	n/a	n/a	n/a	n/a	65%
FI	**28%**	39%	12%	n/a	n/a	n/a	n/a	n/a	n/a
FR	**16%**	13%	10%	57%	33%	66%	88%	38%	60%
HR	**9%**	0%	0%	0%	n/a	n/a	n/a	n/a	78%
HU	**2%**	0%	0%	32%	n/a	97%	–57%	n/a	34%
IE	**43%**	n/a	–7%	87%	44%	n/a	n/a	n/a	n/a
IT	**6%**	1%	0%	285%	100%	n/a	n/a	n/a	75%
LI	**3%**	n/a	0%	81%	n/a	n/a	n/a	n/a	n/a
LT	**60%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
LU	**24%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
LV	**34%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MT	**30%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
NL	**54%**	65%	50%	44%	n/a	n/a	91%	32%	95%
NO	**24%**	21%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PL	**7%**	6%	5%	–6%	n/a	100%	16%	n/a	103%
PT	**5%**	2%	0%	4%	n/a	n/a	n/a	n/a	n/a
RO	**–2%**	3%	2%	95%	n/a	100%	n/a	n/a	–6%
SE	**31%**	50%	14%	378%	n/a	n/a	n/a	n/a	100%
SI	**13%**	5%	0%	–46%	n/a	100%	n/a	n/a	69%
SK	**53%**	39%	0%	103%	n/a	n/a	5%	n/a	n/a
UK	**6%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

The table shows significant divergences between countries. In contrast to an average of 15%, the share of best estimates with no surrender/cancellation options is the highest in Lithuania (60%), Netherlands (54%), Slovakia (53%) and Ireland (43%), whereas it is negative for Romania. Non-life premium provisions, annuities stemming from non-life contracts and health insurance are the lines of business with the highest share of BELs referring to contracts that cannot be contractually redeemed. Liabilities arising both from insurance with profit

([12]) Figures can exceed 100% when undertakings report negative best-estimate values for parts of their business.

([13]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

participation and from index- and unit-linked insurance have a share of 12% of best estimates with no surrender/cancellation options.

Table 3 outlines the share of businesses for which no lapse risk exists, either because no surrender or cancellation exist or because the surrender value never exceeds the value of the assets (option ii).

Table 3: Share of total BELs ([14]) not exposed to lapse risk

	Line of business ([15])								
	Total	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total	**34%**	**20%**	**80%**	**56%**	**37%**	**74%**	**99%**	**51%**	**77%**
AT	**29%**	30%	19%	-17%	n/a	n/a	89%	n/a	100%
BE	**29%**	4%	99%	n/a	n/a	n/a	100%	n/a	100%
CY	**37%**	0%	59%	145%	n/a	n/a	5%	n/a	31%
CZ	**60%**	48%	100%	80%	n/a	n/a	n/a	n/a	100%
DE	**29%**	21%	55%	8%	99%	n/a	111%	n/a	133%
DK	**79%**	66%	94%	51%	n/a	n/a	51%	n/a	n/a
EE	**79%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
EL	**52%**	42%	68%	74%	n/a	n/a	36%	n/a	52%
ES	**67%**	41%	38%	75%	n/a	n/a	n/a	n/a	65%
FI	**84%**	99%	73%	n/a	n/a	n/a	n/a	n/a	n/a
FR	**33%**	16%	98%	54%	33%	66%	88%	38%	60%
HR	**83%**	100%	100%	100%	n/a	n/a	n/a	n/a	78%
HU	**77%**	56%	100%	95%	n/a	100%	–419%	n/a	90%
IE	**99%**	n/a	100%	100%	100%	n/a	n/a	n/a	n/a
IT	**10%**	4%	15%	289%	100%	n/a	n/a	n/a	75%
LI	**99%**	n/a	100%	100%	n/a	n/a	n/a	n/a	n/a
LT	**112%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
LU	**90%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
LV	**90%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MT	**30%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
NL	**59%**	67%	66%	46%	n/a	n/a	98%	32%	93%
NO	**33%**	21%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PL	**66%**	39%	100%	21%	n/a	100%	77%	n/a	100%
PT	**5%**	2%	100%	4%	n/a	n/a	n/a	n/a	n/a
RO	**46%**	76%	78%	29%	n/a	100%	n/a	n/a	-6%
SE	**73%**	73%	73%	100%	n/a	n/a	n/a	n/a	100%
SI	**88%**	81%	98%	43%	n/a	100%	n/a	n/a	100%
SK	**59%**	39%	35%	105%	n/a	n/a	5%	n/a	n/a
UK	**51%**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

([14]) Figures can exceed 100% when undertakings report negative best-estimate values for parts of their business.

([15]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

The average of best estimates not exposed to lapse risk is equal to 34% at the European level. In addition, in this case, the dispersion around the average is extremely high: Lithuania, Liechtenstein and Ireland are the countries with the largest share of best estimates without lapse exposure. Portugal and Italy reported particularly low figures. Again, best estimates not exposed to lapse risk are mostly concentrated in the following lines of business: non-life premium provisions, annuities stemming from non-life contracts and health insurance and, as expected, index- and unit-linked insurance.

For those contracts that are exposed to lapse risk, because they have options to surrender or cancel or their surrender value can exceed the value of the corresponding assets, the information on the share of best estimates according to different disincentives to redeem has been collected. In particular, the information can be differentiated into the following: a business without any disincentive, a business for which there is a tax disincentive, a surrender penalty or any other disincentive. In some cases, multiple disincentives may apply to a single contract. Therefore, it is also possible to deduct the share of the liabilities that have one disincentive or more disincentives.

Tables 4 and 5 provide an overview of the liabilities carrying a disincentive, with differentiation by line of business or country. Figure 2 displays the results by country to assess the dispersion by country.

Table 4: Share of total BELs per type of disincentive per line of business

	Tax disincentive	Surrender penalty	Other disincentive	No disincentive
Insurance with profit participation	35%	22%	11%	26%
Index-linked and unit-linked insurance	6%	8%	1%	9%
Other life insurance	33%	9%	1%	5%
Accepted reinsurance	33%	0%	14%	17%
Annuities stemming from non-life contracts	0%	0%	0%	26%
Health insurance	1%	0%	–2%	2%
Health reinsurance	0%	0%	1%	48%
Best-estimate claim provisions (gross)	n/a	n/a	n/a	n/a
Best-estimate premium provision (gross)	0%	0%	0%	22%
Total	**27%**	**17%**	**8%**	**20%**

Figure 2: Share of total BELs per type of disincentive per country

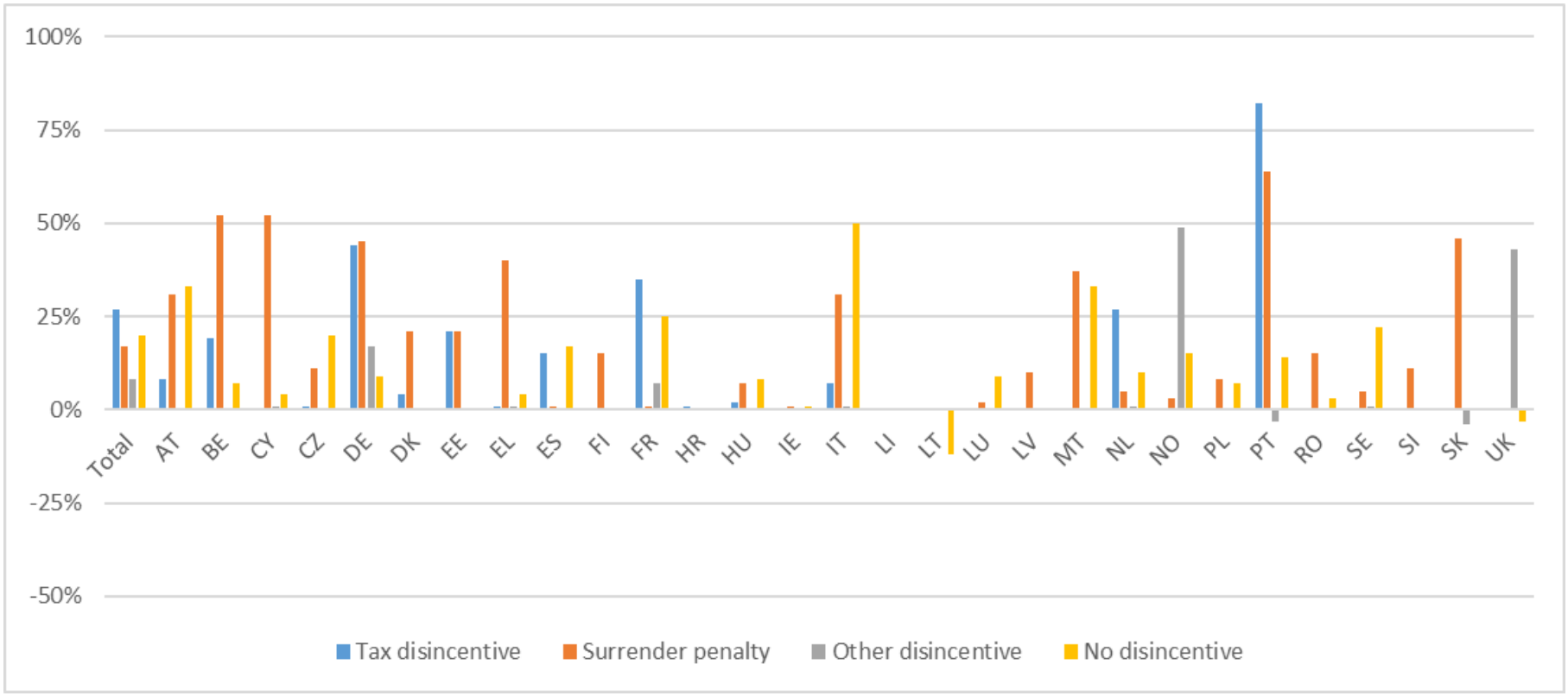


Table 5: Share of total BELs ([16]) per type of disincentive per country

	Tax disincentive	Surrender penalty	Other disincentive	No disincentive
Total	**27%**	**17%**	**8%**	**20%**
AT	8%	31%	0%	33%
BE	19%	52%	0%	7%
CY	0%	52%	1%	4%
CZ	1%	11%	0%	20%
DE	44%	45%	17%	9%
DK	4%	21%	0%	0%
EE	21%	21%	0%	0%
EL	1%	40%	1%	4%
ES	15%	1%	0%	17%
FI	0%	15%	0%	0%
FR	35%	1%	7%	25%
HR	1%	0%	0%	0%
HU	2%	7%	0%	8%
IE	0%	1%	0%	1%
IT	7%	31%	1%	50%
LI	0%	0%	0%	0%
LT	0%	0%	0%	–12%
LU	0%	2%	0%	9%
LV	0%	10%	0%	0%
MT	0%	37%	0%	33%
NL	27%	5%	1%	10%
NO	0%	3%	49%	15%
PL	0%	8%	0%	7%
PT	82%	64%	–3%	14%
RO	0%	15%	0%	3%
SE	0%	5%	1%	22%
SI	0%	11%	0%	0%
SK	0%	46%	–4%	0%
UK	0%	0%	43%	–3%

The tax disincentive is the most common disincentive to surrender for contracts exposed to lapse risk (27% of best estimates). However, this disincentive is available in only some countries (mainly Portugal, Germany, France, Estonia and a few others). Surrender penalties are also commonly used by undertakings to mitigate their lapse exposure (17%), while the use of other forms of disincentives is residual (8%). It should be noted, however, that a significant part of best estimates (20%) refer to contracts for which there is no disincentive to surrender.

([16]) Figures can exceed 100% when undertakings report negative best-estimate values for parts of their business.

Tax disincentives on lapse and surrender

Although the quantitative data allow the share of businesses for which tax disincentives apply to be determined, they do not allow a better understanding to be gained of how these tax disincentives are designed and how material they are. Therefore, a dedicated questionnaire has been sent to NSAs with responses from all countries in the European Economic Area (EEA).

Any tax feature of the insurance product that causes a reduction in the surrender rate is considered a tax disincentive for the purpose of this analysis. The main tax disincentives outlined by NSAs include losing the benefit of tax deductible premiums or reduced taxation of gains (or both).

Tax disincentives exist mainly in the following lines of business: insurance with profit participation and index-linked and unit-linked business. The majority of those tax disincentives are limited in maturity (but also lifelong disincentives are present and play an important role).

To assess if the existing tax disincentives play a material role, in particular if they have an impact on expected lapse rates, the questionnaire also included a question on whether or not undertakings take these tax disincentives into account when valuing their technical provisions.

Regarding insurance with profit participation, of the 18 NSAs that reported having tax disincentives in this line of business, only six (Belgium, the UK, Luxembourg, Hungary, France and Ireland) reported that these disincentives are reflected in the valuation of the best estimate of the liabilities.

In relation to index-linked and unit-linked business, only four NSAs (the UK, France, Luxembourg and Ireland), of the total 18 having tax disincentives in this line of business, reported that these disincentives are reflected in the valuation of the best estimate of the liabilities.

NSAs outlined that the parameterisation of the lapse rates that is used as an input into the valuation of technical provisions is derived based on past lapse experience and past observed lapse rates. Thus, the impact of the existence of any tax disincentives is already implicitly included in the lapse rates used to calculate the best estimate and this impact does not need to be separately model.

The NSAs did not provide any further input that would help in assessing the relevance of any existing tax disincentives for lapse rates and lapse risk for the other lines of business (non-life, annuities stemming from non-life contracts, other life insurance and health insurance).

The NSAs were also asked to identify other disincentives they deem to have a relevant impact on the exercise of surrender options. The existence of surrender penalties/expenses was the most common response in this respect.

Table 6 summarises the feedback received by NSAs on whether tax disincentives exist, differentiating by line of business.

Table 6: Existence of tax disincentives per line of business per country

Line of business ([17])							
	General	**1**	**2**	**3**	**4**	**Non-life**	**Health insurance**
AT		**YES**	**YES**	**YES**	NO	NO	NO
BE		**YES**	**YES**				
CY		**YES**	**YES**	**YES**	NO	NO	NO
CZ		**YES**	**YES**	**YES**	NO	NO	NO
DE		**YES**	**YES**	NO			NO
DK		**YES**	**YES**	**YES**			
EE		**YES**	**YES**	NO	NO	NO	NO
EL	**NO**						
ES		**YES**	NO	**YES**		NO	
FI		**YES**	**YES**	NO	NO	NO	NO
FR		**YES**	**YES**				
HR		NO	NO	NO	NO	NO	NO
HU		**YES**	**YES**	NO	NO	NO	NO
IE		**YES**	**YES**				
IS			**YES**				
IT	**YES**						
LI	**NO**						
LT		**YES**	**YES**			NO	**YES**
LU		**YES**	**YES**				
LV		**YES**	**YES**	**YES**	NO	NO	YES
MT							
NL	**YES**						
NO							
PL		NO	**YES**	NO	NO	NO	NO
PT		**YES**	NO	**YES**	NO	NO	**YES**
RO		**YES**					
SE		**YES**					
SI		**YES**	**YES**	**YES**			**YES**
SK							
UK		**YES**	**YES**	NO	NO	NO	NO

([17]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, annuities stemming from non-life contracts.

Exposure to lapse risk

This section outlines the results provided in the spring 2019 information request, in which undertakings were asked to provide information on the share of best estimates by line of business for those obligations being exposed to the relative lapse up and mass lapse scenarios in Article 142 of the Solvency II Delegated Regulation. For non-life provisions, the mass lapse exposure as referred to in Article 118 of the Solvency II Delegated Regulation was considered.

Table 7 outlines the results by line of business and country in terms of best estimate.

Table 7: Share of total BELs exposed to lapse risk

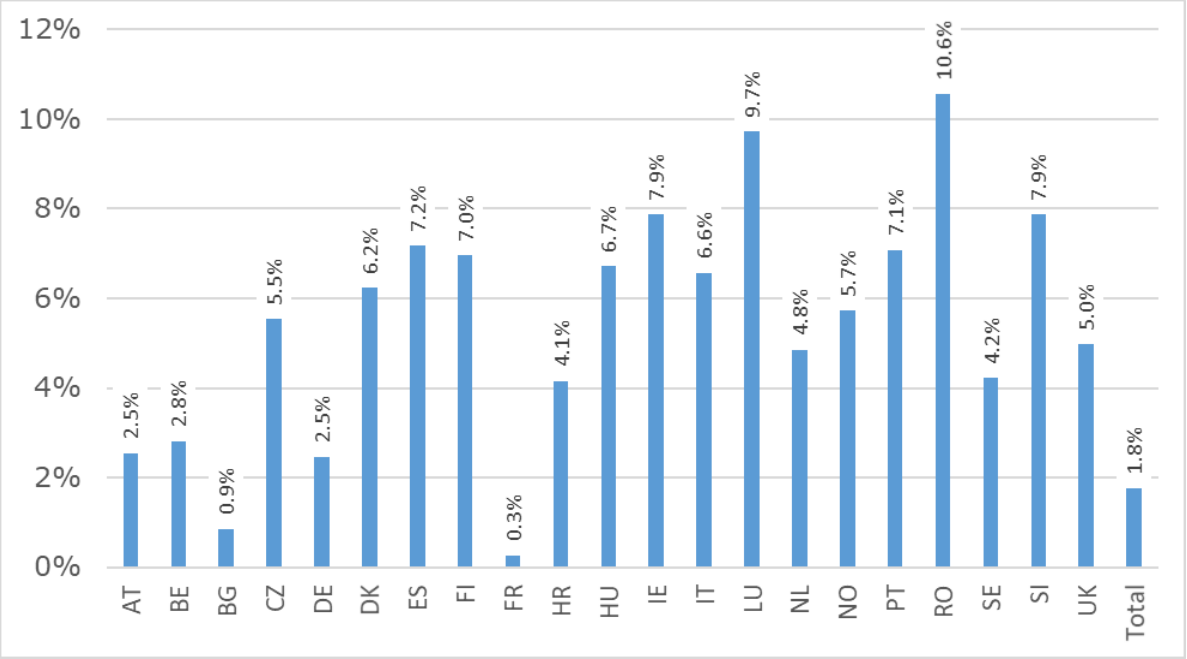
	BEL exposed to mass lapse	BEL impact on mass lapse	BEL exposed to relative lapse up	BEL impact on relative lapse up
Total	**50%**	**7%**	**63%**	**6%**
AT	18%	2%	63%	44%
BE	48%	2%	53%	1%
CY	n/a	n/a	n/a	n/a
CZ	43%	9%	39%	5%
DE	69%	1%	68%	1%
DK	n/a	n/a	n/a	n/a
EE	n/a	n/a	n/a	n/a
EL	43%	7%	39%	6%
ES	36%	13%	39%	15%
FI	80%	55%	38%	3%
FR	40%	2%	69%	12%
HR	53%	39%	53%	38%
HU	73%	9%	66%	12%
IE	16%	1%	13%	2%
IT	61%	7%	80%	6%
LI	n/a	n/a	n/a	n/a
LT	48%	20%	38%	14%
LU	72%	0%	71%	0%
LV	n/a	n/a	n/a	n/a
MT	43%	-14%	48%	1%
NL	22%	1%	25%	0%
NO	78%	32%	58%	11%
PL	61%	27%	60%	25%
PT	77%	17%	68%	16%
RO	24%	16%	24%	14%
SE	59%	3%	54%	1%
SI	46%	24%	36%	19%
SK	45%	18%	45%	15%
UK	n/a	n/a	n/a	n/a

Analysis of lapse rates

The historical annual cancellation/surrender rates by product was provided by the undertakings participating in the information request in spring 2018.

This information provides an indication about the frequency with which policyholders have exercised any surrender/cancellation options in the past. Where available, the average annual surrender/cancellations rates for the last 5 financial years was provided.

Figure 3: Average annual surrender/cancellations rates for the last 5 years per country



At the European level, the historical lapse rate from the studied sample is 1.8%. The level lapse rate varies significantly from one country to the other: while it is close to zero (0.3%) in France, it is 10.6% in Romania. This discrepancy in the experienced lapse rates could be explained by several factors: the differences in the European insurance markets, contractual obligations or disincentives to cancellation (such as tax disincentives).

The link between lapse rates and the presence of disincentives

EIOPA investigated if there is any observable relationship between the presence of any disincentives for cancellation/surrender and the surrender/cancellation rate to find evidence, that is, if the presence of disincentives has an impact on surrender/cancellation rates.

This analysis was possible because the results from the information request in spring 2018 captured both information on the existence of disincentives and information on the lapse rate, as outlined above.

On the disincentives, undertakings had to indicate any factor that makes exercising a surrender/cancellation option less attractive for the policyholder, whether as part of the contract (e.g. lapse discount) or not (e.g. less favourable tax treatment). Their response could include one or more of the following:

- no disincentives to cancellation;

- lapse discount;
- less favourable tax treatment;
- loss of subsidies (from state, employer, etc.);
- less favourable conditions for a new contract owing to possible deterioration in health;
- other (please explain).

In addition, undertakings had to provide information on the typical length of time it took for the first opportunity for cancellation/surrender by the policyholder to arise. At the EEA level, 97% of the products (in terms of the percentage of gross written premium (GWP)) can be cancelled within the first 5 years.

EIOPA assessed whether or not any correlation exists between the level of surrender rates and the existence of disincentives for those contracts for which the first contractual opportunity to surrender is less than 5 years (i.e. the overwhelming majority of the sample). Solid evidence, however, could not be found on the basis of the data in question.

A comparison of historical surrender rates for products according to their surrender disincentives is provided in Table 8.

Table 8: Average surrender/cancellation rate depending on disincentives by typical contractual maturity (products with first surrender/cancellation opportunity of less than 5 years)

Typical contractual maturity	All	Of which there were no disincentives for cancellation	Of which there were tax disincentives	Of which there were other disincentives for cancellation
<5 years	8%	7%	6%	8%
5-10 years	7%	6%	6%	7%
10-15 years	3%	3%	5%	3%
15-20 years	5%	5%	5%	4%
>20 years	3%	2%	5%	3%
Lifelong	6%	7%	4%	6%

These figures obviously display no strong connection between surrender rates and the existence of disincentives to surrender.

Analysis of lapse rates during financial crisis

EIOPA sent a dedicated questionnaire to NSAs to determine the evolution of lapse rates during the financial crisis of 2008 and 2009.

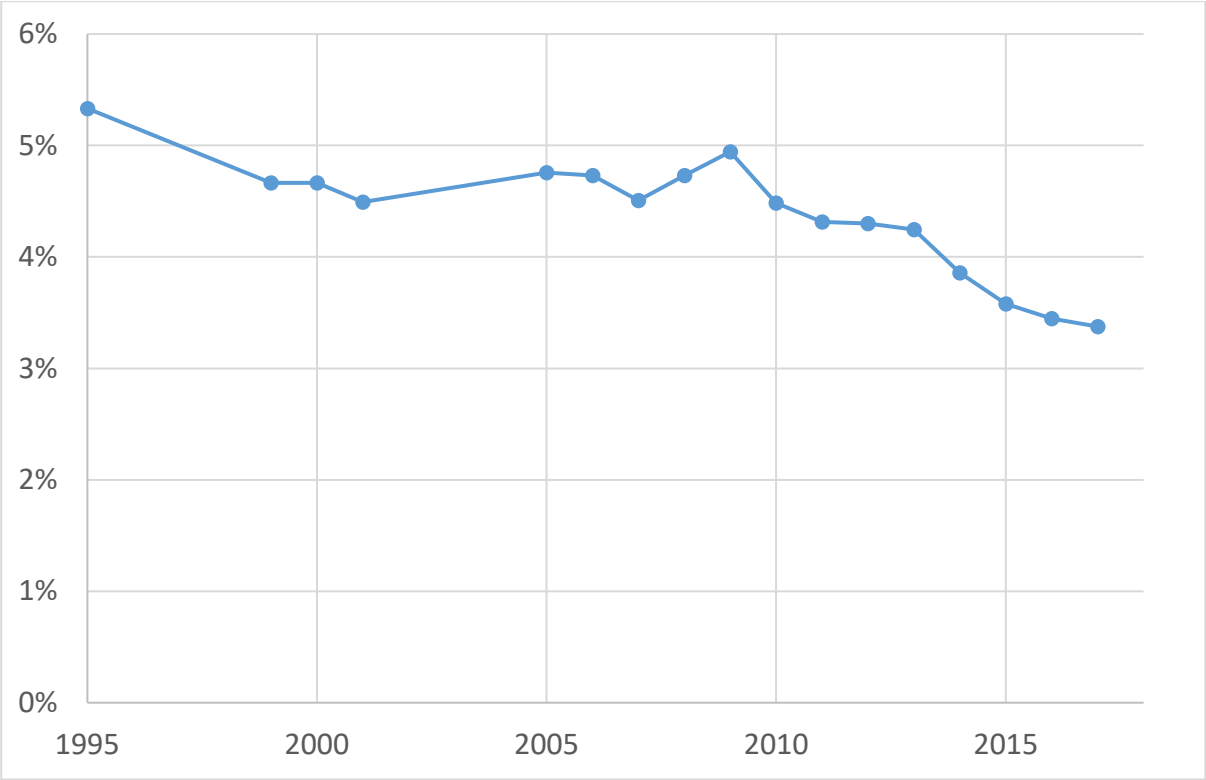
Of the 12 Member States that provided responses to this questionnaire, France, Portugal, the UK, Germany, Iceland, Slovenia, Italy, the Netherlands and Liechtenstein provided data on this particular question.

The answers received highlight that policyholders' behaviour is heterogeneous.

The other three Member States that responded clearly had no impact at this level.

One of the Member States that did provide data provided historical information on surrender rates for the life insurance industry (therefore reflecting all types of life insurance business, such as savings, annuity and protection). Figure 4 illustrates the historical evolution of surrender rates for this country.

Figure 4: Example of historical information on surrender rates for the life insurance industry



The data outline the stability of surrender rates for the last two decades: a slightly decreasing trend is visible.

In the other countries that responded to the questionnaire, the impact was more or less material. Among the six countries in which lapse rates changed during this timeframe, in some cases we cannot conclude with 100% certainty that the results are related to the financial crisis, owing to the lack of explanations or justifications provided by the relevant NSAs; however, that relationship is likely. A brief analysis per Member State seems useful for understanding these behaviours better.

In one country, there was a significant increase in lapse rates in life businesses during the financial crisis. The cause of this might be the effect of the crisis on the banking sector (e.g. the channelling of household savings from insurance and other products to bank deposits).

In another country there was just a small decrease of the number of life contracts in 2009 and it noted that almost all of the terminations observed in the period under analysis were the result of the failure of policyholders to pay premiums on the renewal of contracts.

In another country, there was a significant increase in lapse rates in 2008 and 2009 and lapse rates remained at relatively high levels from 2010 to 2012 compared with the period before 2008. However, this is discernible in relation only to technical provisions

and not to the number of policies (the policies lapsed are the policies with higher technical provisions).

One country also concluded that the financial crisis in 2008 led to an increase in surrender rates. This was true for life businesses, whether they were linked to investment funds or not. In the former case, the lapse rate (calculated based on number of policies) went from around 5% in 2008 to more than 10% in 2009 and, in the latter case, it went from around 5% in 2007, increasing to roughly 7.5% in 2008, to more than 10% in 2009.

Finally, one country reported that lapse rates in 2007 were 9%, whereas in 2008 they were 13%, in 2009 they were 12% and in 2011 they were 8%.

Coverage of biometrical risk

When contracts include a coverage of biometrical risks, policyholders may be inclined to hold on to these contracts rather than surrender or cancel the contracts and thus hold on to lapse risk. In addition, biometrical risks influence the predictability of cash flows directly. There are two data sources to assess biometrical risks.

Information request 2019

This section outlines the results provided in the spring 2019 information request, in which undertakings were asked to provide information on the share of best estimates by line of business for those obligations being exposed to the mortality risk scenarios ([18]) according to Articles 137 (life mortality) and 152 (health mortality) of the Solvency II Delegated Regulation. This was required only for life obligations. The results are presented in Table 9.

Table 9: Share of BELs exposed to the mortality shock and the impact thereof

	BEL exposed to mortality shock	Impact of BEL mortality shock
Total	57%	6%
AT	77%	0%
BE	57%	3%
CY	54%	29%
CZ	51%	6%
DE	62%	0%
DK	n/a	n/a
EE	71%	59%
EL	44%	6%
ES	39%	12%
FI	77%	53%
FR	56%	2%
HR	72%	54%
HU	86%	6%
IE	25%	23%
IT	75%	6%
LI	85%	69%

([18]) That is, the total BELs of insurance policies for which an increase in mortality rates leads to an increase in technical provisions without the risk margin.

LT	31%	1%
LU	70%	0%
LV	n/a	n/a
MT	89%	4%
NL	46%	0%
NO	11%	11%
PL	63%	24%
PT	–1%	1%
RO	33%	12%
SE	28%	1%
SI	58%	18%
SK	64%	29%
UK	n/a	n/a

Information request 2018

EIOPA based a further analysis on the data received in the information request in spring 2018. In that request, undertakings also had to identify whether or not each product contains a guaranteed sum assured ([19]). When undertakings indicated that the product contained a guaranteed sum assured, this was seen as reflective of the characteristic of providing biometrical risk.

Table 10 displays the share of those products providing a biometrical risk in Europe over the different lines of business. The percentages given in the table are in terms of GWP.

As can be seen from Table 10, most lines of business in Europe are exposed to biometric risk, with the exception of annuities stemming from non-life insurance contracts and relating to health insurance obligations, which by construction excludes such risks. As a whole, almost half of European products in terms of written premium (48%) cover biometrical risks, mostly included in insurance with profit participation. Annex 1 provides detailed information on the coverage of biometrical risks by country.

Table 10: Percentage of businesses exposed to biometrical risk in terms of GWP in the EEA

Exposure to biometrical risk	Not exposed	Exposed	Weight
Health insurance	69%	31%	3%
Insurance with profit participation	46%	54%	50%
Index-linked and unit-linked insurance	64%	36%	34%
Other life insurance	31%	69%	10%
Annuities stemming from non-life insurance contracts and relating to health insurance obligations	100%	0%	0%
Annuities stemming from non-life insurance contracts and	0%	100%	0%

([19]) The product is considered to contain a guaranteed sum assured if the product in question pays out a guaranteed lump sum amount if a specified point in time has been reached or in other cases not related to other guarantees (e.g. in the case of disability).

relating to insurance obligations other than health insurance obligations			
Health reinsurance	54%	46%	0%
Life reinsurance	55%	45%	2%
Total	52%	48%	100%

Average duration of liabilities in practice

Based on the information in the QRT ([20]) for year-end 2018 on the cash flow profiles of life and non-life obligations, it was also possible to derive the modified duration of insurance liabilities of the EEA market. The information in the QRT is regularly provided on a yearly basis in templates S.13.01 and S.18.01. The S.13.01 includes information on future cash flows separately by line of business and template S.18.01 on non-life obligations reflects cash flows for premium provisions and claims provisions separately (note that cash flow information is not reported in a standardised way across markets). In particular, when a stochastic valuation has been performed for the purpose of the valuation of technical provisions, various practices could be followed for reporting cash flows ([21]). However, this information is sufficient to get an overview of the dispersion across markets and lines of business.

It should also be noted that the information provided should be handled with care. In particular, information on the modified or Macaulay duration can provide an indication of the time horizon of insurance liabilities. However, it is not sufficient to estimate the sensitivity of insurance liabilities to interest rate changes, for which other metrics such as effective duration should be used ([22]). The effective duration, however, is not included in the QRT and needs to be estimated based on sensitivities provided by undertakings. The calculation has been performed for the stress test of 2016; the numbers provided in the final report demonstrate the discrepancy between the Macaulay duration and the effective duration ([23]).

For the purpose of this report, however, the effective duration has not been estimated. Please note that the following analysis is therefore always based on modified duration as a metric. Table 11 outlines the weighted average modified duration per country and line of business, as determined based on the QRT for year-end 2018. The weighting is made in proportion of the total BELs.

Table 11: Weighted average modified duration of liabilities per country ([24])

	Line of business ([25])

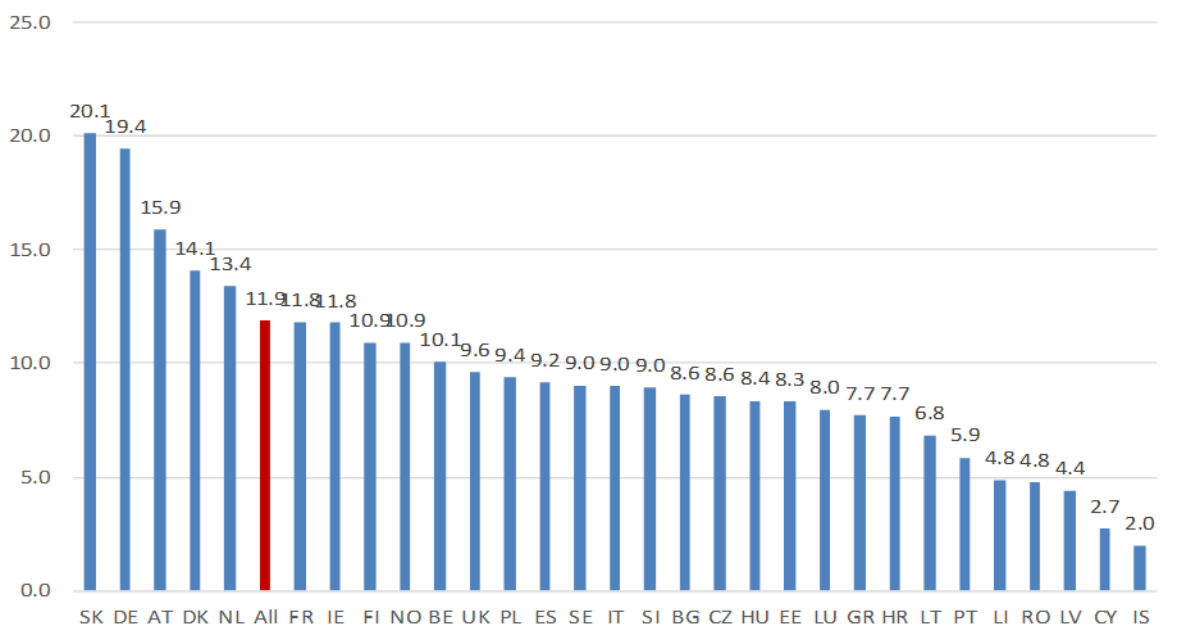
([20]) QRT sample of 2002 solo undertakings.
([21]) For example, an average cash flow could be derived based on the stochastic set or one deterministic scenario could be reported.
([22]) This is because insurance liabilities' cash flows may depend on interest rates (see pages 34 ff and 59 ff of the stress test report 2016).
([23]) The difference can be important if the cash flows are heavily dependent on the interest rates. This is because of future discretionary benefits.
([24]) Using the QRT sample except MT owing to data issues.
([25]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance.

	Total	1	2	3	4	5	6	7	Non-life
Total	**11.9**	12.9	11.5	12.7	11.2	12.8	26.1	13.6	4.6

The numbers vary a lot across countries, with a predominance of rather long-term businesses in Slovakia, Germany, Austria, Denmark and the Netherlands and short-term businesses in Romania, Latvia, Cyprus and Iceland.

Figure 5 gives the modified duration of the liabilities for each country in order of size.

Figure 5: Modified duration per country



The average modified duration varies by line of business. Nevertheless, except for non-life business, for which the modified duration amounts to 4.6, all other lines of business have durations higher than 11 (Figure 6).

Figure 6: Modified duration per line of business

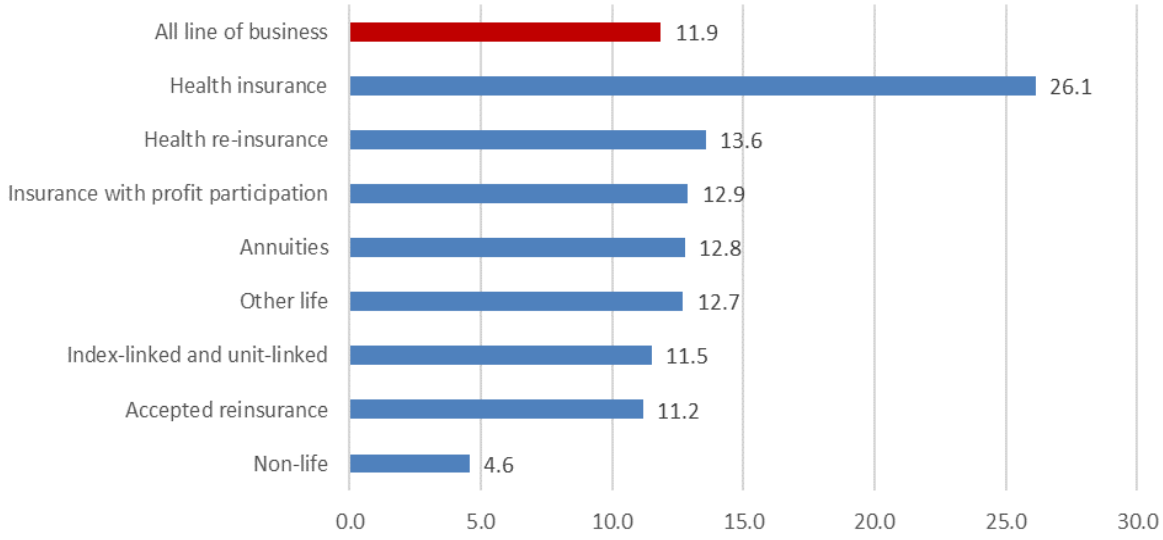
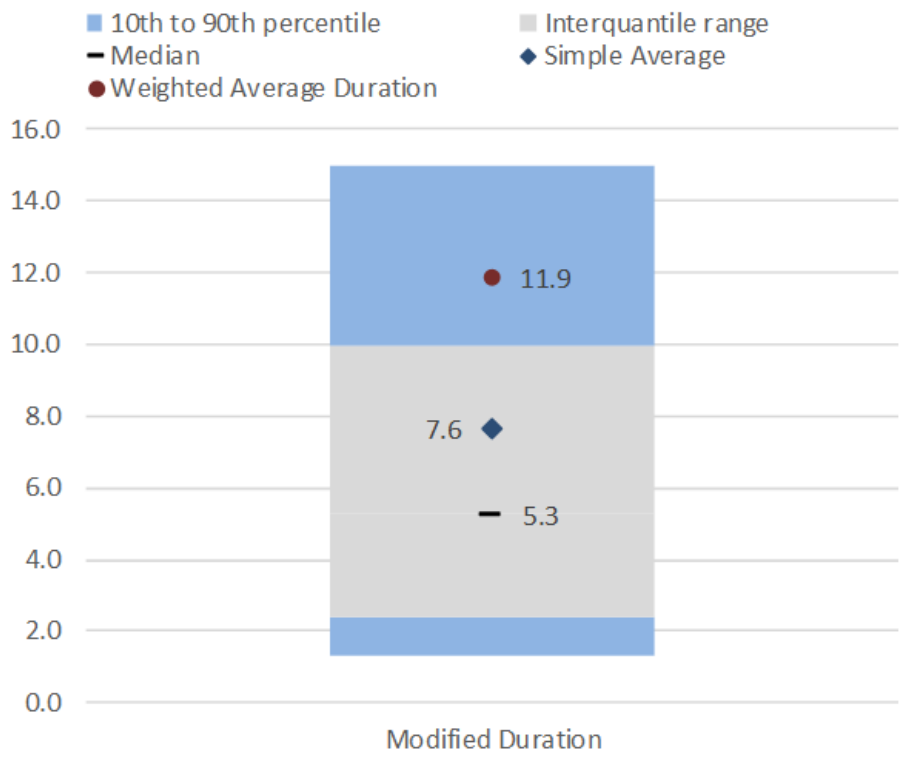


Figure 7 outlines the dispersion of the modified duration across all undertakings in the EEA market.

Figure 7: Dispersion of the modified duration across undertakings in the EEA



EIOPA also analysed how the average modified duration varies across types of undertaking (Figure 8). Figure 9 displays the absolute volume of the business considered, measured in terms absolute discounted cash flows.

Figure 8: Modified duration per type of undertaking

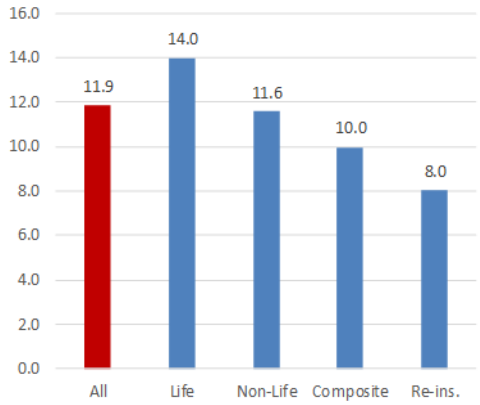
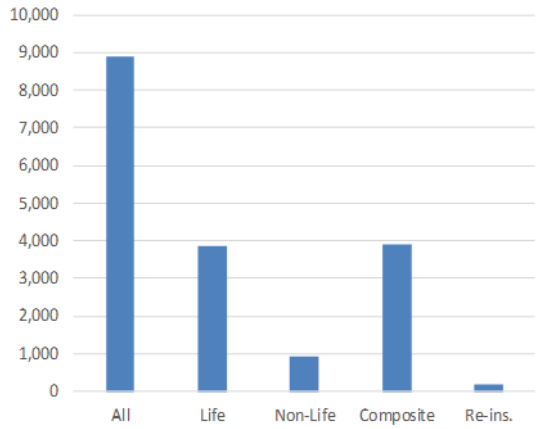


Figure 9: Absolute volume of discounted cash flows per type of undertaking



Contractual maturity

The typical contractual maturity by product was provided by the undertakings participating in the information request in spring 2018. As information on the best estimate by product is not available, the volume of the business is measured in terms of GWPs.

The typical contractual maturity provides information about the contractually defined maximum maturity of a typical contract. The determination is based on the following assumptions: (1) the contract does not end owing to the realisation of a biometrical risk, (2) the policyholder does not exercise any surrender/cancellation option and exercises all renewal options and (3) the insurance or reinsurance undertaking does not exercise any option to terminate the contract and exercises all renewal options.

In the case of an endowment policy, this would, for example, mean that the insured person does not die and the policyholder does not cancel the contract. For the determination, the typical age of the policyholder when entering the contract has to be assumed. The selection should be made from the following six options:

- <5 years;
- 5-10 years;
- 10-15 years;
- 15-20 years;
- >20 years;
- lifelong.

Consider, as an example, an endowment policy with the possibility to cancel at any time, in which the typical contract is entered into at 30 years of age and ends with a lump-sum payment at 65 years if the insured person is still alive. Even though the contract may end earlier because of death or cancellation, the option '>20 years' should be selected.

The following results are based on a sample of 83,155 products from 256 undertakings from 30 countries.

Table 12 outlines the share of businesses as the percentage of GWPs in the different categories outlined above for the whole European sample.

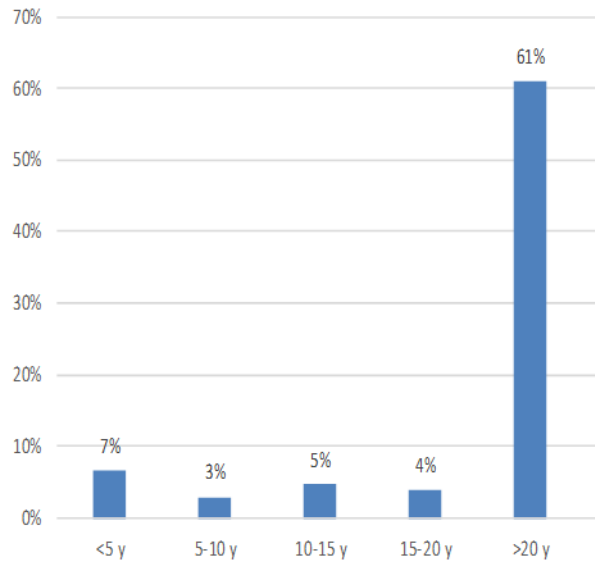
Table 12: Percentage of GWPs per typical contractual maturity

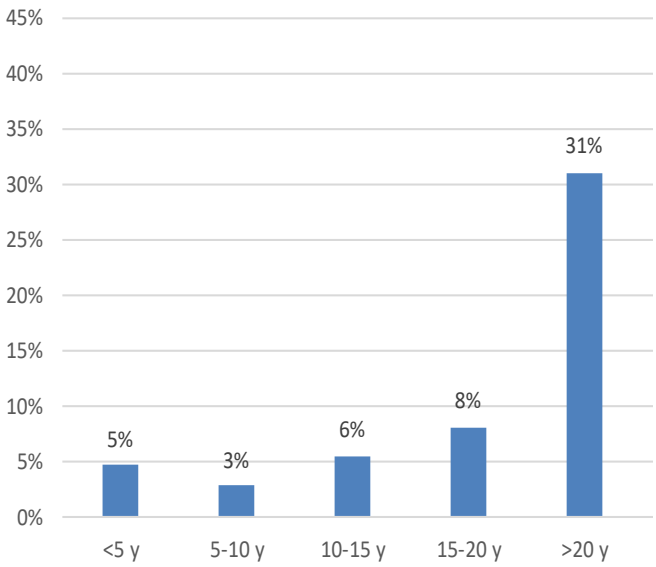
	<5 years	5-10 years	10-15 years	15-20 years	>20 years	Lifelong	n/a
Total	5%	3%	6%	8%	31%	40%	7%

Figures 10 and 11 display these results visually, with the results based on the number of products compared with the percentage of GWPs for easy comparison.

Figure 10: Share of number of products per typical contractual maturity

Figure 11: Share of GWPs per typical contractual maturity





One can observe that in terms of both the number of products and the percentage of GWP, the vast majority of the products are concentrated in the categories exceeding a maturity of 15 years.

Table 13 outlines the dispersion of typical contractual maturity by type of undertaking in percentage of GWP.

Table 13: Percentage of GWP per typical contractual maturity and type of undertaking

	<5 years	5-10 years	10-15 years	15-20 years	>20 years	Lifelong	n/a
Life	4%	2%	5%	7%	37%	36%	9%
Composite	7%	5%	7%	11%	18%	52%	1%
Reinsurance	2%	0%	0%	0%	25%	8%	64%
Total	5%	3%	6%	8%	31%	40%	7%

The predominance of very long-term business exceeding 15 years is observable for all types of undertakings that participated in the information request.

Table 14 outlines the dispersion of typical contractual maturity by line of business as a percentage of GWP.

Table 14: Percentage of GWP per typical contractual maturity and line of business

	<5 years	5-10 years	10-15 years	15-20 years	>20 years	Lifelong	n/a
All	**5%**	**3%**	**6%**	**8%**	**31%**	**40%**	**7%**
Insurance with profit participation	3%	2%	5%	13%	34%	43%	0%
Other life insurance	14%	9%	3%	7%	10%	39%	19%
Health insurance	17%	2%	4%	9%	28%	29%	10%
Annuities stemming from non-life insurance contracts and relating to insurance obligations other than health insurance obligations	100%	0%	0%	0%	0%	0%	0%
Annuities stemming from non-life insurance contracts and relating to health insurance obligations	33%	0%	0%	0%	67%	0%	0%
Unit-linked or index-linked insurance	3%	2%	8%	2%	36%	38%	11%
Life reinsurance	5%	4%	0%	0%	12%	49%	30%
Health reinsurance	7%	0%	0%	0%	49%	34%	10%
n/a	0%	0%	0%	19%	52%	28%	0%

Table 15 outlines the dispersion of typical contractual maturity by country as a percentage of GWP.

Table 15: Percentage of GWP per typical contractual maturity and country

	<5 years	5-10 years	10-15 years	15-20 years	>20 years	Lifelong	n/a
Total	**5%**	**3%**	**6%**	**8%**	**31%**	**40%**	**7%**
AT	1%	3%	7%	5%	41%	29%	15%
BE	5%	10%	6%	13%	52%	13%	0%
BG	14%	0%	25%	39%	22%	0%	0%
CZ	1%	12%	1%	1%	70%	16%	0%
DE	6%	3%	3%	5%	33%	50%	0%
DK	3%	0%	0%	0%	56%	41%	0%
EE	0%	4%	47%	16%	11%	21%	0%
EL	45%	1%	15%	23%	8%	8%	0%
ES	10%	3%	2%	1%	8%	76%	0%
FI	0%	23%	17%	3%	56%	0%	0%
FR	1%	1%	1%	3%	45%	48%	0%
HR	7%	21%	19%	7%	36%	9%	0%
HU	2%	4%	12%	14%	34%	32%	0%
IE	4%	4%	2%	4%	27%	51%	7%
IS	22%	0%	0%	0%	29%	1%	48%
IT	2%	4%	14%	22%	9%	49%	0%
LI	20%	24%	4%	0%	48%	3%	0%
LT	0%	16%	19%	44%	22%	0%	0%
LU	2%	0%	8%	0%	35%	54%	1%
LV	1%	0%	64%	2%	0%	33%	0%
MT	0%	81%	0%	0%	17%	0%	2%
NL	5%	0%	1%	13%	29%	35%	17%
NO	0%	0%	0%	0%	50%	50%	0%
PL	4%	2%	3%	14%	66%	6%	6%
PT	7%	58%	6%	1%	16%	12%	0%
RO	14%	24%	4%	26%	31%	1%	0%
SE	4%	0%	29%	0%	31%	10%	26%
SI	1%	1%	14%	20%	27%	37%	0%
SK	4%	1%	0%	2%	89%	3%	2%
UK	6%	2%	0%	0%	15%	36%	40%

Information on future discretionary benefits and future premiums

Whereas guaranteed benefits are, per se, considered rather stable, FDBs typically vary as financial markets change. Therefore, guaranteed benefits can be seen as more predictable than FDBs. Still, in a context of liquidity considerations, the presence of FDBs can serve to limit liquidity constraints, as FDBs can be reduced by undertakings, thus having a positive impact on liquidity considerations. However, when considering undertakings' ability to earn an additional yield for those assets 'backing' FDBs, concerns may arise. This is because, in some markets, the FDB ([26]), which is the

([26]) In those markets, these benefits are typically not discretionary to the undertaking, but contractually predetermined.

optional part of the liabilities, is hedged by dynamic swap and/or swaption strategies. Such a strategy requires active trading in swaps that do not earn an illiquidity premium.

Although future premiums typically limit liquidity constraints by the undertaking, conceptual concerns arise in respect of the ability to earn a spread on assets backing premiums that have not yet been paid. Future premiums are also exposed to an additional risk, namely that the policy is turned into a paid up status. This risk is different from the surrender of a contract, which may be affected by surrender disincentives. The share of total BEL that corresponds to FDB and for which premiums are paid are reported per country in Table 16.

Table 16: Share of total BEL that corresponds to FDB and for which premiums are paid

	BEL FDB	BEL for which still premiums are paid
Total	**9%**	**24%**
AT	10%	51%
BE	2%	11%
CY	1%	7%
CZ	2%	22%
DE	17%	60%
DK	3%	36%
EE	0%	14%
EL	0%	18%
ES	2%	13%
FI	1%	41%
FR	10%	15%
HR	2%	22%
HU	5%	21%
IE	14%	10%
IT	4%	0%
LI	0%	–1%
LT	1%	28%
LU	3%	1%
LV	0%	37%
MT	–3%	4%
NL	1%	11%
NO	16%	61%
PL	1%	25%
PT	0%	28%
RO	1%	49%
SE	2%	4%
SI	1%	22%
SK	5%	41%
UK	36%	7%

1.2. Measurement of the illiquidity of insurance liabilities

Approach

The general concept of illiquidity could be considered as follows: the more stable and predictable the cash flows, the more illiquid the liabilities. It could be argued that

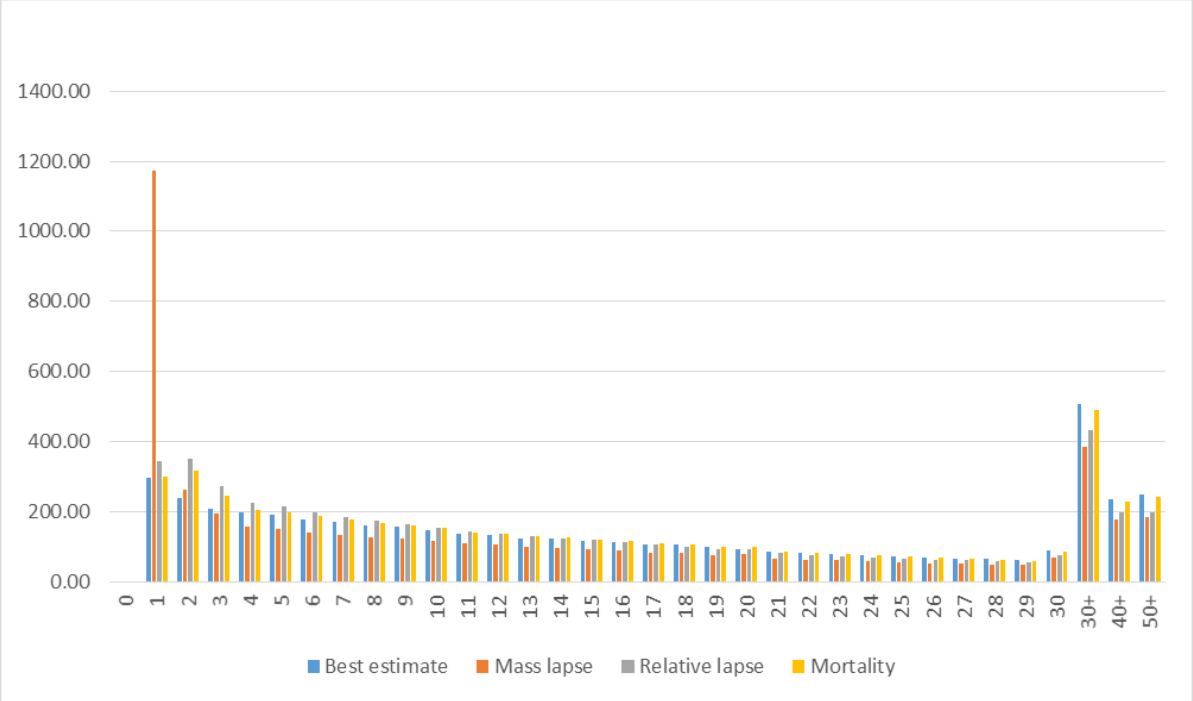
illiquidity conceptually differs from the Solvency Capital Requirement (SCR) risks as follows: SCR risks imply a variation in the value of the insurance liabilities, while illiquidity reflects the variation in the timing of the cash flows of insurance liabilities. If cash flows are fixed irrespective of the scenario, they are considered as fully illiquid because they are perfectly predictable and stable. Undertakings would be able to match such stable and predictable cash flows with illiquid assets that may earn an illiquidity premium because it is relatively more difficult to sell these assets. This measurement of the illiquidity of insurance liabilities relates to the SCR calculations; therefore, when used for the purpose of valuation, this could lead to a double counting issue.

The measurement of the illiquidity of insurance liabilities can be based on the liabilities' sensitivities to specific (liquidity) risks or contractual features and risk characteristics or instead on a bucketing of insurance liabilities according to their contractual features ([27]). In this section, EIOPA focuses on the measurement of illiquidity based on the variation in the cash flows of insurance liabilities. For this measurement, EIOPA used the cash flows of 227 undertakings that participated in the illiquidity part of the information request of 2019. These undertakings provided the cash flows per business line according to QRT S.13 and S.18, not only for the best-estimate scenarios, but also for lapse and mortality scenarios ([28]). Figure 12 shows the total life and non-life best-estimate cash flows, as well as the cash flows after the relative lapse up, the mass lapse and mortality shocks for the 227 selected insurance undertakings. As expected, the mass lapse shock significantly increases the cash flows in year 1, while for the other shocks the cash flows in the early years also increase after the shock, while the later cash flows typically decrease.

([27]) See also page 127 ff of the consultation paper on the opinion on the 2020 review of Solvency II.

([28]) The cash flows of liabilities that require stochastic scenarios for valuation purposes were reported such that they were equivalent to the stochastic set. This means that the discounted value of this cash flow equals value of the best estimate. The cash flows were determined as follows: for each maturity, the market value of cash flows with that maturity was calculated by discounting the scenario-dependent cash flows at the scenario-dependent interest rates and then averaging these discounted values over all scenarios. Subsequently, this market value per maturity was accrued at the prevailing risk-free interest rate for that maturity. This implies that discounting the reported cash flows corresponds to the value of the best estimate.

Figure 12: Best-estimate and stressed cash flows for the illiquidity measurement



These liability cash flows before and after stresses can define the share of liabilities that are predictable. This approach is applicable for both life and non-life obligations, but the relevant stresses differ between the two. For life obligations, mortality, mass lapse and the relative lapse up scenarios are considered. For non-life obligations, mass lapse, reserve risk and catastrophe risks are considered. Given the cash flows after these stresses, the minimum amounts available after x years could be determined. These amounts could be replicated with an illiquid cash flow due in x years. Put differently, these amounts could be invested in illiquid assets for x years. Figure 13 shows how much of the total best estimate remains available in the best-estimate and stressed scenarios, in which remaining cash flows after a specific year accrue according to the forward rates implied by the basic risk free rate term structure:

$$\text{Available funds}_{(i,t)} = \text{Available funds}_{(i,t-1)} \times (1 + \text{interest}_t) - \text{cash flow}_{(i,t)}$$

Figure 13: Available funds in best-estimate and stressed scenarios for the illiquidity measurement

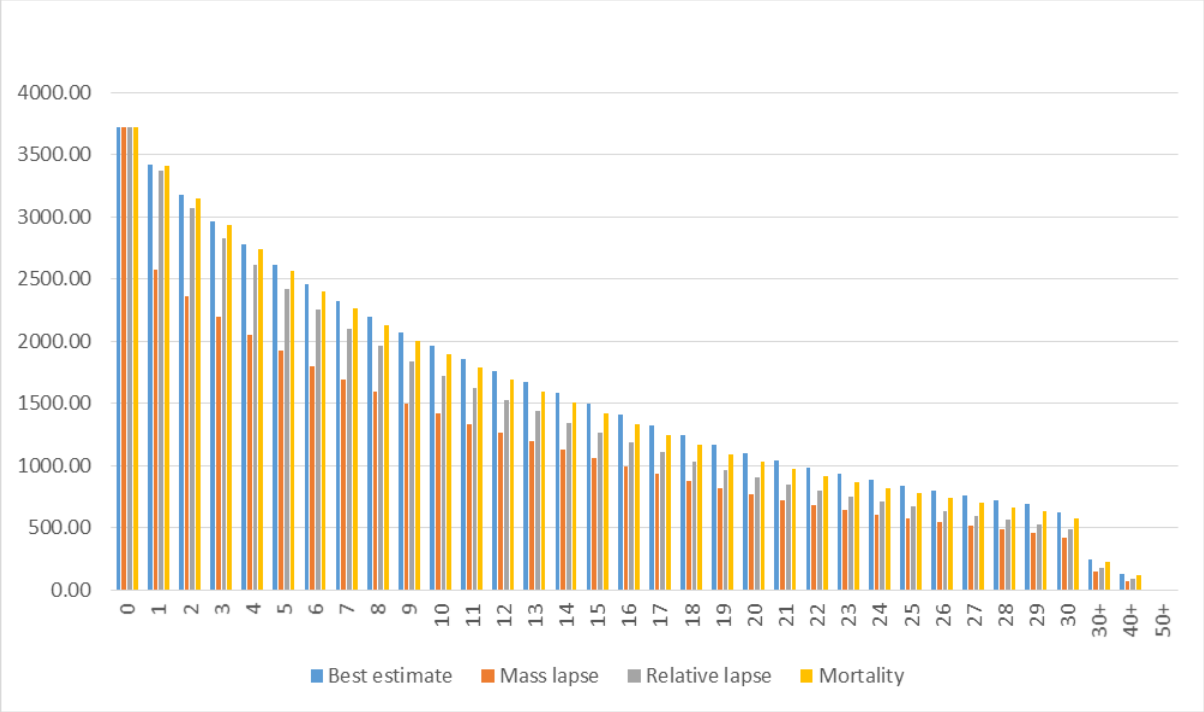


Figure 13 shows the total available remaining funds in the best-estimate scenario and after the mass lapse, relative lapse up and mortality shocks for the 227 selected insurance undertakings.

The minimum amount of funds available over these scenarios could then be considered as relatively stable and predictable, and thus illiquid, as these amount of funds will 'always' be available to the undertaking.

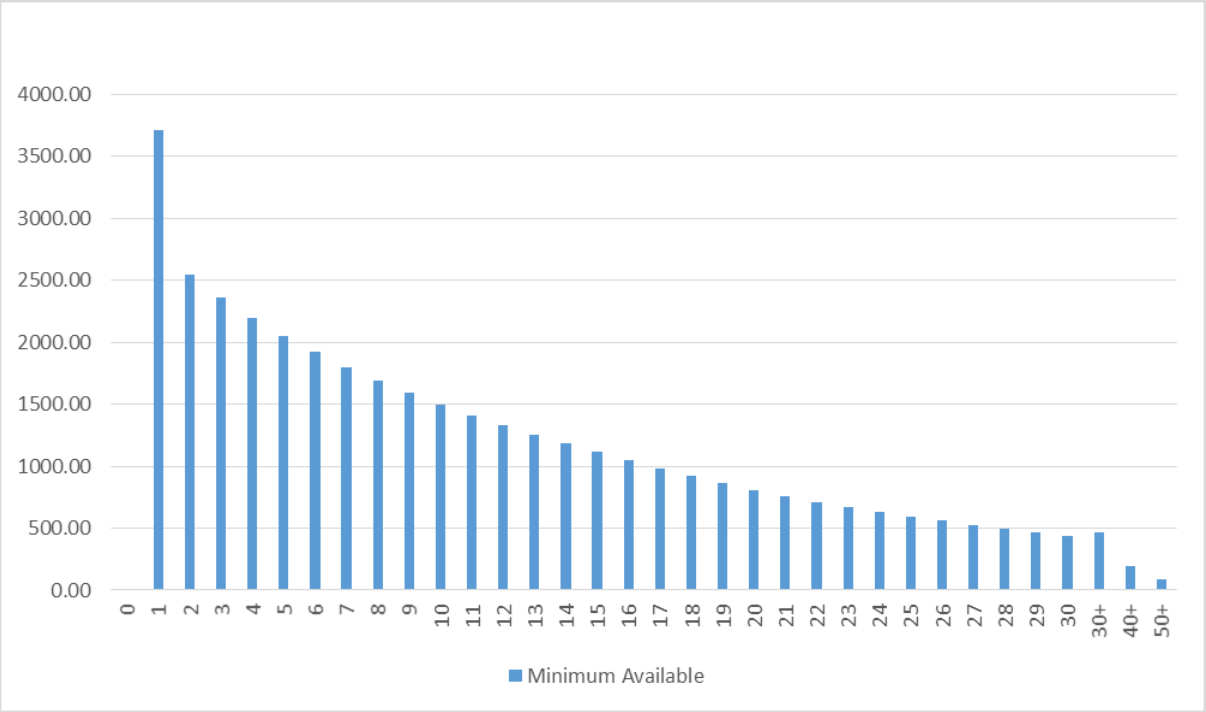
Figure 14 shows the minimum available remaining funds over the best-estimate, mass lapse, relative lapse up and mortality scenarios for the 227 selected insurance undertakings, calculated as follows:

$$\text{Minimum available}_0 = \text{Discounted value best estimate}$$

$$\text{Minimum available}_{(t>0)} = \text{Minimum}\{\text{Available funds}_{(i,t-1)} \times (1+\text{interest}_t)\}$$

Although, the mass lapse scenario is the most severe liquidity stress for the whole of the EEA and for most undertakings, there are lines of business and undertakings for which the relative and/or mortality shocks are the biting scenarios.

Figure 14: Minimum available funds over best-estimate and stressed scenarios for the illiquidity measurement

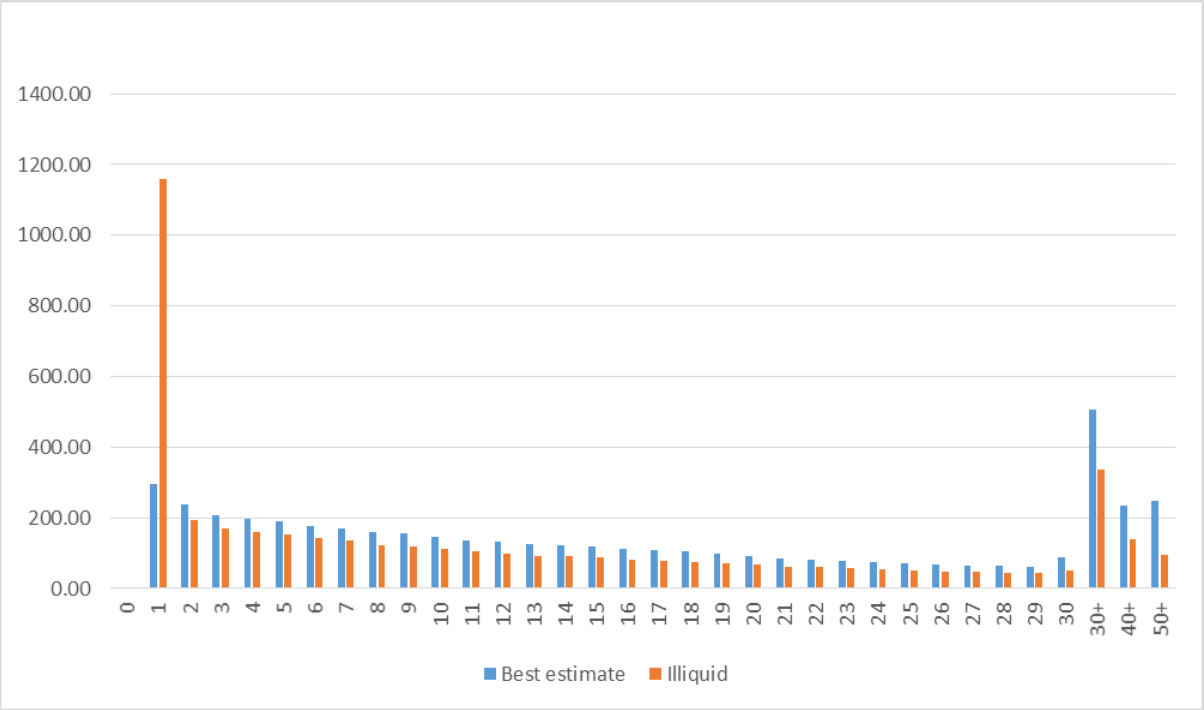


These minimum available amounts are the amounts that can be kept up to a specific point in time. An amount that can be kept for more than 50 years can also be kept for more than 40 years, 30 years, etc. The idea is that the replicating illiquid investments are chosen such that the term of the illiquid investments is as long as possible. The illiquid cash flows are then determined as the maximum amount that can be kept for *t* years:

$$\text{Illiquid}_t = \text{Minimum available}_t - \text{Minimum available}_{(t+1)}/(1+\text{interest}_t)$$

Figure 15 shows the illiquid cash flows based on the described method, compared with the best-estimate cash flows for the 227 selected insurance undertakings.

Figure 15: Total illiquid and best-estimate cash flows for the illiquidity measurement



Annex 4 includes figures displaying the illiquid, best-estimate and stressed cash flows as well as the minimum available amount of funds over these scenarios per jurisdiction, line of business and type of undertaking.

Results per jurisdiction and type of undertaking

The following analysis is based on the sample of undertakings participating in the information request in spring 2019 and providing information on their cash flows before and after stress.

Figure 16 shows the average illiquidity measurement per jurisdiction. At the EEA level, the average illiquidity measurement is 72.2%, which means that this percentage of the liabilities are considered illiquid, namely as being predictable and stable after the mentioned stresses. This measurement is different between jurisdictions, being the highest in Finland with a measurement of 91.4% and the lowest in Spain (46.8%).

For non-life business, note that only the cash flow sensitivities to the mass lapse standard formula have been collected. However, catastrophe risk and reserve risk are also relevant, as they can lead to liquidity needs and forced sales of assets. Therefore, the non-life application ratios displayed in Figure 18 should not be considered as fully reflective of the degree of illiquidity.

Figure 16: Illiquidity measurement per country

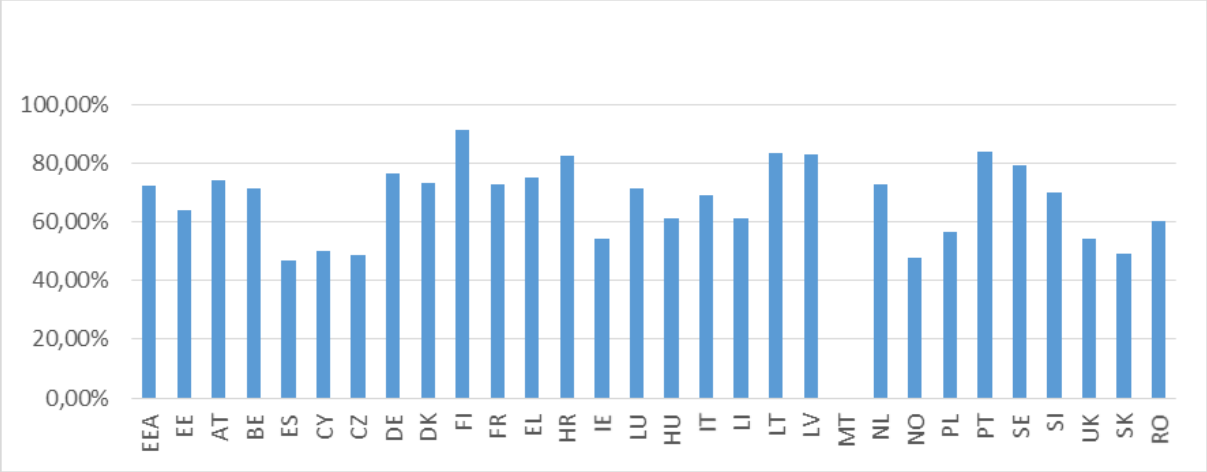


Figure 17 shows the average illiquidity measurement per jurisdiction in composite undertakings. At the EEA level, the average illiquidity measurement is 63.3%. This measurement differs between jurisdictions, being the highest in Croatia with a measurement of 82.4% and the lowest in Spain (46.1%).

Figure 17: Illiquidity measurement for composite undertakings per country

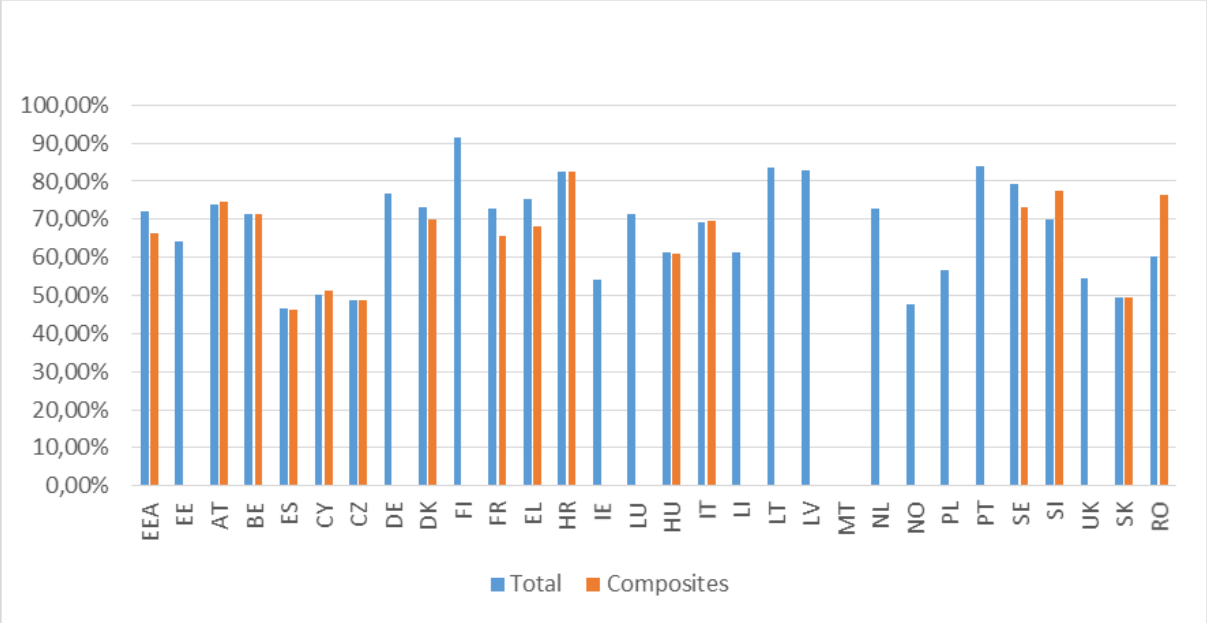


Figure 18 shows the average illiquidity measurement per jurisdiction in non-life undertakings. In this type of undertaking, only three jurisdictions (France, the Netherlands and Poland) show an illiquidity measurement. At EEA level, the highest measurement between the different types of undertakings is 90.6%.

Figure 18: Illiquidity measurement for non-life undertakings per country

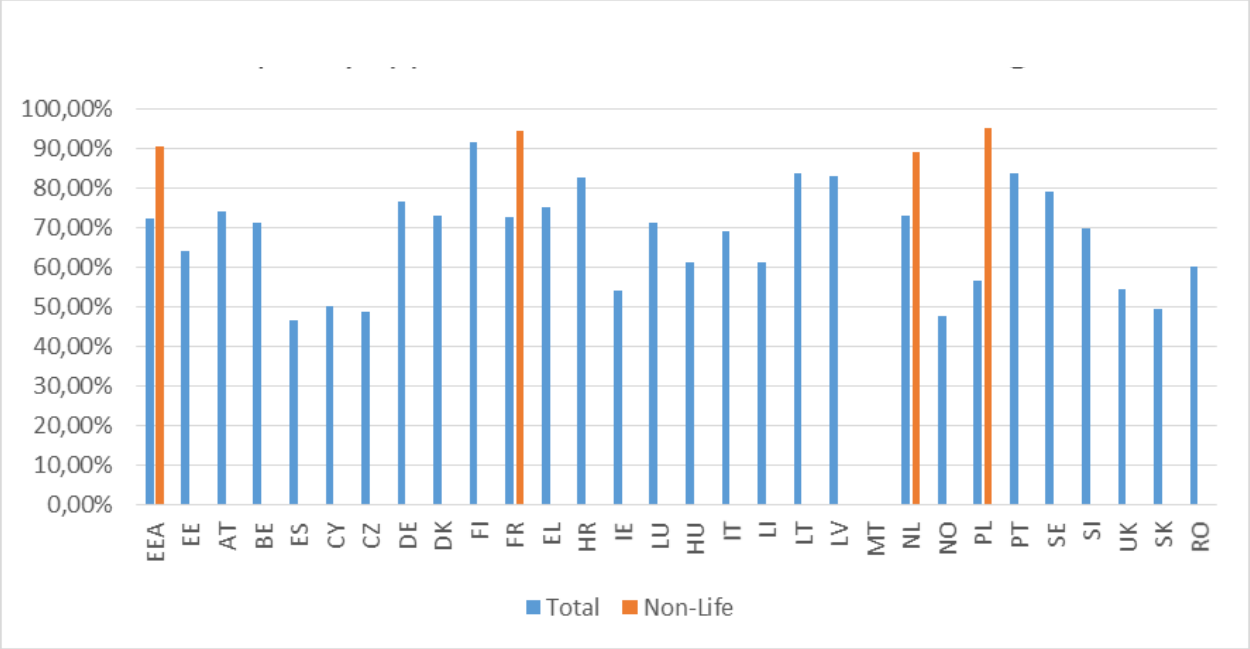


Figure 19 shows the average illiquidity measurement per jurisdiction in life undertakings. At the EEA level, the average illiquidity measurement is 73.4%. This measurement differs between jurisdictions, being the highest in Finland with a measurement of 90.8% and the lowest in Poland (37.3%).

Figure 19: Illiquidity measurement for life undertakings per country

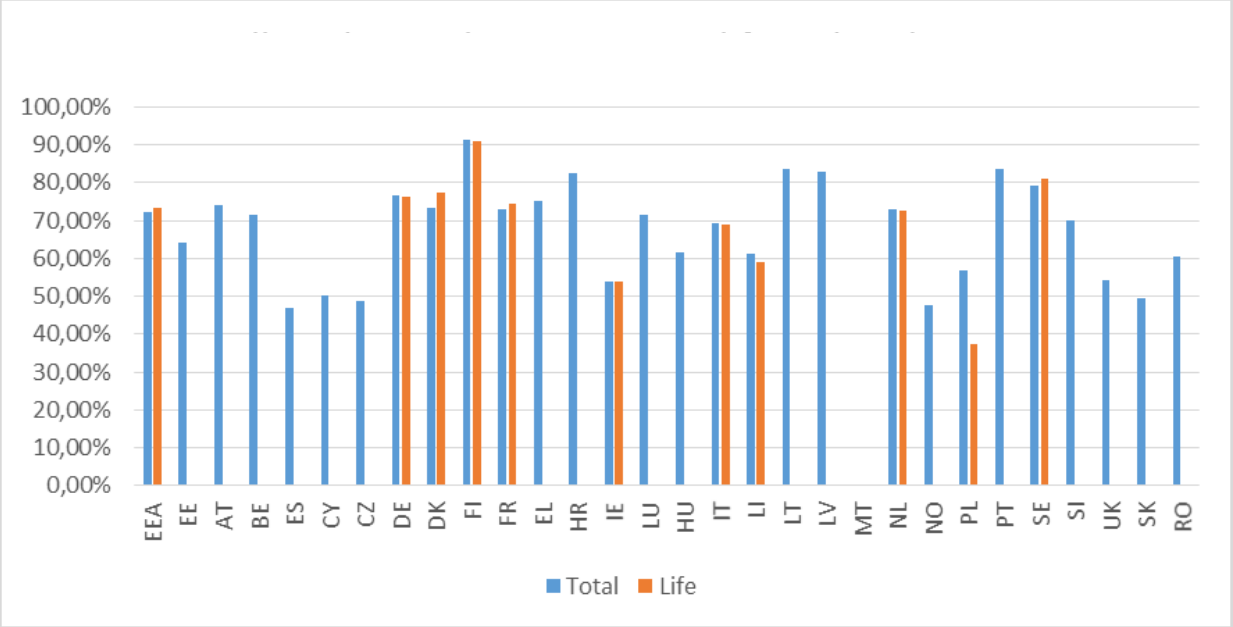


Figure 20 shows the average illiquidity measurement per jurisdiction in reinsurance undertakings. At the EEA level, the average illiquidity measurement is 67.1%. The highest illiquidity measurement is seen in Ireland (97.6%) and the lowest is in France (65.2%).

Figure 20: Illiquidity measurement for reinsurance undertakings per country

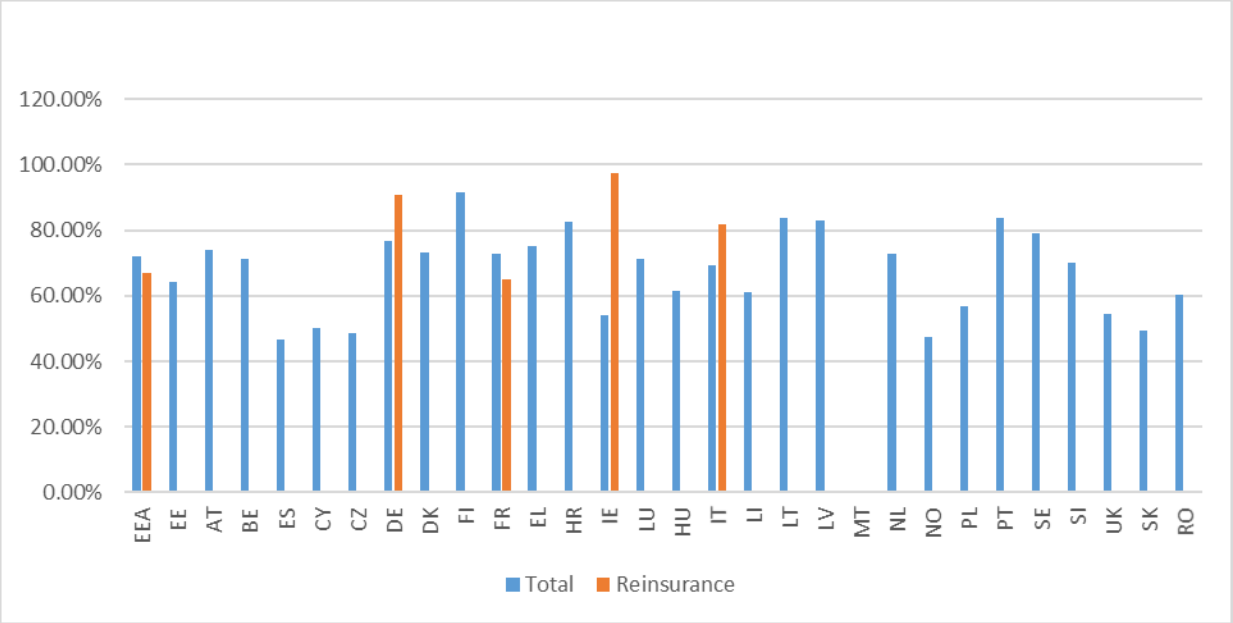


Table 17 shows the different ratios between the lines of business, by country and at the EEA level.

The highest illiquidity measurement at the EEA level appears in the non-life annuities (99.6%) and claim provision (99.7%) lines of business, which means that almost all cash flows are predictable and stable after the stresses in these lines of business. The smallest measurement is in the other life line of business (52.7%). The illiquidity of 62.6% for unit-linked and index-linked business seems quite high, as these kinds of products can typically be lapsed rather easily. Since, for example, the standard formula SCR shock applies to only 40% (or 70%) of the profitable contracts, a part of the unit-linked business will be considered as illiquid by definition of the method chosen for the illiquidity measurement. It is a question of whether or not this method in this case adequately reflects the illiquidity of this line of business. On top of that, unit-linked business is characterised by cash flows that depend on the evolution of financial markets; from a 'valuation by replication' perspective, these cash flows are often replicated by liquid instruments and that does not match with the label 'illiquid'.

Therefore, how this method can be further improved will need to be considered, for example by also reflecting product features to ensure sensible results for all types of business. EIOPA intends to further work on this method.

There are many differences between different jurisdictions. However, most illiquidity measurements exceed a level of 50%.

Table 17: Illiquidity measurement per line of business per country

	Line of business ([29])								
	Total	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total	72.20%	75.6%	62.6%	52.7%		99.6%	77.2%	77.9%	99.7%
AT	74.00%	79.1%	73.7%	76.3%			52.3%		99.8%
BE	71.40%	69.4%	62.1%			100.0%	55.6%		98.6%
CY	50.20%	45.6%	51.8%	27.9%			63.1%		
CZ	48.80%	38.7%	65.7%	74.5%					100.0%
DE	76.60%	78.9%	59.1%	70.1%			82.3%		100.0%
DK	73.10%	78.7%	68.5%	66.2%			63.5%		
EE	64.10%								
EL	75.10%	78.3%	61.0%	78.0%			69.9%		99.1%
ES	46.80%	63.0%	92.6%	42.6%					96.5%
FI	91.40%	92.8%	89.8%						
FR	72.80%	76.3%	57.7%	39.3%		99.9%	60.1%	62.1%	99.4%
HR	82.60%	79.0%	89.0%	33.0%					100.0%
HU	61.40%	66.1%	55.0%	31.9%		93.7%	17.5%		94.2%
IE	54.00%		52.5%	51.9%			20.7%		
IT	69.20%	70.1%	60.2%	73.2%			35.7%		100.0%
LI	61.20%		59.4%						97.3%
LT	83.60%								
LU	71.40%								
LV	82.80%								100.0%
MT									
NL	73.00%	94.8%	78.5%	55.9%			88.3%	98.0%	100.0%
NO	47.60%	39.6%							
PL	56.70%	49.5%	47.3%	11.2%		100.0%	44.1%		100.0%
PT	83.80%	77.2%	71.9%	84.0%					
RO	79.20%	84.0%	73.9%	65.2%			96.9%		97.1%
SE	70.00%	79.0%	57.7%	23.1%			44.2%		100.0%
SI	49.40%	43.9%	42.5%	57.6%		100.0%	63.8%		100.0%
SK	60.30%	43.3%	87.0%	23.9%		98.5%			100.0%
UK	54.40%								

([29]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

2. Information on the asset management of insurers

The request for information from the European Commission in February 2019 asked, in section 3.2, for information on the asset management of insurers, as follows:

EIOPA is asked to provide information on the period over which the different types of investments are effectively held by insurance undertakings. The information should be compared to the maturity and duration of the investments, where relevant. The information should also be compared to the liquidity of the liabilities.

In the CfA, EIOPA is asked to identify the characteristics of insurance business and liabilities that enable insurers to hold their investments for the long term.

EIOPA was asked to provide information on the period over which the different types of investments are effectively held by insurance undertakings. One obvious source of information is Solvency II reporting. Detailed lists of assets are currently available on a quarterly basis from the first quarter of 2016 until the second quarter of 2019. These data show the amount of buying and selling in just these 2 years (i.e. a period much shorter than the typical lifetime of a life insurance obligation). Nevertheless, the turnover in these 2 years provides an insight into and a first indication of the extent to which insurers hold on to their assets.

The objective is to identify if undertakings with longer term liabilities hold on to a greater part of their assets every quarter than undertakings with shorter term liabilities. Owing to the illiquidity of liabilities, insurers can ideally match them by buying and holding long-term assets. On the other hand, industry responses to date have indicated that, outside certain specific situations and for rather specific asset classes such as infrastructure, they do not hold individual assets for a long holding period, but instead they are long-term holders of asset classes (e.g. equity) as part of their strategic asset allocation (SAA).

Bearing in mind the focus on assets backing illiquid liabilities, EIOPA further explored the existence of particular assets that are bought and held long term, to investigate their holding periods. With this analysis, EIOPA aims to investigate insurers' behaviour as long-term investors in individual assets.

Stakeholders consider effective holding periods to be less relevant than strategic allocation targets and the fact that the industry could avoid forced sales by allowing its balance sheet to deteriorate. EIOPA asked if undertaking's asset management framework (i.e. asset management plan and SAA) includes a holding period indication per asset class. The vast majority of undertakings (70%) stated that their asset management framework does not include indications on holding periods per asset class. Although 30% of undertakings answered yes to this question, the explanations given by those undertakings indicated that only a minority use the holding period as an explicit criterion in their asset management framework. Only a small minority therefore stated that they use the holding period as an indicator explicitly, in particular when they are investors holding everything to maturity.

The answers instead indicate that a common practice is the use of duration measures in the asset management framework. This is, in particular, mentioned with respect to the SAA, ensuring that undertakings meet their risk appetite. It also seems to be common practice for the duration measure to be used to ensure that liabilities are best

matched. The ALM strategy therefore includes duration targets and acknowledges other limits (e.g. on illiquid investments). The holding period is then just a consequence of the ALM strategy. The holding period is not considered as a target or limit by the majority of undertakings.

However, a group of undertakings (5% of respondents) outlined that they hold all or parts of their assets, in particular bonds, to maturity and that selling would be considered only in specific situations such as in the case of a significant stress event. For those undertakings, the holding period is relevant and coincides with the maturity of the liabilities. Participations were also mentioned by some undertakings as being investments with dedicated holding periods. Only a small minority of undertakings mentioned that they put particular focus on holding periods, for example as an explicit target function in their asset management framework (e.g. as a target for reinvestments) or by reporting on related indicators (holding period returns were mentioned as an example).

The answers indicate that the portfolio view is preferred with respect to ALM. Specific targets used in the SAA, however, can vary by type of asset (e.g. duration target for bonds and target on illiquid investments).

Typically, undertakings make long-term SAAs. In addition, ALM techniques are put in place to match liability cash flows and liquidity management techniques to ensure they have sufficient liquidity when it is required. Therefore, in the ordinary course of events, those techniques are expected to reduce the risk of forced sale of free assets (i.e. not those belonging to policyholders) to meet liability outflows. EIOPA investigated insurers' behaviour as investors with long-term strategies per asset class and little liquidity risk.

Therefore, EIOPA investigated, in particular under stressed conditions, whether or not such reasoning can be supported by evidence. Several approaches have been considered: the nature of the liabilities, an equity holding period test and a 1-year liquidity test.

In addition, EIOPA wanted to understand if undertakings experienced hidden losses during the financial crisis. Therefore, NSAs were asked about the investment practices of undertakings during the financial crisis, in particular if they had any evidence available on cases in which undertakings needed to realise hidden losses on assets that were induced by credit spreads widening as assets needed to be sold.

Thirteen responses were received. These varied in the level of quantitative detail that was available, and few NSAs were able to complete the spreadsheet we included in the information request on hidden losses. It was more common for NSAs to provide qualitative descriptions of their experience and that of their undertakings during the crisis. While it appears that some NSAs observed undertakings realising hidden losses, or observed 'flight to safety', others did not make this observation (or noted that it was not material) or indeed observed the opposite. Some NSAs also observed that unusual investment practices such as flight to safety were short lived and positions were unwound after the crisis.

The German supervisory authority included the development of book and market values, hidden reserves and hidden losses, as well as in- and outflows of particular asset categories. The results of this analysis for the German life insurance market did not indicate an increase in outflows/sales of assets during the time of the financial crisis.

Because of the limited information available, and the range of responses, we do not consider that any overall conclusions can be drawn about the investment practices of undertakings during the financial crisis.

2.1. Information on holding periods

EIOPA has investigated how long undertakings hold on to their bonds and equity. For this investigation, EIOPA used the quarterly data from QRT S.06.02 with the details on the investments. These data are available from the first quarter of 2016 to the second quarter of 2019.

Results from the analysis of this period have been 'extrapolated' to average holding periods. These average holding periods were then compared with characteristics of the undertakings and their liabilities.

Stakeholders stated in the request for feedback sent in 2018 that they usually, in 'normal' times, trade a substantial amount of their investments. Their argument is that they do not hold on to individual assets, but have long-term strategic holding in a specific asset class. For example, their exposure to equity remains the same over time, but they do occasionally buy and sell individual equities. Specific long-term investments such as property and infrastructure are kept for longer terms.

EIOPA estimates

Method

For this analysis, EIOPA compared, from quarter to quarter, the extent to which the investment in any specific asset has changed. Using only the change in the value of the asset from one quarter to another will result in a bias, since price changes may also affect the change in value from one quarter to another. This effect of price changes can be eliminated by insurers reporting on the quantity per asset.

Comparing the notional value of individual bonds or the number of individual shares at the beginning and end of a period allows the net number of bonds or equities bought or sold during that period to be calculated.

As only 'snapshots' are available, it is not possible to determine if assets were bought and then sold during the year (or vice versa) — therefore, the actual trading activity is underestimated — and it is impossible to determine when transactions were executed.

Comparing the notional value of the bonds or the quantities of the equities of a quarter with the previous quarter will give the net number of bonds or equities bought or sold during that quarter. It is a net number, since undertakings that have bought and sold an investment in a quarter only report the final exposure to that investment at the end of that quarter.

To do this, MVi,j,t is defined as the market value of the holdings/investments of undertaking i in asset j at time t and Ni,j,t is defined as the number of holdings/investments in asset j at time t, where N equals the par/notional amount for bonds and the quantity for equities. The number of assets j bought, sold and kept by undertaking i in quarter t then becomes:

$$\Delta N_{i,j,t}^{bought} = \left[N_{i,j,t} - N_{i,j,t-1}\right]^{+}$$

$$\Delta N_{i,j,t}^{sold} = \left[N_{i,j,t-1} - N_{i,j,t}\right]^{+}$$

$$\Delta N_{i,j,t}^{kept} = N_{i,j,t-1} - \Delta N_{i,j,t}^{bought} - \Delta N_{i,j,t}^{sold}$$

Because, with this calculation, buying or selling 100,000 penny stocks would be 100,000 times more relevant than buying or selling a single stock worth 100,000, these numbers are translated into the market value of assets *j* bought, sold and kept by undertaking *i* in quarter *t*:

$$\Delta MV_{i,j,t}^{bought} = \Delta N_{i,j,t}^{bought} \times \frac{MV_{i,j,t}}{N_{i,j,t}}$$

$$\Delta MV_{i,j,t}^{sold} = \Delta N_{i,j,t}^{sold} \times \frac{MV_{i,j,t-1}}{N_{i,j,t-1}}$$

$$\Delta MV_{i,j,t}^{kept} = \Delta N_{i,j,t}^{kept} \times \frac{MV_{i,j,t-1}}{N_{i,j,t-1}}$$

Please be aware that this translation does not imply that price effects are included in the transactions ([30]). If an asset is new on the balance sheet at time *t*, it may be that there is no price available at time *t*–1; therefore, the price (i.e. the ratio of value and numbers) at time *t* is used for this.

The degree to which an undertaking holds onto its investments does not depend on the absolute figure. When an insurer buys or sells €10 million of assets, this is a lot if total investments are €20 million but not much if total investments are €1 billion. Therefore, the relative amounts of assets *j* bought, sold and kept by undertaking *i* during quarter *t* are defined as the changes in market value divided by the total investments of undertaking *i* in quarter *t*:

$$\Delta_{i,j,t}^{bought} = \Delta MV_{i,j,t}^{bought} \Big/ \sum_j MV_{i,j,t-1}$$

$$\Delta_{i,j,t}^{sold} = \Delta MV_{i,j,t}^{sold} \Big/ \sum_j MV_{i,j,t-1}$$

$$\Delta_{i,j,t}^{kept} = \Delta MV_{i,j,t}^{kept} \Big/ \sum_j MV_{i,j,t-1}$$

The percentages kept are then translated into average holding periods (AHPs) as follows:

$$AHP_{i,j} = 1 \Big/ \frac{1}{T-1} \sum_t \Delta_{i,j,t}^{kept}$$

where *T* is the number of periods in the analysis.

Results

([30]) The reason that numbers are considered in the first place is because changes in the market values of investments may be due to either price changes or buying or selling the investment.

Table 18 shows the number of undertakings in total, per type of undertaking and per jurisdiction. Only undertakings that had information in QRT S.06.02 for all quarters between the first quarter of 2016 and the second quarter of 2019 were selected.

Table 18: Number of undertakings included in the analysis

	All	Life	Non-life	Composite	Reinsurance
Total	**1,376**	**349**	**730**	**232**	**65**
AT	**34**	6	11	16	1
BE	**55**	10	26	18	1
BG	**23**	2	14	7	
CY	**28**	3	17	6	2
CZ	**24**	1	10	12	1
DE	**233**	64	149		20
DK	**6**	2	4		
EE	**9**	1	6	2	
EL	**35**	2	16	17	
ES	**89**	17	42	28	2
FI	**41**	5	34	2	
FR	**108**	24	51	29	4
HR	**18**	3	6	9	
HU	**22**	4	8	10	
IE	**85**	34	30	1	20
IT	**92**	28	46	18	
LI	**8**	5	2	1	
LT	**9**	3	4	2	
LU	**54**	34	14	1	5
LV	**5**		4	1	
MT	**13**	1	9	2	1
NL	**103**	23	74	2	4
NO	**19**	4	10	5	
PL	**54**	25	29		
PT	**13**	7	4	2	
RO	**19**	7	6	6	
SE	**80**	9	59	12	
SI	**14**		3	9	2
SK	**13**	2		11	
UK	**70**	23	42	3	2

Figure 21 shows the average percentages kept, bought and sold and Figure 22 shows the average holding periods for government bonds, corporate bonds and equity for all 2002 insurance undertakings. On average, undertakings hold on to 79%, 70% and 79% of their investments in government bonds, corporate bonds and equity, respectively. These numbers imply average holding periods of 4.8, 3.3 and 4.8 years for these investments, respectively. The longer average holding period for government bonds is in line with its higher average duration (8.9 years) than for corporate bonds (6.2 years).

Figure 21: Percentages kept, bought and sold per asset type

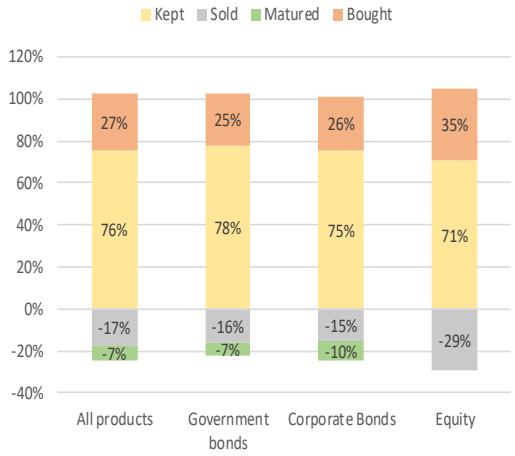
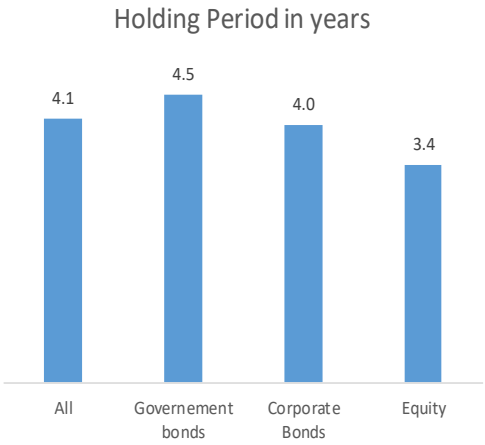


Figure 22: Average holding periods per asset type



Figures 23, 24 and 25 show the percentages kept, bought and sold of the individual types of undertakings. Reinsurance undertakings, on average, sell the largest parts of their government and corporate bonds, but sell the smallest part of their equity investments. Composite undertakings sell the smallest part of their government bonds, while life undertakings sell the largest part of their equity investments every year.

Figure 23: Corporate bonds — percentages kept, bought and sold per type of undertaking

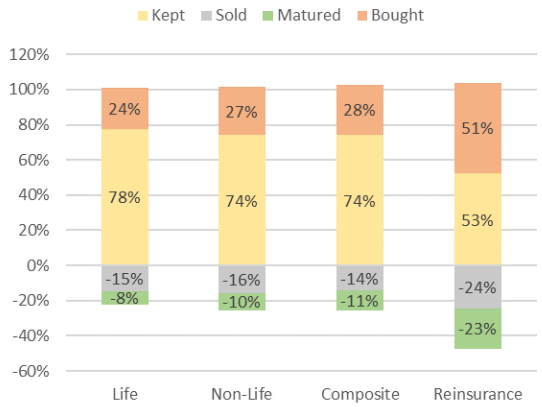


Figure 24: Government bonds — percentages kept, bought and sold per type of undertaking

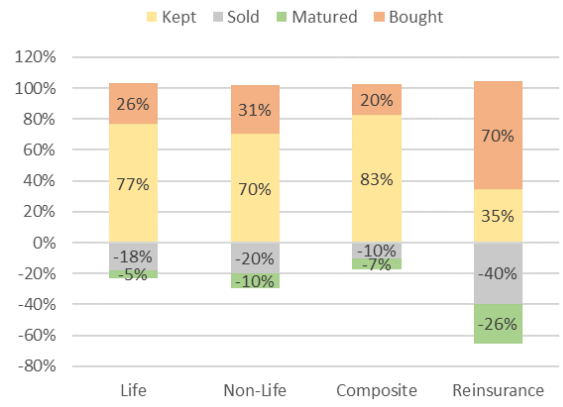


Figure 25: Equity — percentages kept, bought and sold per type of undertaking

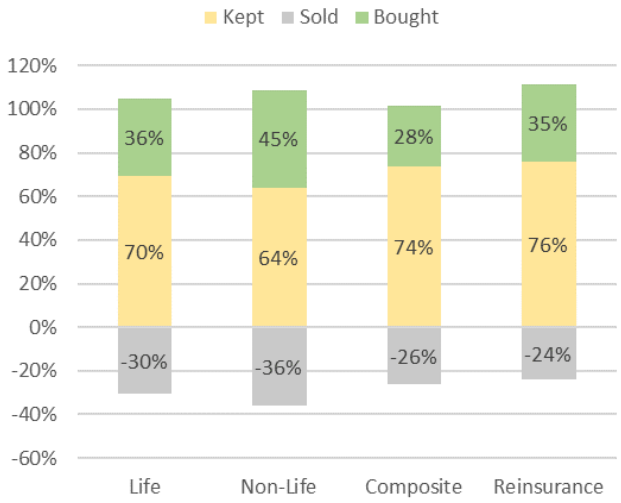


Table 19 translates the percentages kept from the figures above into average holding periods per undertaking. Reinsurance undertakings thus hold on to their government and corporate bonds for the shortest periods, while composites hold to their government bonds the longest.

Table 19: Estimated average holding period per type of undertaking and per type of asset

	Government bonds	Corporate bonds	Equity
All	4.5	4.0	3.4
Life	4.3	4.5	3.3
Non-life	3.4	3.9	2.8
Composite	5.7	3.9	3.8
Reinsurance	1.5	2.1	4.2

Tables 20 and 21 show the average holding periods for the undertakings in the different jurisdictions; either split by asset class or split by type of undertaking. The average holding period is the longest in Belgium and Slovakia, while it is shortest for undertakings in Bulgaria, Greece and Czech Republic.

Table 20: Estimated holding period in number of years per country and per type of investment

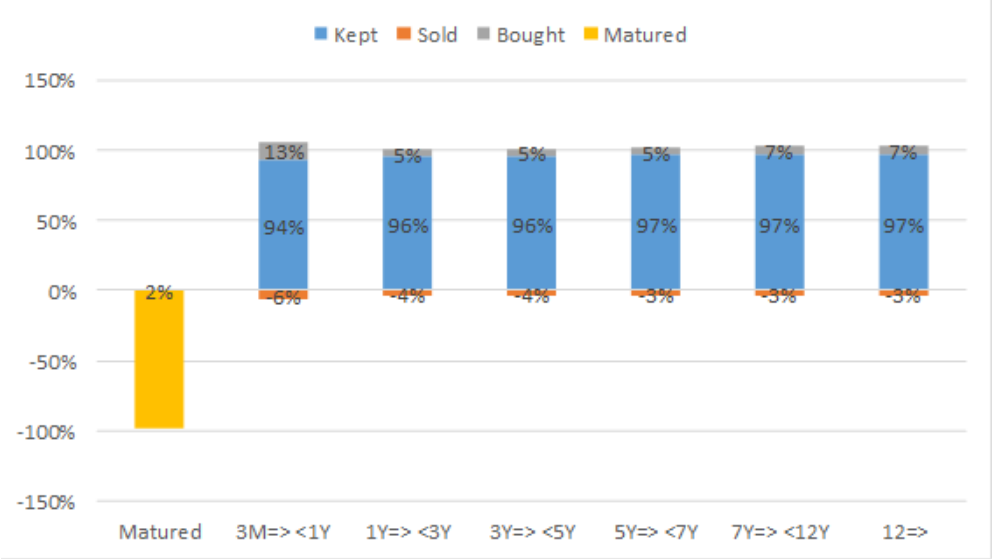
Country	All	Government bonds	Corporate bonds	Equity
All	4.1	4.5	4.0	3.4
AT	5.5	7.2	6.3	3.0
BE	7.7	11.9	5.1	3.5
BG	1.2	3.4	0.4	2.4
CY	3.0	2.4	3.6	3.1
CZ	1.4	1.6	1.2	0.8
DE	5.2	5.3	5.8	3.5
DK	3.0	2.3	2.8	4.2
EE	4.2	6.1	3.6	3.3
EL	1.4	1.1	6.3	6.8
ES	4.6	6.7	4.2	1.4
FI	2.1	1.6	2.2	2.7
FR	5.8	8.0	4.9	3.8
HR	6.2	6.8	2.8	4.6
HU	2.8	2.8	3.2	2.0
IE	2.4	2.1	2.5	2.9
IT	5.8	5.9	5.8	4.9
LI	2.7	2.5	3.4	2.2
LT	4.1	3.9	4.6	—
LU	3.0	2.3	4.8	1.9
LV	3.2	3.2	6.1	1.3
MT	1.6	1.5	1.5	2.9
NL	2.1	2.3	1.9	1.4
NO	3.2	1.9	3.9	3.8
PL	2.9	2.7	1.8	—
PT	2.0	1.8	2.3	2.4
RO	4.7	4.5	3.9	—
SE	2.2	1.8	1.8	3.2
SI	4.9	4.9	5.0	5.0
SK	9.2	14.2	7.7	2.5
UK	2.3	1.7	2.2	3.4

Table 21: Estimated holding period in number of years per country and per type of undertaking

Country	All	Life	Non-life	Composite	Reinsurance
All	4.1	4.0	3.5	4.8	2.2
AT	5.5	4.8	3.3	6.0	—
BE	7.7	3.6	4.4	8.2	1.9
BG	1.2	3.4	1.0	1.7	7.4
CY	3.0	3.7	2.2	3.0	2.3
CZ	1.4	2.6	3.7	1.3	7.4
DE	5.2	6.5	5.6	2.6	2.5
DK	3.0	3.1	1.1	—	—
EE	4.2	3.8	3.0	—	—
EL	1.4	0.7	1.7	2.1	—
ES	4.6	6.4	2.9	4.7	2.1
FI	2.1	2.1	2.1	8.1	—
FR	5.8	5.1	4.8	8.1	1.8
HR	6.2	7.0	3.3	6.5	—
HU	2.8	5.7	1.5	2.5	—
IE	2.4	3.1	2.2	1.9	1.8
IT	5.8	4.9	2.6	6.4	—
LI	2.7	7.2	1.2	2.7	—
LT	4.1	2.9	2.2	7.2	—
LU	3.0	6.3	1.3	1.2	1.2
LV	3.2	—	2.8	5.5	—
MT	1.6	2.2	1.0	1.6	1.2
NL	2.1	2.2	1.6	1.0	8.2
NO	3.2	5.1	0.7	3.5	—
PL	2.9	2.8	2.9	—	—
PT	2.0	1.6	5.0	4.6	—
RO	4.7	5.1	3.6	5.0	—
SE	2.2	1.7	2.3	2.4	—
SI	4.9	—	2.7	5.6	2.6
SK	9.2	6.7	—	9.4	—
UK	2.3	2.6	2.0	1.7	0.9

The percentage of bonds that are kept, sold, bought and matured is displayed in Fugure 26 per maturity. Data are based on quarterly QRT and are not annualized.

Figure 26: Percentages of kept, sold, bought and matured per maturity based on quarterly non-annualised data



Stakeholder feedback

In complement to the above analysis based on QRTs, EIOPA has collected feedback from undertakings. In particular, stakeholders were asked if those results adequately reflect their asset management practices. If not, stakeholders were invited to provide alternative indicators.

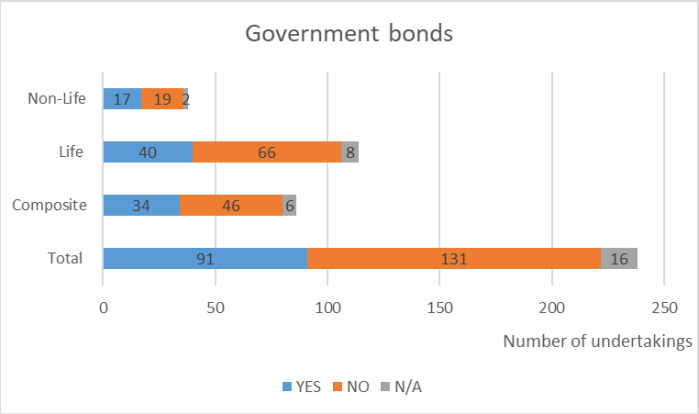
The majority (60% of all undertakings) indicated that the displayed numbers did not reflect their asset management practices. However, the alternative estimates provided by undertakings seemed to be in the range of what would be expected from individual undertakings around the average.

Government bonds

The undertakings were asked to compare their investment behaviour with the EIOPA estimates. The EIOPA estimates over the course of a year (quarter 1 2016 to quarter 1 2017) with respect to government bonds are that 80% are kept, 14% are sold and 6% are matured. Based on the 3-year observation period, EIOPA estimated that the holding period for government bonds is 5 years. Based on the quarterly analysis, the annualised average holding period is 4.5 years.

In the survey, 40% of the undertakings, independent of the type of undertaking, found that the estimated percentage kept for government bonds reflected their asset management. Figure 27 shows that the proportion of undertakings that found that the preliminary results reflected their asset management is higher for non-life undertakings (45%) than for composite (40%) and non-life (35%) undertakings.

Figure 27: Number of undertakings, per type, that consider that the estimated percentage kept, sold or matured reflects their government bond management



If a selling rate per year in the period in question of up to 14% is assumed, 72% of the undertakings that report a selling rate different from the EIOPA estimated rate fall within this category. The results depend on the type of undertaking. The average for all undertakings was 16% and was 26% for non-life undertakings, 19% for life undertakings and 8% for composite undertakings.

In the survey, 23% of life undertakings and 37% of composites and non-life undertakings found that the preliminary results reflected their asset management. Almost 50% of the undertakings did not provide additional information about their observed holding period. Of the undertakings that provided information about the actual holding period, for 60% the holding period is longer than the EIOPA estimated holding period of 5 years. The average holding period is 9 years for all undertakings, 8 years for life undertakings and 5 years for non-life undertakings.

The investment strategies of the different types of undertakings are summarised in Table 22.

Table 22: Number of undertakings per investment strategy for government bonds, per type

	Government bonds		
Investment strategy type	Life	Non-life	Composites
Active specific target	39	12	30
Active higher return than the market	17	6	15
Passive	48	17	34
Not specified	10	4	7
Total	114	39	86

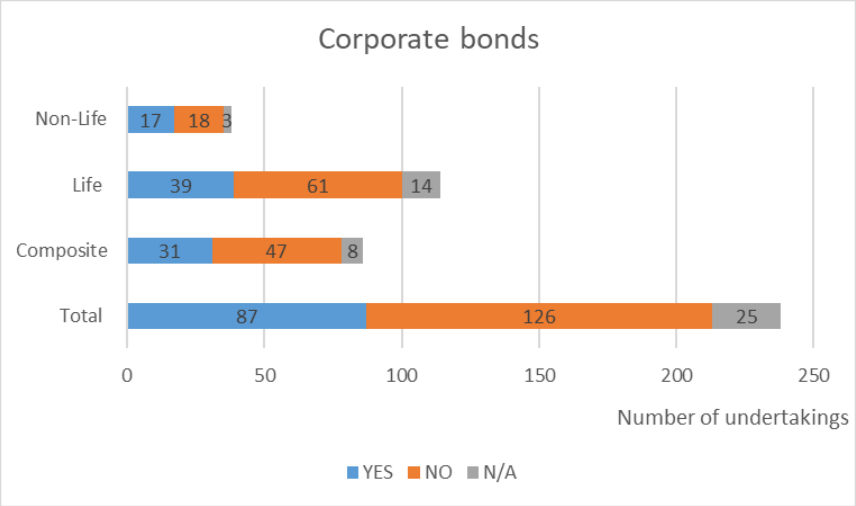
There is no significant difference between the choices of strategy of the different types of undertakings. The most common strategies are 'active specific investment strategy' and 'passive strategy'. Of the undertakings in the not specified category, some mention that their unit link portfolios have individual strategies and are managed with respect to liquidity constraints.

Corporate bonds

In the request for information of spring 2019, EIOPA asked undertakings to compare their investment behaviour with the EIOPA estimates. The EIOPA estimates over the course of a year (quarter 1 2016 to quarter 1 2017) with respect to corporate bonds are that 77% are kept, 15% are sold and 8% are matured. This then corresponds to an estimated average holding period of 4.3 years. Based on the quarterly analysis, the annualised average holding period is 4 years.

In the survey, 37% of the undertakings, independent of the type of undertaking, found that the preliminary results on the percentage kept for corporate bonds reflected their asset management. Figure 28 shows that the proportion of undertakings that found that the preliminary results reflected their asset management is highest for non-life undertakings: 45%.

Figure 28: Number of undertakings, per type, that consider that the estimated percentage kept, sold or matured reflects their corporate bond management



If a selling rate per year in the period in question of up to 15% is assumed, 80% of the undertakings that report a selling rate different from the EIOPA estimated rate fall within this category. The reported selling rate is independent of the type of undertaking. The average selling rate per year based on reported rates is 15% for corporate bonds. The results depend on the type of undertaking. The average for all undertakings was 18% and was 13% for non-life undertakings, 13% for life undertakings and 10% for composite undertakings.

In the survey, 30% of life undertakings, 36% of composites and 44% of non-life undertakings found that the preliminary results on the holding period of assets reflected their asset management.

Of the undertakings that provided information about the actual holding period, for 60% the holding period is longer than the EIOPA estimated holding period of 4.3 years. The average holding period based on the reporting of undertakings is 5.7 years. The average holding period is higher for composite undertakings (6.6 years) than for life (2.3 years) and non-life (5.1 years) undertakings.

The investment strategies of the different types of undertakings are summarised in Table 23.

Table 23: Number of undertakings per investment strategy for corporate bonds, per type

	Corporate bonds		
Investment strategy type	Life	Non-life	Composites
Active specific target	31	12	32
Active higher return than the market	33	10	14
Passive	33	12	28
Not specified	17	5	12
Total	114	39	86

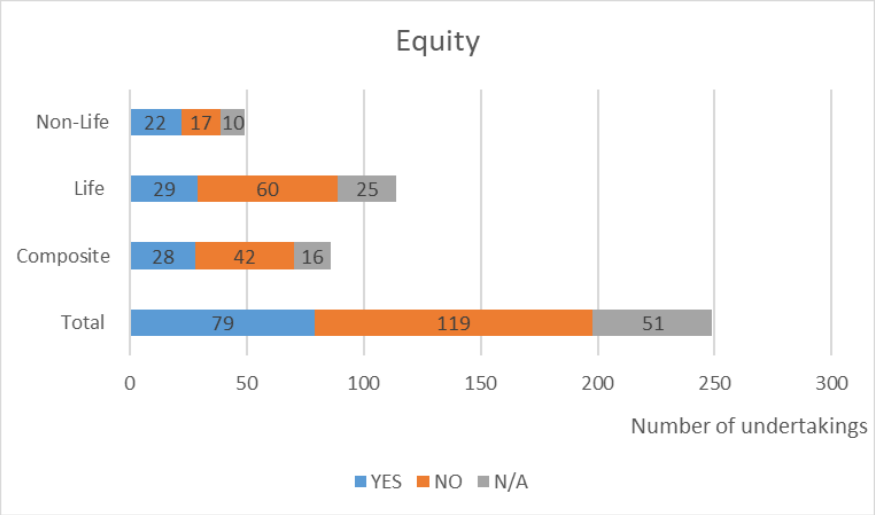
There is no significant difference between the choices of strategy of the different types of undertakings. All of the common strategies are used in almost equal proportions.

Equity

The undertakings are asked to compare their investment behaviour with the EIOPA estimates. The EIOPA estimates over the course of a year (quarter 1 2016 to quarter 1 2017) with respect to equity are that 78% are kept and 22% are sold. Based on the 3-year observation period, EIOPA estimated that the holding period for equity is 4.5 years. Based on all QRTs, the average holding period is 3.4 years.

In the survey, 30% of the undertakings, regardless of the type of undertaking, found that the preliminary results on the percentage kept for equity reflected their asset management. Figure 29 shows that the proportion of undertakings that found that the preliminary results reflected their asset management is highest for non-life undertakings: 45%.

Figure 29: Number of undertakings, per type, that consider that the estimated percentage kept, sold or matured reflects their equity management



If a selling rate per year in the period in question of up to 22% is assumed, 66% of the undertakings that report a selling rate different from the EIOPA estimated rate fall within this category. The reported selling rate is independent of the type of undertaking.

In the survey, 30% of all undertakings found that the preliminary results reflected their asset management. Of the undertakings that provided information about the actual holding period, for 60% the holding period is longer than the EIOPA estimated holding

period of 4.3 years. The average holding period based on the reporting of undertakings is 8 years. The average holding period is higher for composite undertakings (10.2 years) than for non-life (8.2 years) and life (6.3 years) undertakings. The median holding period is 5 years.

The investment strategies of the different types of undertakings are summarised in Table 24.

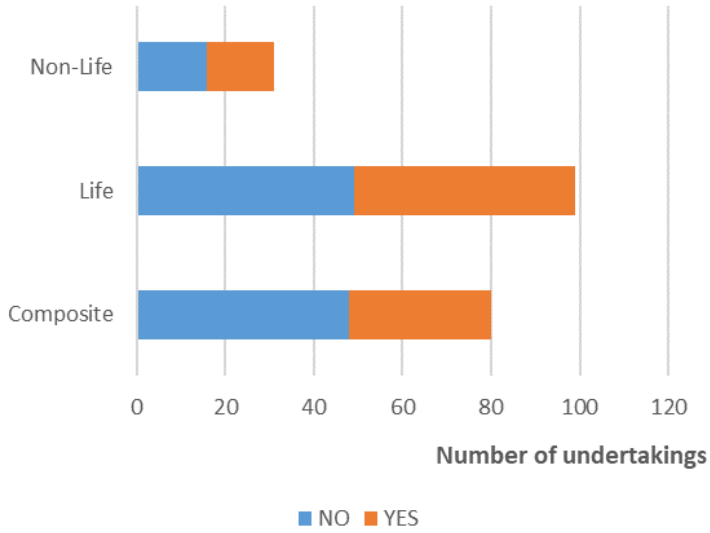
Table 24: Number of undertakings per investment strategy for equity, per type

	Equity		
Investment strategy type	Life	Non-life	Composites
Active specific target	27	10	30
Active higher return than the market	35	11	20
Passive	25	8	18
Not specified	27	10	18
Total	114	39	86

Long-term illiquid investments

Solvency II identifies specific investments such as infrastructure and strategic equity investments as typically long-term investments that are bought and held by undertakings. EIOPA asked undertakings if there are other investments of relevance that they consider as having similar characteristics. The majority of respondents did not consider that other investments were long-term investments with similar characteristics to infrastructure and strategic equity investments.

Figure 30: Number of responses from undertakings on long-term illiquid investments



Undertakings that answered yes to this question elaborated on the nature of these investments. In particular, those respondents highlighted that a range of assets are held long term. The asset classes identified are listed in Table 25.

Table 25: Asset classes identified by undertakings as held long term

Asset class	All undertakings	Percentage of total participants to the survey
Private debt/loans/mortgages (including funds)	44	18.5%
Real estate (including funds)	42	17.6%
Private equity (including funds)	38	16.0%
Bonds	12	5.0%
Infrastructure debt/funds	9	3.8%
Strategic participations	8	3.4%
Equity	7	2.9%
Investment funds/hedge funds	4	1.7%
Public-private partnerships	2	0.8%
Renewables	2	0.8%

The large majority of the answers provided mentioned the following three illiquid asset classes:

1. private debt, in particular mortgages, loans and privately placed bonds (other than infrastructure debt) — some respondents declared that they also invest in this asset class indirectly, through investment funds;
2. property-related investments (both direct and through funds) — many undertakings highlighted that direct real estate investments are held long term, as they provide a considerable rents cash flow;
3. private equity, other than strategic participations.

The average holding period for each asset class is reported in Table 26.

Table 26: Average holding period for the asset class undertaking spotted as held to maturity/long-term

Asset class	Average holding period (in years)
Private debt/loans/mortgages (including funds)	11
Real estate (including funds)	14
Private equity (including funds)	9
Bonds	12
Infrastructure debt/funds	13
Strategic participations	13
Equity	10
Investment funds/hedge funds	11
Public-private partnerships	10
Renewables	10

2.2. Information on duration

The average modified duration is calculated at the company level based on the QRT data set using all assets that have a duration (mainly bonds). The figures are based on the modified duration undertakings report in S.06.02. The number calculated is presented as a percentage, indicating the interest rate sensitivity of the company's assets to external shocks. For instance, assuming we have an undertaking with a 5% average duration and a bond portfolio worth €100 million, an external interest rate shock of 100 basis points (bps) will have an impact of 5% on the price of the bond portfolio, which will be now valued at €95 million. The distribution of the weighted average modified durations of the QRT sample can be seen in Table 27.

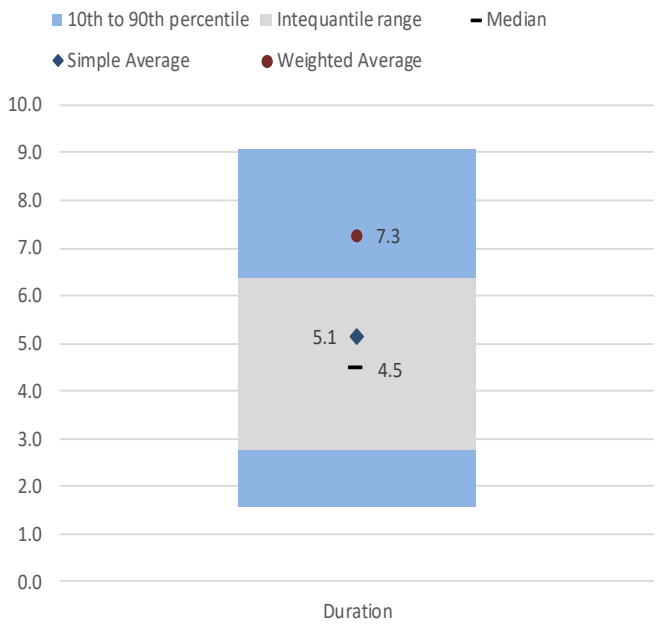
The sample consists of 1,985 undertakings. The country breakdown and the breakdown by number of undertakings and by total investments is given in Table 27. All data refer to year-end 2018.

Table 27: Sample of undertakings for the duration figures

	Number of undertakings	Total investments (non-unit and -index linked) in billion euros	Total investments as percentage of total
All	1,985	7,526	100%
AT	35	108	1.40%
BE	63	274	4%
BG	33	2.8	0.04%
CY	31	2	0.03%
CZ	27	14	0.20%
DE	257	1,834	24%
DK	75	252	3%
EE	10	1.3	0.02%
EL	36	13	0.20%
ES	154	254	3%
FI	45	34	0.50%
FR	150	2,104	28%
GIB	22	4.6	0.06%
HR	18	4.7	0.06%
HU	23	4.6	0.06%
IE	190	96	1.30%
IS	8	0.9	0.01%
IT	92	706	9%
LI	27	3.8	0.05%
LT	9	0.8	0.01%
LU	91	50	0.70%
LV	6	0.6	0.01%
MT	40	7.4	0.10%
NL	123	360	5%
NO	31	137	2%
PL	59	31	0.40%
PT	38	38	0.50%
RO	28	2.6	0.04%
SE	122	166	2%
SI	15	5.9	0.08%
SK	14	4.7	0.06%
UK	113	1,011	13%

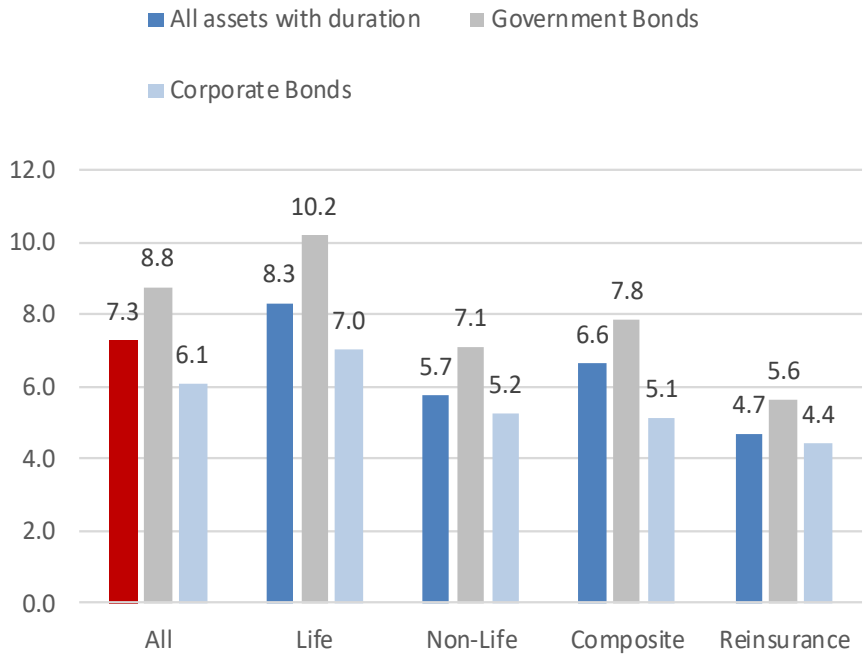
The average duration of all investments that have a duration is displayed in Figure 31.

Figure 31: Average duration of all investments with a duration (QRT sample)



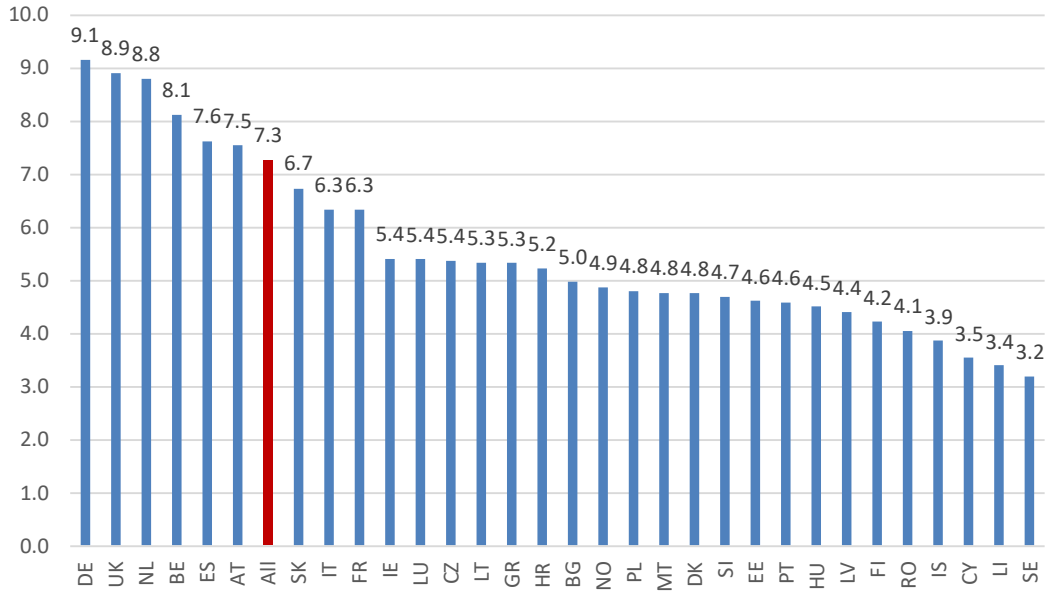
Data at the undertaking level are subsequently used for the production of aggregated weighted averages, which are further used in the analysis. The breakdowns by line of business and by country are displayed in Figures 32 and 33, respectively.

Figure 32: Average weighted duration of all investments with a duration by line of business



From Figure 32, we can see that the government bond portfolio for all lines of business is more sensitive to external shocks than the corporate bond portfolio and the overall average.

Figure 33: Average weighted duration of all investments with a duration by country



Similarly, when looking at the country breakdown, we can see that Germany, the UK and the Netherlands have a weighted average duration close to 9%, which is higher than the average of the sample. Additional breakdowns for the government and the corporate bond portfolios can be found in Annex 2.

In Figures 34 and 35, the interlinkage between the holding period of assets in years estimated by EIOPA (X axis) and the average duration of assets (Y axis) is explored.

Figure 34: Comparison of the average duration of assets with the holding period of assets, per country

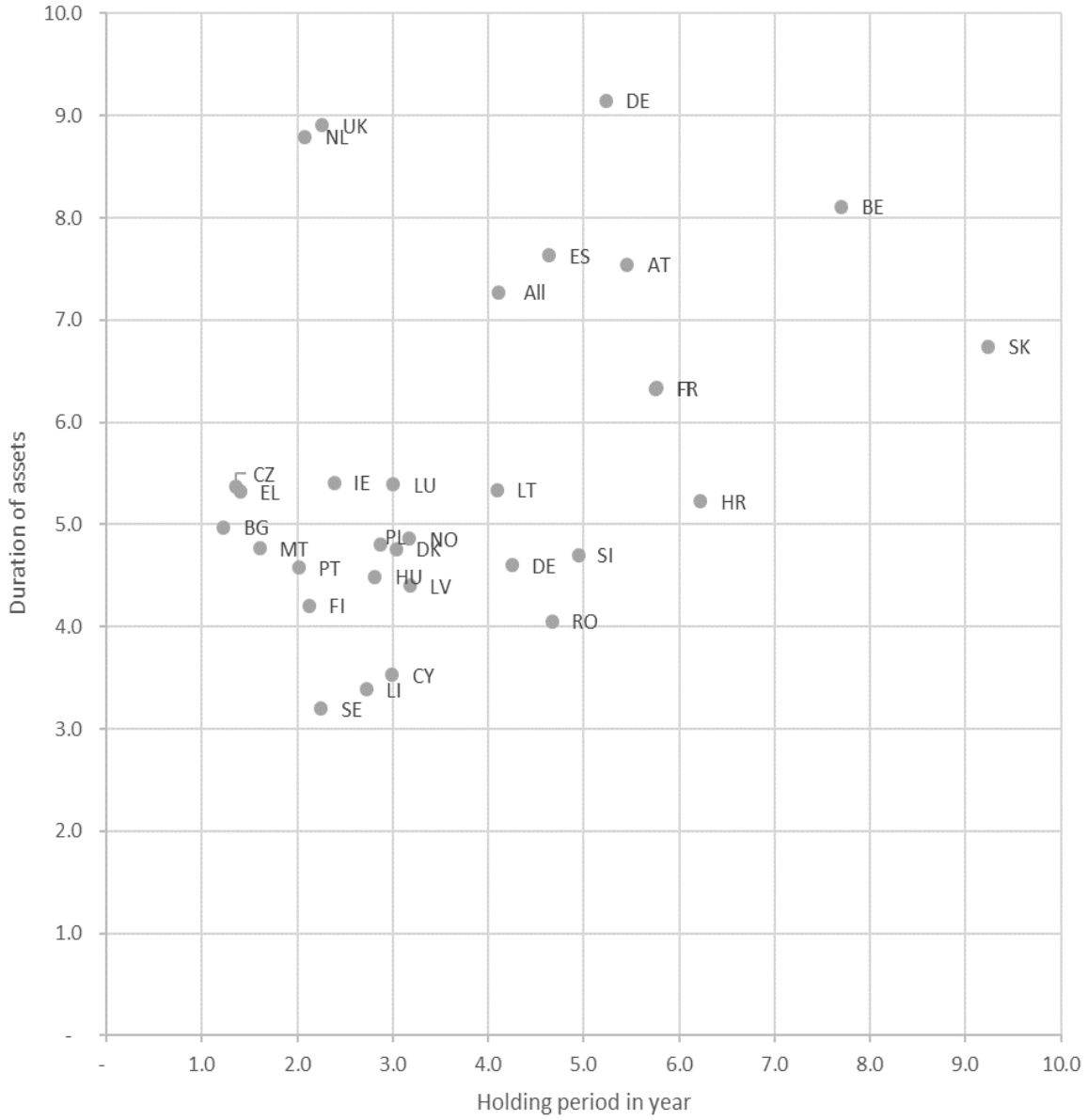
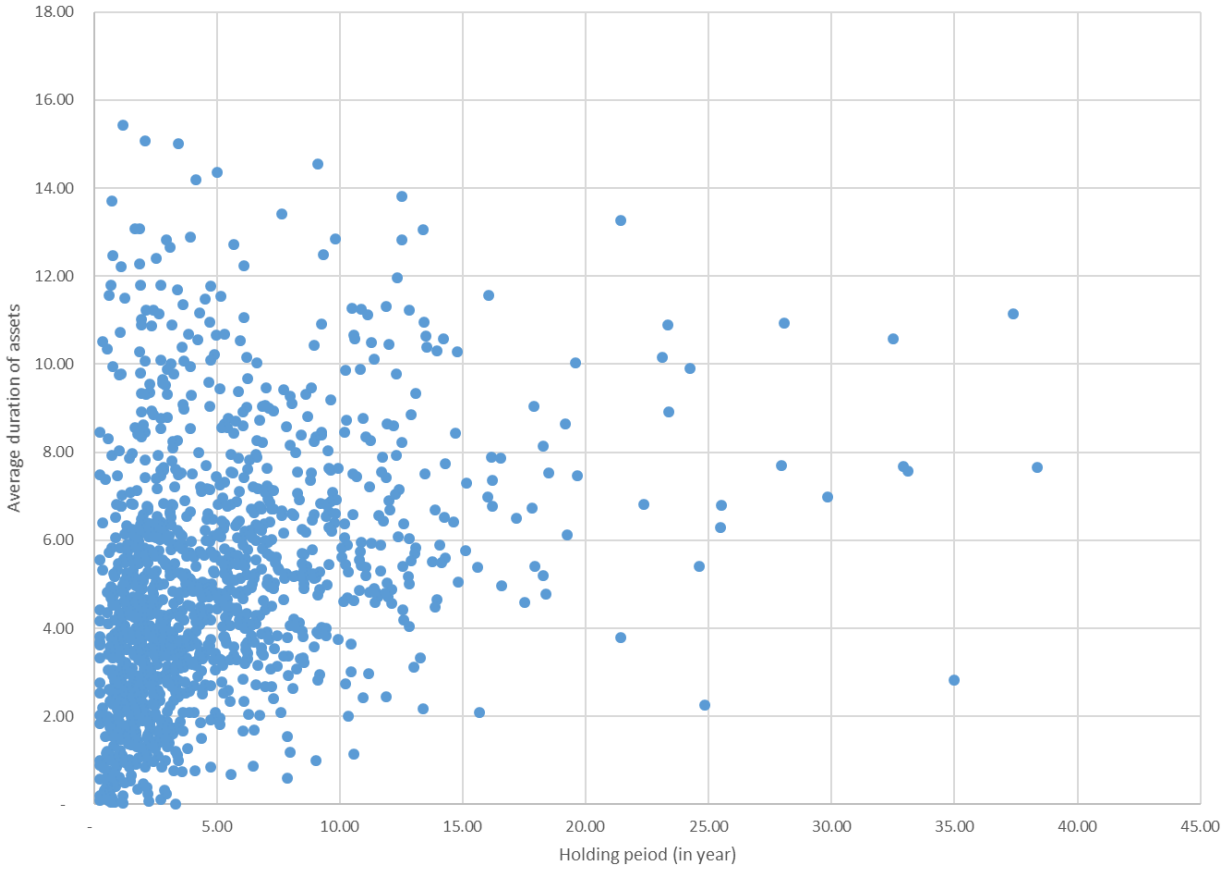


Figure 35: Comparison of the average duration of assets with the holding period of assets, per undertaking



2.3. Characteristics that enable long-term investments

Another assumption on undertakings' asset management behaviour is that they are investors with long-term strategies for each asset class and little liquidity risk. Thanks to adequate ALM and liquidity risk management, undertakings could cover liability cash flows under stress. This would mean that the industry could avoid forced sales of assets to a large extent.

The definition of long-term investments is therefore not based on the effective holding period of each particular/individual asset, but is based on the long-term strategic exposure to assets, including in forced sale/stressed situations, which are best tested on a holistic basis.

Link with liabilities

Stakeholder feedback

In response to the question regarding if asset management plans and/or SAAs differ depending on the functions of specific liabilities (portfolios), the majority of undertakings answered that the asset management plans and/or SAAs do indeed differ across the liability portfolio.

The following characteristics of liabilities were mentioned as differing across the portfolio:

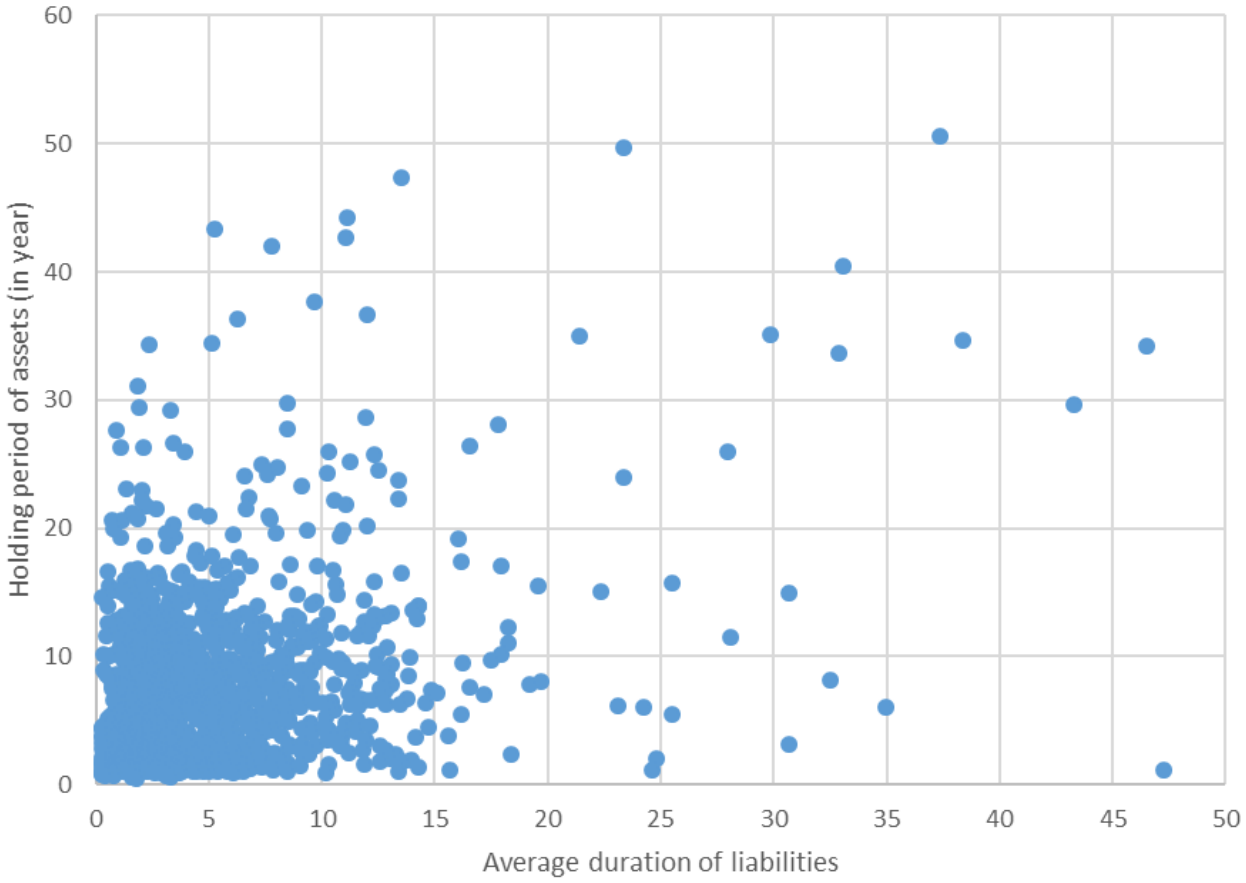
- the currency of the obligations;
- the maturity/duration of the obligations (short or long term);
- the lines of business (e.g. life versus non-Life, unit-linked versus non-unit-linked business);
- other characteristics of the obligations, such as the level of guarantees or commissions;
- the existence of ring-fenced funds.

One-third of undertakings responded that their asset management does not differ depending on the function of specific liabilities. They noted that their management is done on the basis of the whole portfolio rather than by separating different liability portfolios.

Analysis of interlinkages between asset management and liabilities

In Figure 36, the relationship between the average duration of the assets (X axis) and the average duration of the liabilities can be seen at the undertaking level. However, no strong statistical relationship can be seen within our sample of observations.

Figure 36: Comparison of the average duration of liabilities with the holding period of assets, per undertaking



When looking at the estimated holding period of assets against the illiquidity measurement, both at the country and the undertaking levels (among the 172 undertakings of the LTG sample; Figures 37 and 38, respectively), no strong statistical relationship can be observed. The same applies to Figure 39, in which the relationship between the average duration of assets and the average duration of liabilities is investigated.

Figure 37: Scatter plot of the holding period of assets versus illiquidity measurement by country

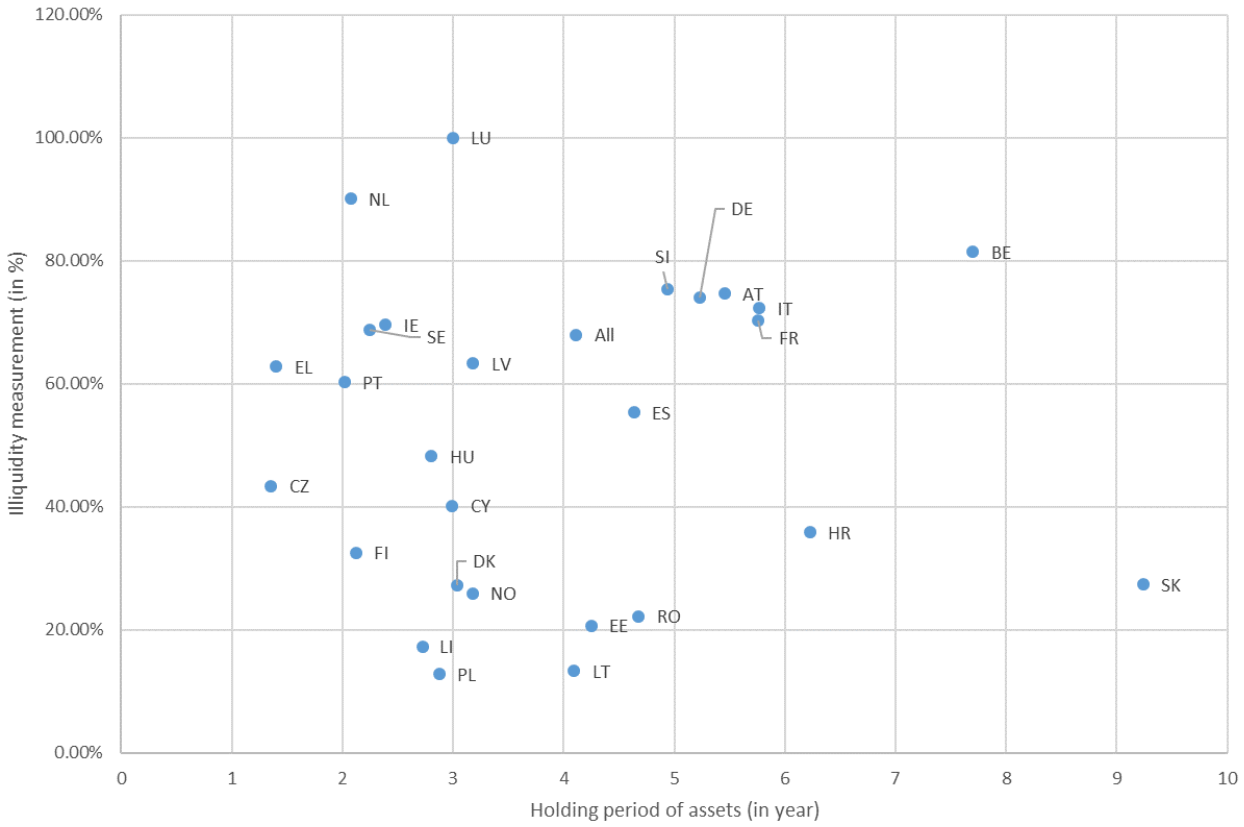
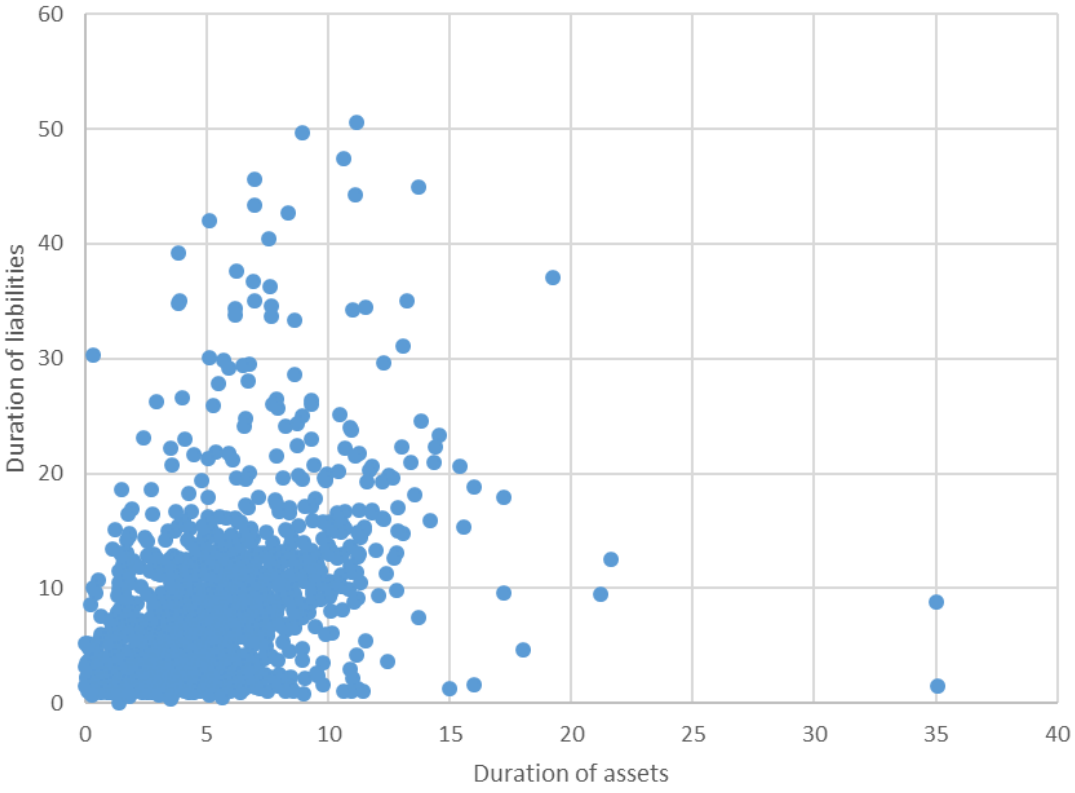


Figure 38: Scatter plot of the holding period of assets versus illiquidity measurement by undertaking

Figure 39: Scatter plot of the average duration of assets versus the average duration of liabilities for 2018



Equity holding period test

Introduction

This section is dedicated to the analysis of the information on the asset management of insurers, particularly the holding period of investors, and its ability to decide the timing of buying and selling equities. This analysis relates to point 3.2 of the European Commission request for information, in which EIOPA is asked to provide information on the period over which investments are effectively held by insurance undertakings.

Some feedback was received from stakeholders in the request for feedback put forth by EIOPA concerning the holding period of assets, namely that, even though insurers may not typically hold individual assets for a prolonged period, they could do so and they could also avoid forced sales in times of distress with the implication of a deterioration of the balance sheet. So, it is not whether or not an insurer actually holds on to its assets, but whether or not it could hold on to its asset that is of interest (i.e. whether or not they will be forced to sell rather than whether or not they actually sell).

Moreover, the feedback received seemed to highlight that, as far as equities are concerned, they were used not only to earn extra return but also as a 'buffer' with a high turnover ratio to keep flexibility in their asset management practices. Stakeholders outlined, during the discussions, a broader definition of long-term investments (i.e. not based on the effective holding period of each particular/individual asset but based on the long-term strategic exposure to assets, including in forced sale/stressed situations, which should best be tested on a holistic basis).

Description of the test

Following this line of thought, a test was given to the insurance undertakings to determine the first year in which an undertaking has to sell its equity investments and, therefore, to determine what extent an undertaking can hold this investment and prevent losses from forced sales. The key principle of this test is that, to the extent that cash inflows are insufficient to meet the required cash outflows, the insurer may either choose or be forced to sell equities. Therefore, this test aims to identify the maturity when an insurance company needs to sell a part of its equity portfolio to meet its liabilities cash flow projection under stressed conditions. The main idea is then to compare cash inflows to cash outflows under stressed conditions. When a gap is identified, undertakings can either use cash or short-term securities to fill in the gap or sell equities. The maturity when equities need to be sold to fill in the gap is the main outcome of the test.

Unit-linked business with no guarantees and assets backing this business were excluded from the test. In terms of assets, the test encompasses corporate and sovereign bonds, equities and cash, bank deposits and short-term securities. All other assets were excluded (e.g. strategic participations, infrastructure and private equity).

The scenario selected for the test has a deterministic nature and tried to capture stressed conditions. Concerning the stresses, undertakings had to apply:

- 50% of the standard formula shocks for underwriting risk shocks as defined in the Solvency II Delegated Regulation;
- 50% of the standard formula market risk shocks as defined in the Delegated Regulation (except for equity risk shocks as defined in Article 169 of the

Delegated Regulation and spread shocks on bonds as defined in Article 175 of the Delegated Regulation);

- no spread risk shocks to bonds, as they are supposed to be kept until maturity;
- 50% of the mass lapse shock mentioned in Article 142(6)(b) of the Delegated Regulation in the first year of the test (maturity 1) — the mass lapse shock is therefore 20%;
- 50% of the permanent lapse up shock mentioned in Article 142(2) of the Delegated Regulation from year 2 onwards (maturity 2 and onwards);
- 100% of the standard formula equity risk shocks as defined in Article 169 of the Delegated Regulation (except for strategic participations, which are excluded from the scope of the test).

When a sub-module considers bi-directional shocks, undertakings have to apply the most adverse scenario according to their net SCR calculation (except for lapse shocks). Moreover, the impact of stresses should be reflected on the future premiums considered as cash inflows.

The outcome of the test was the first maturity at which the gap between cash inflows and cash outflows needs to be filled and selling type 1 equities are needed.

Results of the test

The results of the test are based on a sample of 191 undertakings (69 composites, 94 life undertakings and 28 non-life undertakings).

The total distribution of undertakings after the first year of selling type 1 equities is given in Table 28.

Table 28: Distribution of undertakings after first year of selling type 1 equity

Type of undertaking	0	1	2	3	4	5	9	11	12	13	16	17	18	19	20	22	23	24	25	29	31	36	37	43	45	51	59	Total
Composite	32	27	2		1	1	1				1				2		1	1										69
Life	32	42					1	2		1	2	1	1	1	1	1			1	1	1	1	1	1	1	1	1	94
Non-Life	18	6		1			1		1									1										28
Total	**82**	**75**	**2**	**1**	**1**	**1**	**3**	**2**	**1**	**1**	**3**	**1**	**1**	**1**	**3**	**1**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**191**

According to this sample, 43% of undertakings can hold their equities beyond 5 years and 58% can hold their equities for at least up to 5 years.

Table 29 shows this distribution as the percentage of equities sold in the first year in the total equities that those type of undertakings hold (E.g. In the first year, life undertakings are forced to sell 10.8+% of their type 1 equity).

Table 29: Distribution of undertakings by percentage of total equity sold in the first year

Type of undertaking	1	2	3	4	5	9	11	12	13	16	17	18	19	20	22	23	24	25	29	>30	Total
Composite	28.6%	3.5%		0.0%	0.1%	0.6%				0.0%				3.3%		0.3%	0.0%				36.5%
Life	10.8%					0.0%	0.0%		0.1%	0.8%	0.0%	0.0%	0.4%	0.0%	6.1%			0.1%	0.0%	0.3%	18.7%
Non-Life	15.2%		0.8%			0.6%		0.5%									0.0%				17.0%
Total	**15.4%**	**0.9%**	**0.0%**	**0.0%**	**0.0%**	**0.2%**	**0.0%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.3%**	**0.8%**	**4.4%**	**0.1%**	**0.0%**	**0.1%**	**0.0%**	**0.3%**	**23.2%**

Focusing on the percentage of market value, first sales between 1 and 5 years represent 16.3% of the total market value. Year 1 is the year in which most sales occur (15.4%).

The number of undertaking with the first sales in first are given in Table 30, per country.

Table 30: Number of undertakings with the first sale in each year, per country

Member-State	0	1	2	3	4	5	9	11	12	13	16	17	18	19	20	22	23	24	25	29	>30	Total
AT	2	3																				5
BE	1	1				1																3
CY	4	2																				6
CZ	2	2																				4
DE	5	11									1										3	20
DK		5					1								1							7
ES	3	2																				5
FI	2											1	1									4
FR	8	19	2				1		1		1										1	33
GR	3						1															4
HR	2	1																1				4
HU	3	1												1								5
IE	3														1							4
IT	3	8															1			1		13
LI	2	1																			1	4
LU	2	1																				3
NL	11	2		1														1	1		2	18
NO															1	1						2
PL	7	3						1														11
PT		1			1																	2
RO	4	1																				5
SE	2	4								1	1											8
SI	2	3						1														6
SK	4	2																				6
UK		1																				1
Total	**82**	**75**	**2**	**1**	**1**	**1**	**3**	**2**	**1**	**1**	**3**	**1**	**1**	**1**	**3**	**1**	**1**	**2**	**1**	**1**	**1**	**191**

If the first column, the undertakings that do not need to sell type 1 equities in any of the years within the time horizon amount to 82.

The focus can be on the weights of equities that would actually be sold in the total equities held, by Member State (Table 31).

Table 31: Share of total equity that would be sold per first sale in each year, per country

Member-state	1	2	3	4	5	9	11	12	13	16	17	18	19	20	22	23	24	25	29	>30	Total
AT	4.5%																				4.5%
BE	61.8%				5.5%																67.3%
CY	38.3%																				38.3%
CZ	73.1%																				73.1%
DE	36.5%									0.9%										2.1%	39.5%
DK	20.8%					1.3%								2.1%							24.2%
ES	61.3%																				61.3%
FI											1.9%	6.8%									8.7%
FR	17.4%	3.3%				0.0%		0.0%		0.0%										0.0%	20.8%
GR						30.4%															30.4%
HR	17.5%																1.9%				19.4%
HU	19.1%												6.6%								25.8%
IE														24.4%							24.4%
IT	48.0%															1.1%			0.0%		49.1%
LI																				2.1%	2.1%
LU	13.9%																				13.9%
NL	4.3%		1.5%														0.0%	9.1%		14.7%	29.6%
NO														3.7%	29.7%						33.4%
PL	11.0%						0.0%														11.0%
PT	9.2%			7.1%																	16.2%
RO	25.9%																				25.9%
SE	3.7%								0.2%	2.4%											6.3%
SI	39.0%						5.9%														44.9%
SK	45.1%																				45.1%
UK	16.1%																				16.1%
Total	**15.4%**	**0.9%**	**0.0%**	**0.0%**	**0.0%**	**0.2%**	**0.0%**	**0.0%**	**0.0%**	**0.6%**	**0.0%**	**0.0%**	**0.3%**	**0.8%**	**4.4%**	**0.1%**	**0.0%**	**0.1%**	**0.0%**	**0.3%**	**23.2%**

In the sample analysed, 15.4% of total equities were sold in the first year and only 23.2% were sold within the established time horizon (59 years). However, this conclusion should be drawn with an important caveat: some NSAs reported that some of the undertakings that performed this test did not provide data for the years following the first year that they needed to sell type 1 equities. This may explain why the weight of assets sold within the whole time horizon is just a little bit higher than the weight of assets sold in the first years.

Taking into account the existence of a liquidity plan in the undertakings, an analysis was performed to determine if there was a link between the existence of a liquidity plan in the undertaking and the risk of forced selling. The average first year of selling equities was computed for two different groups (the group of undertakings that have a liquidity plan and the remaining undertakings). Table 32 shows the results.

Table 32: Average first year of selling depending on if there is a liquidity plan

Liquidity plan	First year of selling (average)
YES	3,64
NO	5,28

The difference between undertakings with and without liquidity plan is very small (less than 2 years); this difference may not be particularly relevant and any conclusions extracted from this finding should be taken carefully. Therefore, with this sample, we can consider the existence of a liquidity plan not as a clear explanative driver but as a candidate driver.

In conclusion, although a large percentage of undertakings can hold their assets for at least 5 years (58%), in terms of volume of equities, most of them (65%) are sold during the first 5 years.

Table 33 provides the average illiquidity meausurement depending on the year of first forced sale.

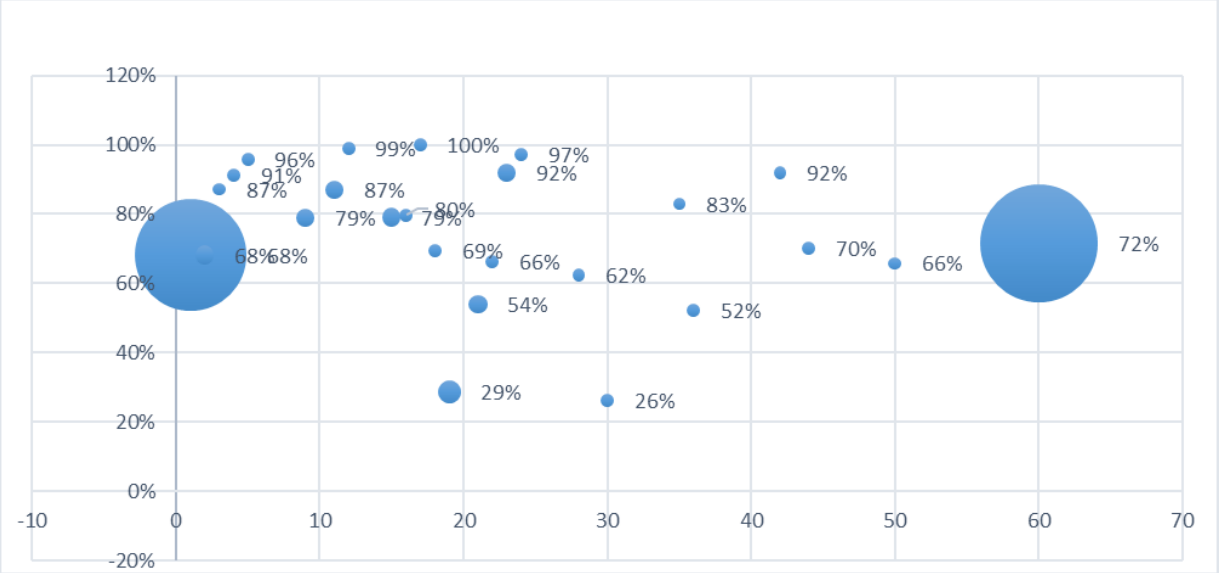
Table 33: Average illiquidity measurement depending on the year of first forced sale

Year of forced sale	Illiquidity measurement	Number of undertakings
Before year 10	70%	82
Of which in year 1	68%	74
Year 10 and later	71%	27
No forced sale	72%	82

This could be explained by the fact that the illiquidity of the liabilities is not the only dimension of the test. For example, success in the test could also depend on the availability of buffers (i.e. the amount of cash and deposits), the future premiums and fixed-income coupons.

In Figure 40, the size of the circle corresponds to the number of undertakings contributing to that average illiquidity measurement (e.g. the circle for year 60 represents 82 undertakings with an average illiquidity measurement of 68%). Note that the number of undertakings that are not exposed to forced sale is represented in the figure as x=60.

Figure 40: Number of undertakings per first year of forced sale and the average illiquidity measurement



In particular, the size of those considered buffers is related to the size of the total best estimates:

$$Size\ of\ buffer = \frac{(Cash\ and\ deposits + FP_{t=1} + CPN_{t=1} + Accumulation\ of\ \ cash\ surplus)}{Total\ best\ estimate}$$

When comparing the results of the equity holding period test with a ratio of 1, it appears clearly that the undertakings that are not exposed to forced sales have the highest ratio. However, the ratio for undertakings that are exposed to forced sales is in a very small range for the size of buffers: 13% to 18%.

Table 34 shows the average size of considered buffers depending on the year of first forced sale.

Table 34: Average size of buffers depending on the year of first forced sale

Year of forced sale	Size of buffers	Number of undertakings
Before year 10	18%	82
Of which in year 1	15%	74
Year 10 and later	13%	27
No forced sale	43%	82

When looking at the individual results, it can be seen that there is no evident trend that the time before the first of forced sale increases with the size of buffers. It should be noted that the number of undertakings that are not exposed to a forced sale is represented in Figure 41 as x=60.

Figure 41: Number of undertakings per average size of buffers and first year of forced sale

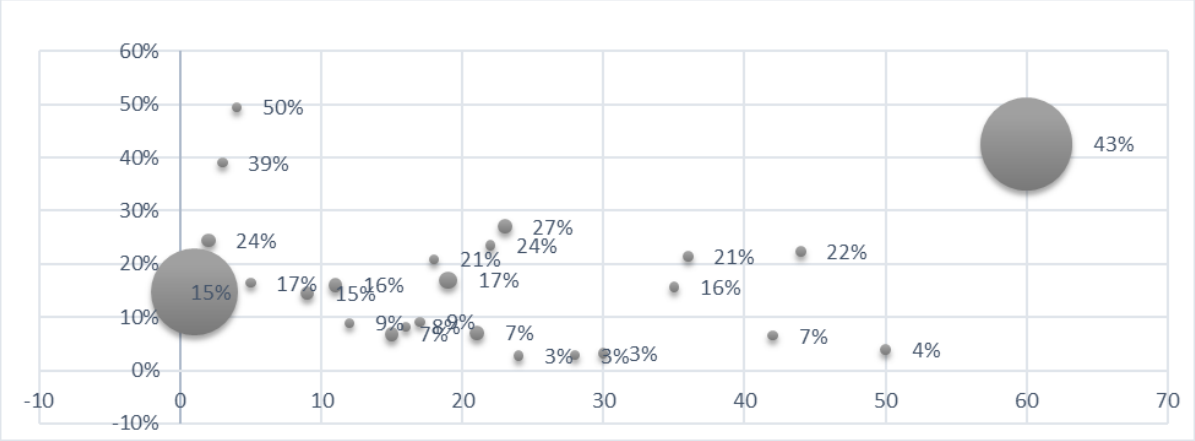
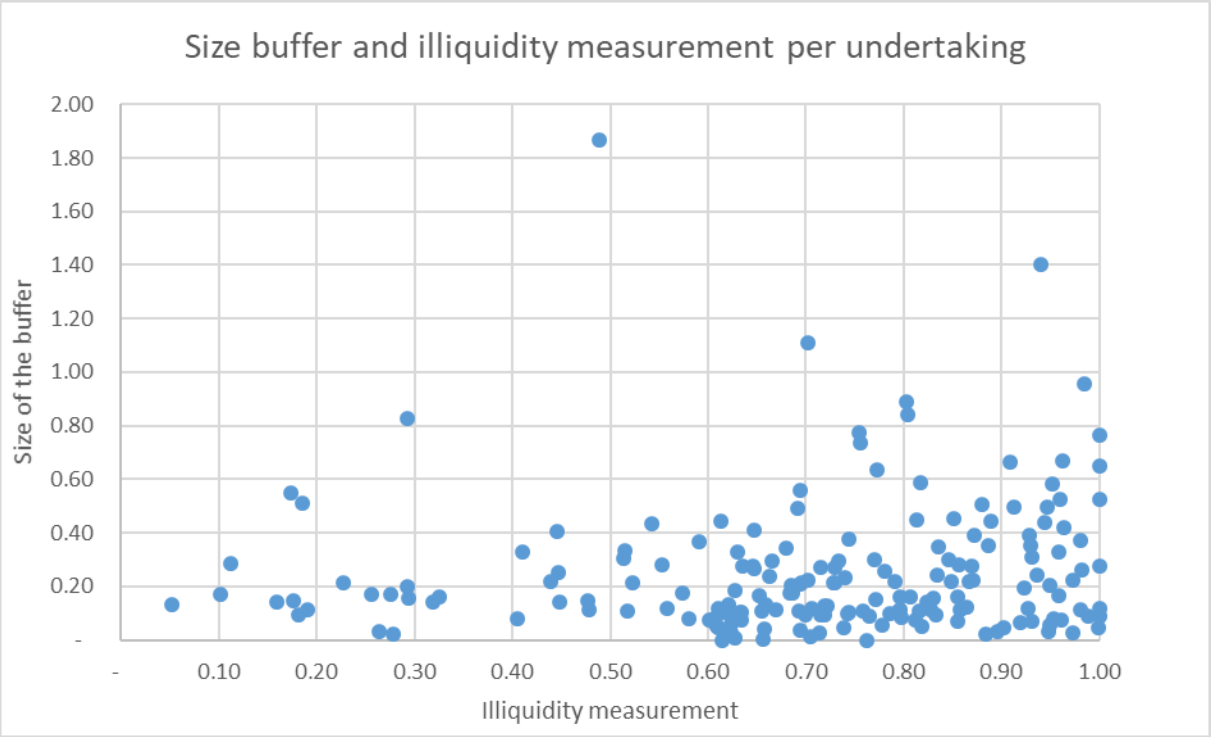


Figure 42 displays the size of buffers and the illiquidity measurement per undertaking. There is no significant correlation between the size of buffers and the illiquidity measurement. Therefore, with this sample, the size of buffers can be considered not as a clear explanatory driver but as a candidate driver.

Figure 42: Size buffer and illiquidity measurement per undertaking



To conclude, the results of the equity holding period test show that, for this sample, not all undertakings are exposed to forced selling under stress. Of those undertakings that are exposed to forced sales, 15% sell in the first year and 23% sell in the years after. It might be expected that the features that are necessary to generate better results are illiquid liabilities, the presence of buffers and the existence of a liquidity plan. However, it is not possible to establish a clear link based on the available sample size.

Liquidity management

Asset management and forced selling

To understand how undertakings consider the risk of forced selling in their asset liability management and/or risk management, EIOPA launched an information request on illiquid liabilities in March 2019. Undertakings were asked to explain their asset management practices.

The main conclusions are as follows: 26% of undertakings (58 out of 223) do not assess the risk of forced selling in their asset liability management and/or risk management ([31]).

Among these companies that do not assess the risk of forced selling in their asset liability management and/or risk management, around 28% have developed specific tools and limits and, for most, this consists of using risk appetite limits.

([31]) 15 undertakings did not respond.

The companies ([32]) that assess the risk of forced selling in their asset liability management and/or risk management make use of the following tools.

Liquidity stress

Of the undertakings that assess the risk of forced selling, 57% make use of this tool. Among those undertakings that apply liquidity stresses, around 32% also use risk appetite or liquidity limits (e.g. to set a minimum limit on the treasury/cash or equivalent) in addition to liquidity stress ([33]).

For the undertakings that describe stress scenario(s), the following are the most common scenarios, in rank order with the most common given first, for liquidity shocks in the context of forced selling:

- a liquidity scenario based on lapse risk (either through the utilisation of lapse risk scenario in the standard formula or through their own assessments based on the portfolio characteristics);
- a liquidity scenario based on catastrophic (natural) events;
- asset haircuts to simulate the stress of the forced selling of assets;
- other tools — 14% of undertakings use a combination of tools, as liquidity stress tests and/or limits several internal tools.

It seems, however, that in around 26% of the cases in which a tool was referred to, no specific tool seems to have been implemented to analyse the risk of forced selling, in particular.

Around 18% of the undertakings that consider the risk of forced selling in their asset liability management and/or risk management outlined that they will adopt (or at least are planning to adopt) a derisking or rebalancing process in the case of liquidity shock. Of the undertakings that consider the risk of forced selling, 10% do not expect that forced selling would materialise, even in the case of a stress scenario. Finally, 3% of undertakings adopt neither derisking nor rebalancing processes in the case of liquidity shock.

There are a wide variety of liquidity stresses applied by undertakings:

- the application of a flat lapse stress on the insurance portfolio (with examples including 15%, 20%, 40%, 50% and 100%);
- the application of the standard formula shocks (on assets, liabilities or both);
- the application of an economic model to the lapses (financial and credit stresses);
- the application of a combination of different scenarios;
- the assessment of liquidity risk using cash flow models (ALM, shortfalls);
- the application of an increase to recent historical observations;
- simulating ad hoc lapse stresses.

Management action and forced sale

([32]) 5 out of 165 undertakings did not respond.

([33]) 19 of the undertakings did not respond.

Around 68% of undertakings do not address the situation of a forced sale in their management actions implemented for best-estimate calculations.

As regard to the undertakings that addresses the situation of a forced sale in their management actions:

In the scope of composite undertakings, Austria, Czechia, Hungary, Italy and Portugal refer to SAA in this context in such a way that if SAA limits are breached owing to an adverse market movement, for instance, asset mix is rebalanced to again meet the SAA constraints. In addition to these Member States, in the scope of life undertakings, Germany, France, Italy and Luxembourg also refer to SAA on the same terms. Norway and Sweden refer the constant proportion portfolio insurance view for equities (for these two types of undertakings).

In the scope of composites, some Spanish undertakings refer to the assumption of sales in the case of a cash flow gap or an income deficit. In addition, a life undertaking in Germany applies the same approach. Other strategies target the planned book investment return by selling assets with unrealised gains (or losses) to meet the targeted return. Czechia, Italy and France are some of the Member States whose undertakings follow this strategy. In this scope, the idea seems to be to first sell assets with unrealised gains (or losses) to meet the targeted return.

Another important strategy is ALM (assets are sold if they exceed the imposed limits). France, Belgium, Italy and Portugal are some examples of Member States that following this strategy.

Only Germany and Norway explicitly mention a clear derisking strategy besides the strategies already mentioned. There are specific trigger events (extreme ones) that give rise to predefined actions, but not much detail is given on that. One example is the case of a huge fall in the Solvency II buffer (asset over liabilities) with the assets staying in the derisk portfolio until specific criteria for returning to default asset management are met. This applies to life insurers.

Focusing on only life undertakings, in addition to what has been mentioned, one German company notes that, if the annual cash flow balance (premiums–benefits+capital income+planned outgoing capital assets) is negative, borrowing will take place at the required level. Two other German companies explicitly mention the ‘Branchensimulationsmodell’ for the best-estimate calculations (software provided by the German Insurance Association, which is widely used in the German life insurance market). This software distinguishes between the asses classes ‘fixed income’, ‘equity’ and ‘real estate’. In each time step of the projection, the model checks if the investment earnings are sufficient to meet the policyholder claims (interest guarantees). If the investment earnings of the portfolio are insufficient, the model fills the gap using reserves on real estate, equity and fixed income, in that order. In addition, another company in Germany uses hierarchical disinvestment based on capital requirements (if a shock event occurs, assets are sold in specified orders).

In the scope of the SAA strategy, one French company notes that, in case of a market shock, the SAA is an adapted function of the shock’s type (a decrease in

the equity exposure and adjustment of the duration gap between assets and liabilities).

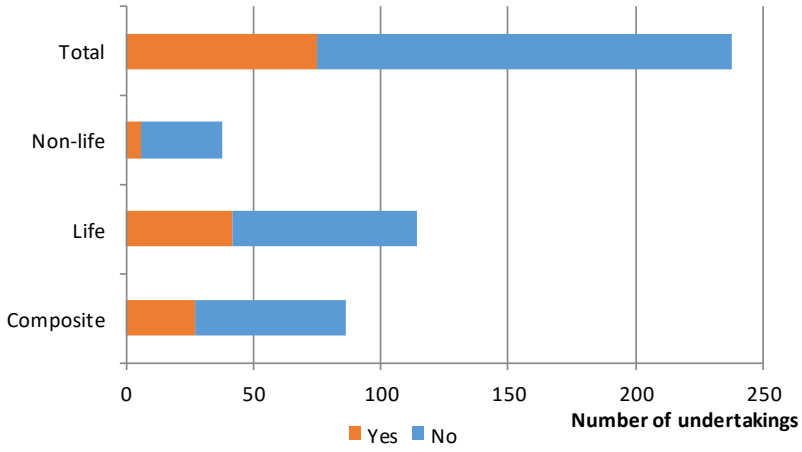
In the scope of non-life undertakings, one company in Germany notes that investment risk steering can overwrite target allocation and sell real assets and reinvest into fixed income. In Finland, one undertaking notes that management practices are included in the capitalisation plan. Tasks include derisking and preparing for capitalisation from the mother company. In France and the Netherlands, the ALM strategy is referred to, as explained above. In Malta, one company notes that the risk of forced sales is minimised because assets are kept until very close to the liability duration and most of the assets are invested in investment-grade fixed-income bonds.

Finally, the triggering of forced sales is mainly due to:

- a negative cash position at the year-end;
- rebalancing the allocation to reach the allocation target;
- a mass lapse event;
- exceeding ALM limits;
- targeting shareholder margin and/or targeted profit sharing rates (realisation of unrealised gains);
- targeting the planned book investment return;
- income redemptions and financial income when they do not allow benefits to be paid.

Figure 43 presents the number of undertakings, per type, that prescribe a specific order in which assets are sold in the best-estimate calculations. From this figure, it can be seen that the majority of undertakings do not have such a plan in place. The number with such a plan in place is even lower among non-life insurers, with only 16% answering positively to this question. For both life and composite undertakings, the proportion of undertakings with such a plan is above 30% (37% and 31%, respectively) but, nevertheless, few undertakings have such a plan.

Figure 43: Undertakings, per type, that prescribe an order for selling assets in best-estimate calculation



There is a clear trend for selling equities first in the best-estimate calculation among all groups of undertakings (life, non-life and composites). In these cases, properties are very often sold second but, in some undertakings, fixed-income assets are the second type of asset to be sold and only after that is real estate sold. Some undertakings indicate that short-term bonds are the first to be sold, as well as lower credit ratings. The majority of undertakings prefer to sell corporates first and then government bonds, but the opposite also true in a few cases. Some undertakings do not plan to sell bonds, but plan to only sell equity and, after those, properties.

Some undertakings do not specify the type of asset that is to be sold but instead apply some criteria to make this decision, for instance:

- minimise the impact on profit and losses (or minimise the realisation of unrealised capital losses and gains);
- minimise the SCR;
- target the liquidity and asset and liability management indicators;
- target the SAA limits.

Results of the liquidity test

To complete its investigations on forced selling, EIOPA asked undertakings to report on how they manage their liquidity under a stress situation. More specifically, they were asked which categories of assets they expect to sell and what the maturity of the assets being sold is. This is crucial information, as it can demonstrate how insurance companies can hold on to their long-term assets until the maturities and may not need to sell them in the case of a stress event. The main idea is then to compare cash inflows to cash outflows under stressed conditions.

The stress scenario was defined as a combination of different shocks affecting the cash in-/outflows of the undertakings. The shocks were based on the full or partial application of several risk modules of the standard formula: underwriting risks shocks, market shocks and lapse shocks (up and mass lapse).

Table 35 shows the breakdown of assets after stress and the impact of the stress on the different asset classes. The analysis is based on 224 undertakings (14 of 238 were removed owing to data quality issues).

Table 35: Breakdown of asset values before and after stress for the scope of the stress

	Solvency II value before stress (€)	Breakdown (%)	Solvency II value after stress (€)	Impact (%)
Government bonds	1,107,572,938,583	35.1	1,063,826,781,028	-3.95
Corporate bonds	854,149,166,767	27.0	762,220,551,500	-10.76
Equity	191,209,638,571	6.1	137,821,940,082	-27.92
Investment funds for collective investment undertakings	627,736,072,864	19.9	508,041,214,216	-19.07
Structured notes	44,110,192,844	1.4	38,841,930,626	-11.94
Collateralised securities	26,038,684,048	0.8	24,101,541,021	-7.44
Mortgages and loans	186,275,420,370	5.9	170,326,946,552	-8.56
Property	71,186,606,371	2.3	59,830,952,140	-15.95
Other investments	50,790,254,444	1.6	45,385,001,842	-10.64
Total	3,159,068,974,861	100	2,810,396,859,007	-11.04

Table 36 shows the breakdown of assets being sold after stress and the share of assets being sold by asset class. The analysis is based on 120 undertakings. Only those that reported positive values of assets being sold after stress are reported. Again, the same 14 undertakings with poor data quality were removed for the analysis.

In total, €341 billion or 13.1% of assets would be sold after stress. Government bonds are, in absolute amounts, the assets that are most sold after stress (€116 billion), followed by cash and deposits (€89 billion).

As a proportion, the most common assets sold are collateralised securities (15.9%), but the absolute amount is relatively small (€3.1 billion or less than 1% of the assets being sold). They are closely followed by government bonds (12.9%), equities (12.5%) and, to a lesser extent, corporate bonds (10%).

Mortgages and loans appear to be the assets that are the least sold by undertakings, as only 1.6% of the total amount is sold after stress.

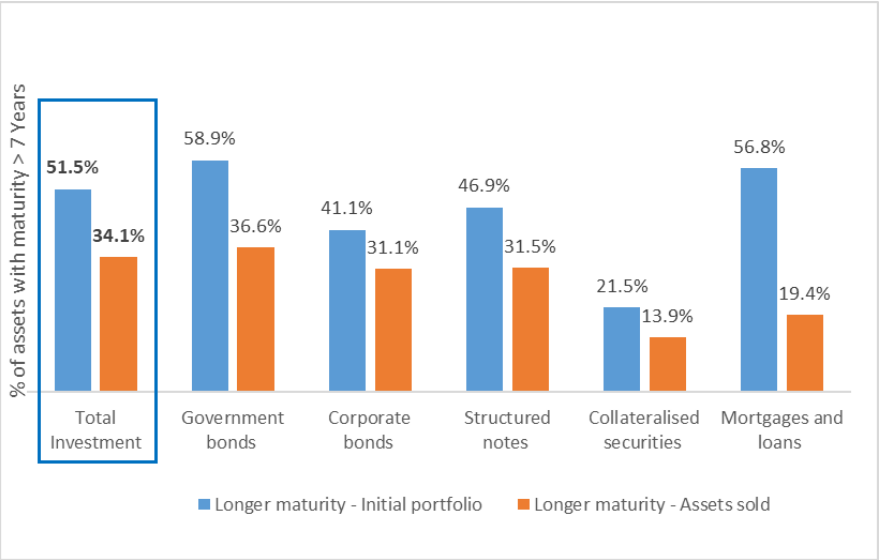
Table 36: Assets sold after stress

	Solvency II value before stress (€)	Total Solvency II value after stress that would be sold (€)	Assets sold after stress as a proportion total assets	Assets sold after stress as a proportion of total assets being sold
Government bonds	898,445,707,188	116,330,256,650	12.9%	46.2%
Corporate bonds	684,961,262,882	68,385,553,925	10.0%	27.1%
Equity	162,476,820,612	20,303,700,102	12.5%	8.1%
Investment funds for collective investment undertakings	503,811,680,468	35,825,928,758	7.1%	14.2%
Structured notes	35,714,931,630	2,013,312,261	5.6%	0.8%
Collateralised securities	19,238,539,715	3,067,867,402	15.9%	1.2%
Mortgages and loans	101,408,563,404	1,580,956,113	1.6%	0.6%
Property	71,186,727,371	2,620,075,017	3.7%	1.0%
Other investments	46,938,630,837	1,935,825,920	4.1%	0.8%
Total	2,524,182,864,107	252,063,476,148	10.0%	100%

We observed that the assets that are being sold after stress have a longer remaining maturity than the initial portfolio. The remaining maturity threshold when the proportion of assets being sold is larger than the initial portfolio depends on the asset categories. For the remaining maturities above 7 years, the proportion of assets being sold is lower than the initial portfolio for all asset categories (except structured notes, for which the threshold is 10 years).

Figure 44 compares the proportion of assets with a remaining maturity larger than 7 years kept in the portfolio after stress with the amount of assets of the same remaining maturity sold owing to the stress. For instance, the overall European portfolio before stress comprises 51.5% of assets with a remaining maturity larger than 7 years. Assets sold because of stress comprise 34.1% of assets with a remaining maturity larger than 7 years.

Figure 44: Comparison of the remaining maturity of the assets sold after stress with the initial portfolio



It can be seen from the figure that the assets with maturities longer than 7 years tend to be sold less often than those with lower maturities. This is even more so the case for government bonds (58.9% versus 36.6%). It should be noted that the impact is even higher for mortgages and loans, but the absolute amount being sold is relatively limited.

3. Information on long-term guarantee measures

3.1. Information about the matching adjustments

With regards to the matching adjustment (MA), the European Commission listed five bullet points in its call for information (CfI) setting out what it would like EIOPA to provide information on. These were as follows:

> With regards to the matching adjustments, EIOPA is asked to provide the following information on the corresponding portfolios:
> - The breakdown of issuers, between sovereigns, special purpose vehicles and other corporates;
> - Where possible, the look-through to the underlying investments;
> - The types and volume of derivatives instrument used;
> - The external and, where available, internal credit quality assessment;
> - The actual yield obtained by insurers on their investments.
>
> The information should be broken down to different regions, where relevant divergence can be observed.

Data

Quantitative reporting template data

EIOPA based its analysis on two QRT templates:

1. S.06.02 provided information on the assets that insurance undertakings hold. By filtering the assets listed in S.06.02 into only those held in MA portfolios, the data could be used to mostly answer the first bullet point of the CfI. S.06.02 broke the assets down into QRT asset categories, as asked for in the CfI, and also allowed EIOPA to calculate the average duration for each asset category. The only outstanding point from the CfI's first bullet point was regarding assets held in SPVs.
2. SR.22.03 provided information on the calculation of the MA. EIOPA made use of this QRT information by complementing it with information on the actual losses from default and downgrade arising in those portfolios (collected yearly to support the production of EIOPA's LTG report). EIOPA used these two sources of information to answer the fifth bullet point of the CfI, on the actual yields obtained.

Although these two QRT templates were useful to answer parts of the CfI, there were still outstanding areas that could not be answered with QRT information alone.

Information request

To fill the gaps identified in the available information, EIOPA decided to send an information request to undertakings that applied the MA. The information received back had to be accurate as of 31 December 2018.

EIOPA's request asked undertakings for information on the following areas of the MA:

- the losses in each MA portfolio from defaults and downgrades over 2018;
- an item-by-item list of all assets held in MA portfolios;
- a look-through to the assets underlying securitisations.

As described above, the information on defaults and downgrades, combined with the QRT information on the calculation of the MA (SR.22.03), determined EIOPA's approach to the actual yield obtained in MA portfolios.

The item-by-item list of MA assets included columns on (among others) the market value, the asset class, the country of issue, the rating source, the credit quality step (CQS), an SPV identification code and, when an asset was a securitisation, the type of securitisation that it was (based on the types determined in Article 177 of the Commission Delegated Regulation). This information allowed EIOPA to fully answer the outstanding elements of the CfI.

The information request also asked undertakings to state if they used an internal model (or partial internal model) to calculate their credit risk SCR. This was used to distinguish between standard formula and internal model undertakings.

EIOPA's response

In the UK, the data request was sent to 18 undertakings, namely 100% of UK undertakings that apply the MA. Data were received back from all 18 undertakings. Likewise, in Spain, the information was sent to 15 undertakings, which were 100% of the Spanish firms that applied the MA in 2018. Data were received back from all 15 undertakings.

In the analysis below, where possible, data have been used from the information request over the QRT data. This is because data from the information request are more comprehensive and tailored to the CfI than the QRT data.

The rest of this section addresses each of the questions in the CfI separately for the UK and Spanish markets.

The breakdown of issuers between sovereigns, SPVs and other corporates

- Results for the UK market

Table 37 and Figure 45 show the breakdown of issuers based on the asset category classification from QRT S.06.02 (C0290).

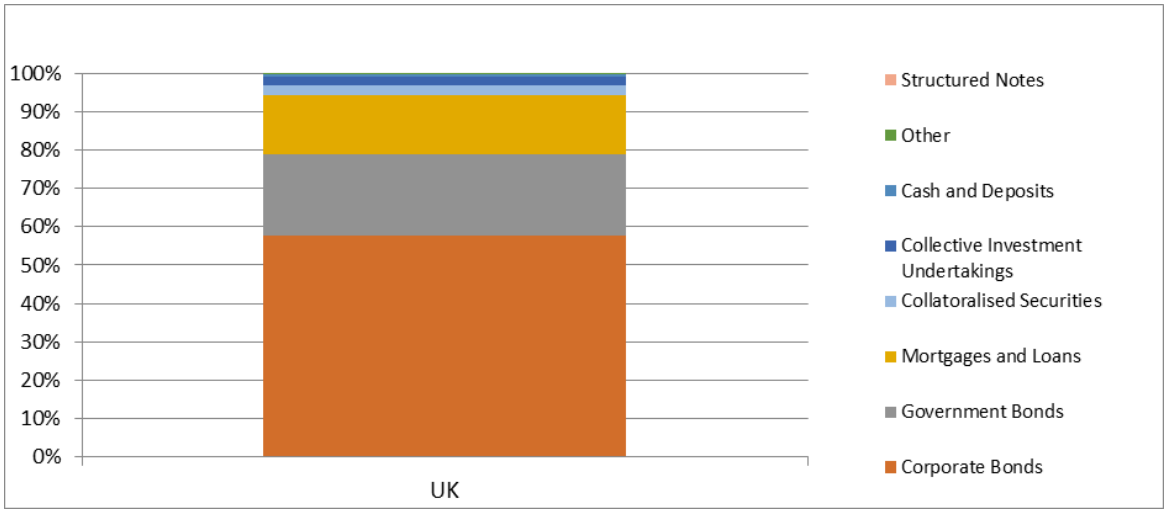
For each category, an average duration was calculated ([34]), weighted by market value.

([34]) Note that the QRTs do not require the duration to be reported for the category 'mortgages and loans'.

Table 37: Weighted average duration per asset category for the UK MA portfolios

UK MA portfolio	Market value (%)	Average duration
Corporate bonds	57.66	10.54
Government bonds	21.19	13.12
Mortgages and loans	15.47	—
Collateralised securities	2.61	13.93
Collective investment undertakings	2.28	0.03
Cash and deposits	0.53	—
Other	0.25	—
Structured notes	0.02	3.40

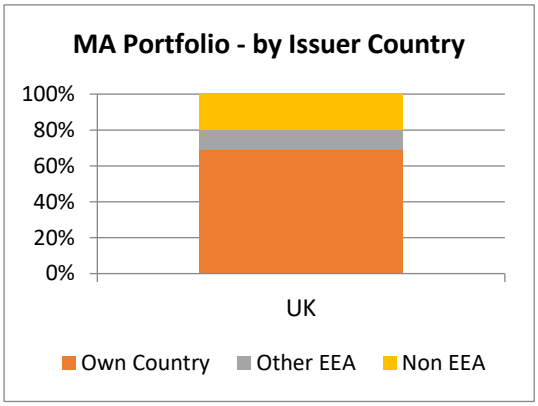
Figure 45: UK MA portfolios per asset category



For the UK market, corporate bonds were over half of the total assets held and the largest three categories (corporate bonds, government bonds, and mortgages and loans) made up over 94% of the total assets.

Using data collected in the information request, Figure 46 shows the split of assets by country of issue. It can be seen that EEA assets accounted for nearly 80% of assets in UK MA portfolios.

Figure 46: UK MA portfolios by insurer country



	Market value (%)
Own country	67.59
Other EEA	13.02
Non-EEA	18.69

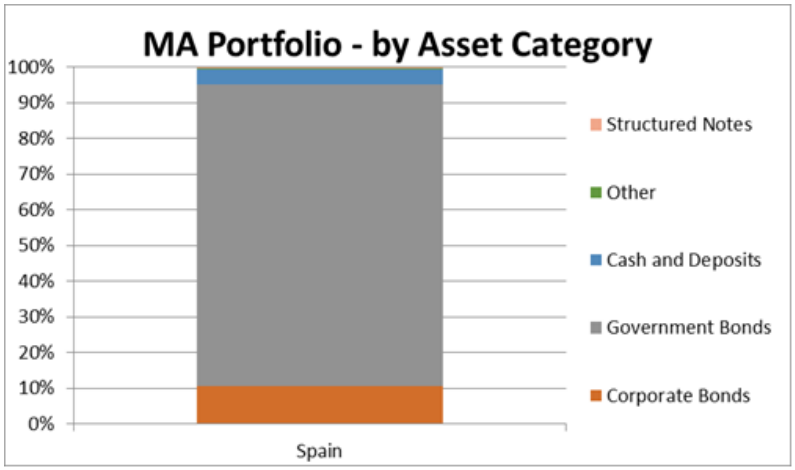
- Results for the Spanish market

The asset category split is shown in Table 38 and Figure 47.

Table 38: Weighted average duration per asset category for the ES MA portfolios

Spanish MA portfolio	Market value (%)	Average duration
Corporate bonds	10.67	10.01
Government bonds	84.48	10.96
Mortgages and loans	0.00	—
Collateralised securities	0.00	—
Collective investment undertakings	0.00	—
Cash and deposits	4.04	—
Other	0.27	2.09
Structured notes	0.54	4.37

Figure 47: Spanish MA portfolios per asset category



Derivatives are not included in Table 38 and they are treated separately in the section devoted to them.

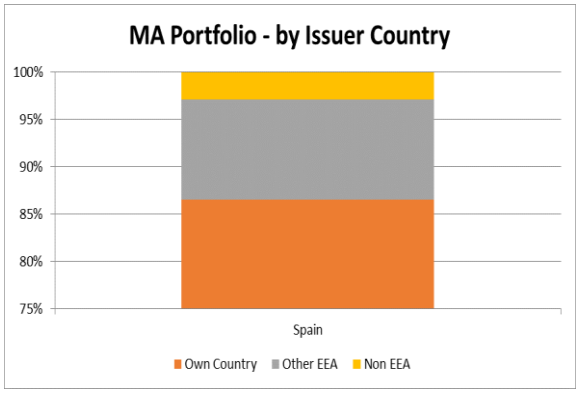
The Spanish market is clearly dominated by government bonds, which make up more than 80% of total investments, followed by corporate bonds. Together, these make up 95% of investments in Spanish MA portfolios.

Owing to the different way in which QRTs are filled in by the undertakings, SPVs are included in two categories (other and structured notes). The total SPVs make up 2% of total assets.

The average duration was calculated from the QRT data. This was calculated on a weighted basis using the market value of the assets as a weight.

Using data collected in the information request, Figure 48 gives the split of assets by country of issue.

Figure 48: Spanish MA portfolios by insurer country



	Market value (%)
Own country	86.83
Other EEA	10.55
Non-EEA	2.91

The look-through to the underlying investments

The information that EIOPA collected from S.06.02 did not contain enough granularity to look at which assets are held in SPVs. Therefore, EIOPA gathered additional information via a data request sent to undertakings in the first half of 2019.

Specifically, undertakings were asked to categorise assets as belonging to one of three categories:

- not from a securitisation;
- cash flows that originate from a securitisation on a listed, regulated exchange;
- cash flows that originate from a securitisation that is bilateral lending.

Undertakings were asked to look-through to the underlying assets for all securitisations, unless they both were listed on a regulatory exchange and had an external rating.

EIOPA's information request also asked undertakings to state whether the securitisations were type 1 or type 2. Type 1 securitisations were defined as a securitisation that met the criteria listed in Article 177(2) of the Commission Delegated Regulation, with the remainder being classified as type 2.

- Results for the UK market

In the UK, SPVs accounted for just under 10% of all MA assets. Sovereigns accounted for just over 12% and the remainder (nearly 78%) were other corporate assets (Table 39).

Table 39: Breakdown of the UK MA portfolios per asset category

	Gross total (£)	Value (%)
Sovereigns	32,641,204,367	12.18
SPVs	26,510,152,485	9.89
Other corporates	208,898,743,058	77.93
Total	268,050,099,910	100

Table 40 shows the classification of securitisations as type 1 or type 2 from the UK market.

Table 40: Breakdown of type 1 and type 2 securitisations in the UK MA portfolios

	Gross total (£)	Value (%)
Type 1	425,783,833	1.61
Type 2	15,470,450,749	58.36
Unspecified	10,613,917,903	40.04

The categorisation of securitisations as type 1 or type 2 is specific to the standard formula. Internal model risk classifications are not necessarily aligned to these definitions. Some UK undertakings with internal models did not provide a response to this part of EIOPA's information request; therefore, there are no data in this section for roughly 40% of the SPVs. However, for the other 60%, over 97% of

them were classified as type 2 securitisations. Only two undertakings, comprising five assets, reported a securitisation as having met the criteria required to be classified as type 1.

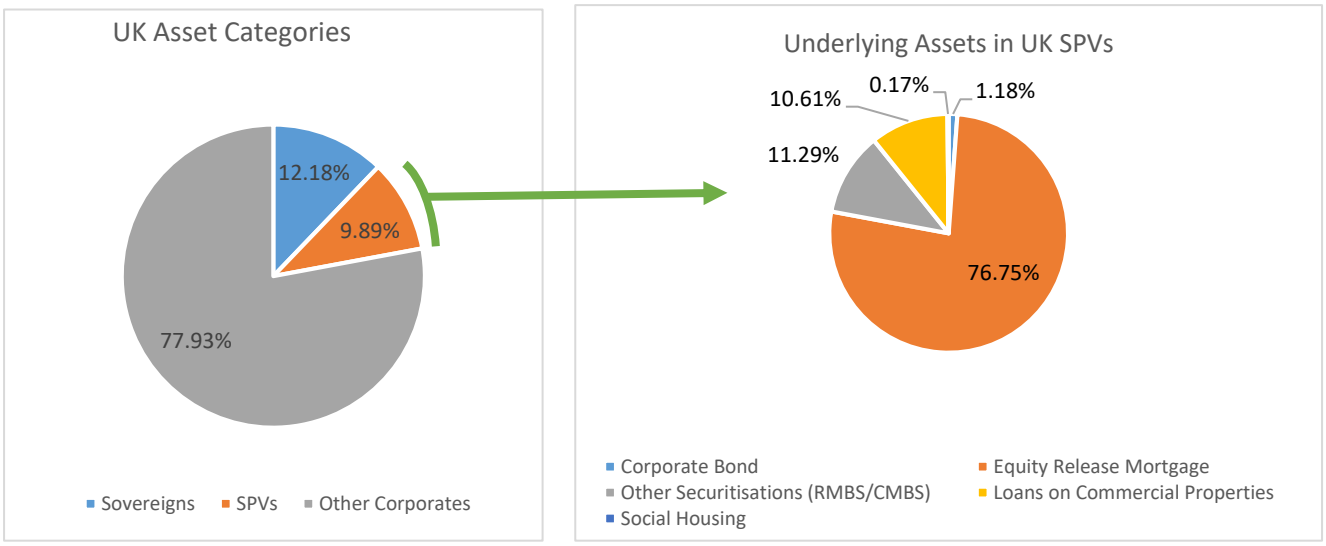
In the UK, 98.5% of securitisations (by market value) were either bilateral lending and/or lacked external ratings (therefore, a look-through to the underlying assets was required). Table 41 shows the granular asset categorisation for the look-through.

Table 41: Breakdown of the asset categorisation for the look-through of securitisations in the UK MA portfolios

	Gross total in SPVs (£)	Value (%)
Agricultural mortgage		0.00
Corporate bond	306,654,903	1.18
Covered bond		0.00
Education loan		0.00
Equity release mortgage	20,027,555,124	76.75
Ground rent		0.00
Incoming-producing real estate		0.00
Infrastructure assets		0.00
Object finance		0.00
Other assets		0.00
Other commercial real estate lending		0.00
Other securitisations (residential/commercial mortgage-backed securities)	2,946,230,523	11.29
Quasi government exposures		0.00
Loans on commercial properties	2,768,795,503	10.61
Secured financing		0.00
Social housing	43,943,941	0.17
Sovereigns: other than UK		0.00
UK sovereigns		0.00
Student accommodation		0.00
Trade receivables		0.00
Total	26,093,179,994	100

These results are presented graphically in Figure 49.

Figure 49: Breakdown per asset category and underlying asset in the SPVs in the UK MA portfolios



It can be seen that, of the assets that were classified as SPVs, the vast majority (76.75%) were from equity release mortgages.

- Results for the Spanish market

The Spanish results are shown in Table 42.

Table 42: Breakdown of the Spanish MA portfolios per asset category

	Gross total (€)	Value (%)
Sovereigns	72,453,798,855	83.229
SPVs	1,938,418,053	2.227
Other corporates	12,661,229,655	14.544
Total	87,053,446,564	100.00

Regarding the classification of securitisations as type 1 or type 2, the results from the Spanish market are given in Table 43.

Table 43: Breakdown of type 1 and type 2 securitisations in the Spanish MA portfolios

	Gross total (€)	Value (%)
Type 1	1,863,272,126	96.123
Type 2	75,145,927	3.877
Unspecified	—	0.000

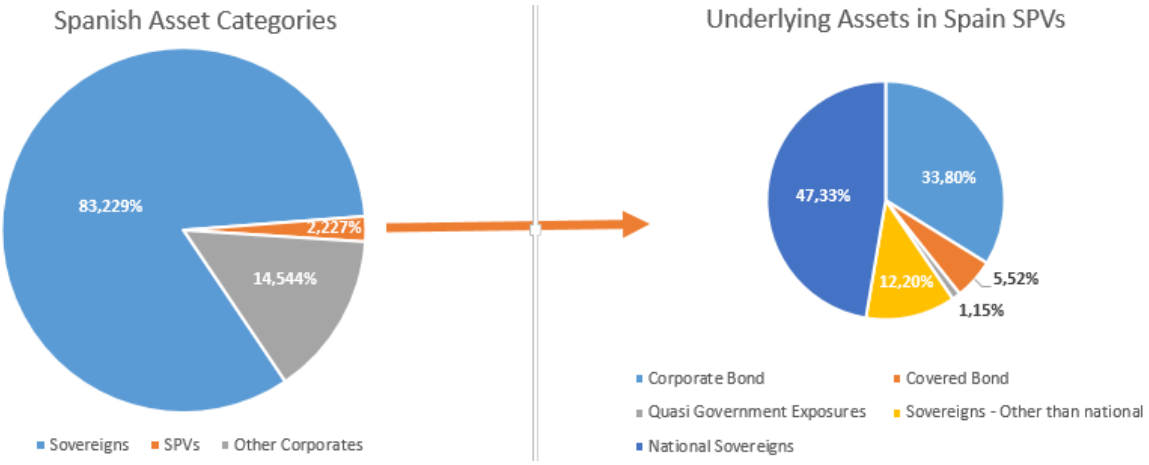
The look-through into the assets underlying the SPV for the Spanish market is reported in Table 44.

Table 44: Breakdown of the asset categorisation for the look-through of securitisations in the Spanish MA portfolios

	Gross total in SPVs (€)	Value (%)
Agricultural mortgage		
Corporate bond	655,251,343	33.80
Covered bond	106,925,981	5.52
Education loan		0.00
Equity release mortgage		0.00
Ground rent		0.00
Incoming-producing real estate		0.00
Infrastructure assets		0.00
Object finance		0.00
Other assets		0.00
Other commercial real estate lending		0.00
Other securitisations (residential/commercial mortgage-back securities)		0.00
Quasi government exposures	22,273,158	1.15
Loans on commercial properties		0.00
Secured financing		0.00
Social housing		0.00
Sovereigns: other than Spanish	236,510,290	12.20
Spanish sovereigns	917,444,662	47.33
Student accommodation		0.00
Trade receivables		0.00
Total	1,938,405,433	100.00

The two steps that EIOPA undertook for this analysis are represented graphically in Figure 50.

Figure 50: Breakdown per asset category and underlying asset of the SPVs in the Spanish MA portfolios



In Spanish MA portfolios, 2.23% of all assets were from SPVs. Within SPVs, the assets are government and corporate bonds.

The types and volume of derivatives instrument used

To respond to the CfI in relation to 'the types and volume of derivatives instrument used', EIOPA also relied on data obtained from undertakings. While the taxonomy for derivatives remains that used in the QRT derivative templates, the information recorded in the QRTs could not be used directly to answer the CfI. This is because the QRTs do not accurately distinguish between those derivatives included inside the matching adjustment portfolios and those included outside them.

To respond to the request to quantify the volume of the derivatives, notional amounts have been used. This is because performing the analysis with market values would have to account for the negative values observed on some derivatives, which could lead to confusion in the interpretation of results. For example, a derivative category with a market value of 0 could lead to the inference that it has no importance, but this result may be a consequence of the sum of values with different signs.

- Results for the UK market

In the case of UK market, data were available for 16 undertakings covering the vast majority of the derivatives used in the UK market within MA portfolios (these undertakings make up 91% of all of the derivatives, as measured by notional value, reported in the QRTs for undertakings with MA portfolios). For these undertakings, the type and volume of derivatives used within the MA portfolios are summarised in Table 45.

Table 45: Types and volume of derivatives used within the UK MA portfolios

QRT code	Definition	Notional (billion pounds sterling)	Percentage of market
D1	Interest rate swap	131.00	74.32%
D2	Currency swap	16.95	9.62%
D3	Interest rate and currency swap	14.85	8.43%
D9	Other swap	12.66	7.18%
E1	Forward interest rate	0.02	0.01%
E2	Forward foreign exchange	0.58	0.33%
F1	Credit default swap	0.20	0.11%
	Total	**176.26**	**100.00%**

It can be seen that the largest category by far is interest rate swaps (D1), followed by currency swaps and interest and currency swaps (D2 and D3). The only other substantial category is 'other swaps' (D9). An investigation of category D9 revealed that it largely comprised inflation swaps. The residual derivative exposures (less than 0.5% of the total) relate to other interest rate and foreign exchange derivatives, as well as a small amount of credit default swaps used by one undertaking as a risk management tool. In summary, the derivatives used in UK matching adjustment portfolios relate to the management of interest rate, foreign exchange and inflation risks within the matching adjustment portfolios.

- Results for the Spanish market

In the case of Spain, 100% of the derivatives (€42.2 billion) are included in category D1 (interest rate swap). To provide more insight into these derivatives, undertakings were able to break down the D1 category more granularly into 'asset swaps', 'interest rate swaps' and 'others'. Table 46 summarises the results of this investigation.

Table 46: Breakdown of derivatives in category D1 in the Spanish MA portfolios

Type	Notional	% of notional
D1	**Interest rate swap**	
Asset swaps	37,403,346,337.81	88,7200%
Interest rate swap	4,617,708,972.43	10,9531%
Others - fiduciaries	137,808,236.18	0,3269%
	42,158,863,546.42	

It can be seen that, in Spain, 88.72% of derivatives are in the asset swaps category, followed by 10.95% being interest rate swaps. The small remainder (the 0.33% included in the 'others' category) refers to a fiduciary deposit, which, according to the percentage it represents, is not particularly relevant.

The external and, where available, internal credit quality assessment

To undertake a more thorough analysis of the external and internal ratings, EIOPA asked undertakings to provide more information in this area in the aforementioned data request.

Total assets were split into externally rated, internally rated or unrated. The externally rated and internally rated assets were then spilt into two further categories based on how undertakings calculate their credit risk SCR: internal model or standard formula.

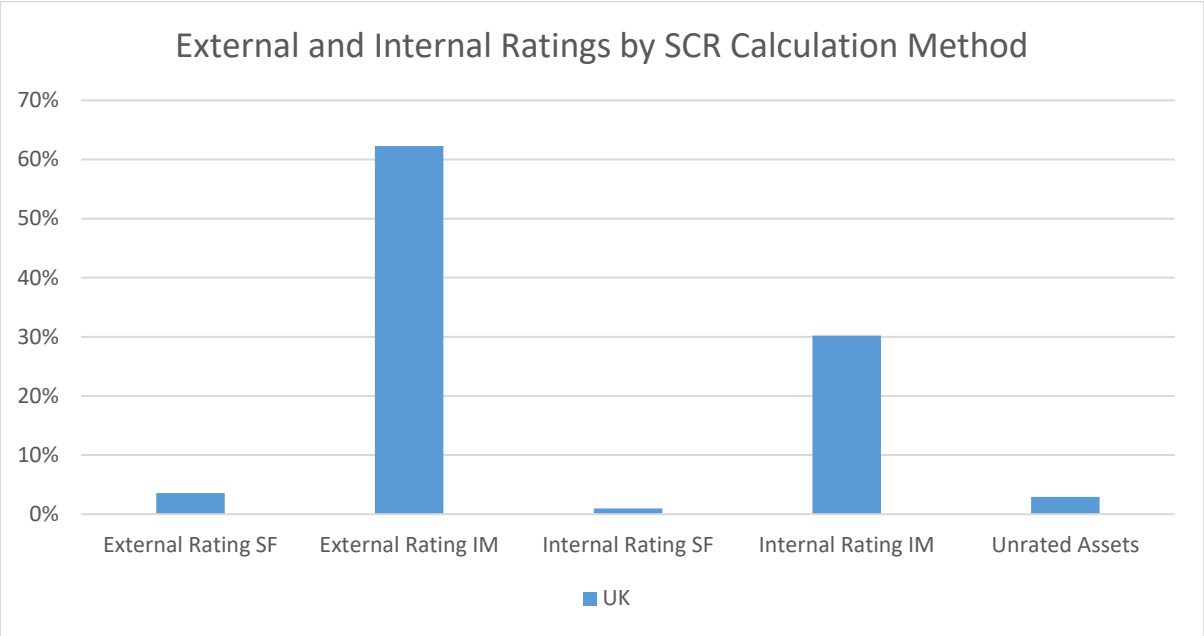
- Results for the UK market

The results for the UK market are given in Table 47 and Figure 51.

Table 47: Split per externally rated, internally rated and unrated assets of the UK MA portfolios

	Total value (billion pounds sterling)	Calculation of credit risk SCR	Value (billion pounds sterling)
Gross external	176.570	External rating standard formula	9.641
		External rating internal model	166.929
Gross internal	83.714	Internal rating standard formula	2.684
		Internal rating internal model	81.030
Unrated assets	7.766	Unrated assets	7.766

Figure 51: Split per external and internal ratings by SCR calculation method of the UK MA portfolios



Around 66% of all assets were externally rated and 31% were internally rated (the other 3% being unrated). Of the £176.57 billion externally rated assets, 94.5% were from undertakings using approved internal models. The category of externally rated assets from approved internal model undertakings made up over 62% of total assets in MA portfolios. Regarding internally rated assets, the overwhelming majority (97%) originated from undertakings with approved internal models for credit risk.

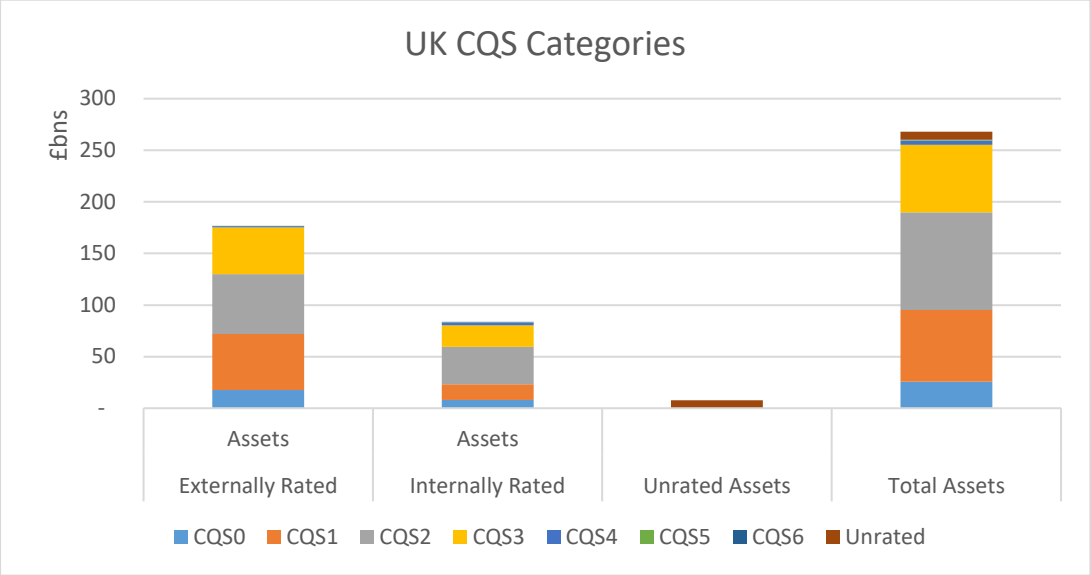
Having split the assets into externally rated, internally rated and unrated, EIOPA then looked at the CQS split within these categories (Table 48).

Table 48: Breakdown per CQS and type of rating of the UK MA portfolios

	Externally rated			Internally rated			Total assets (billion pounds sterling)
CQS	Assets (billion pounds sterling)	Percentage of assets	Cumulative	Assets (billion pounds sterling)	Percentage of assets	Cumulative	
0	17.6	9.95%	9.95%	8.2	9.75%	9.75%	25.7
1	54.4	30.80%	40.76%	15.0	17.96%	27.71%	69.4
2	58.1	32.90%	73.66%	36.5	43.58%	71.28%	94.6
3	45.1	25.56%	99.22%	20.6	24.55%	95.84%	65.7
4	1.3	0.72%	99.94%	2.8	3.30%	99.14%	4.0
5	0.1	0.06%	100.00%	0.4	0.46%	99.60%	0.5
6	0.0	0.00%	100.00%	0.3	0.40%	100.00%	0.3
9	0.0	0.00%	100.00%	0.0	0.00%	100.00%	7.8
Total	176.6		100%	83.7		100%	268.1

These results are presented graphically in Figure 52.

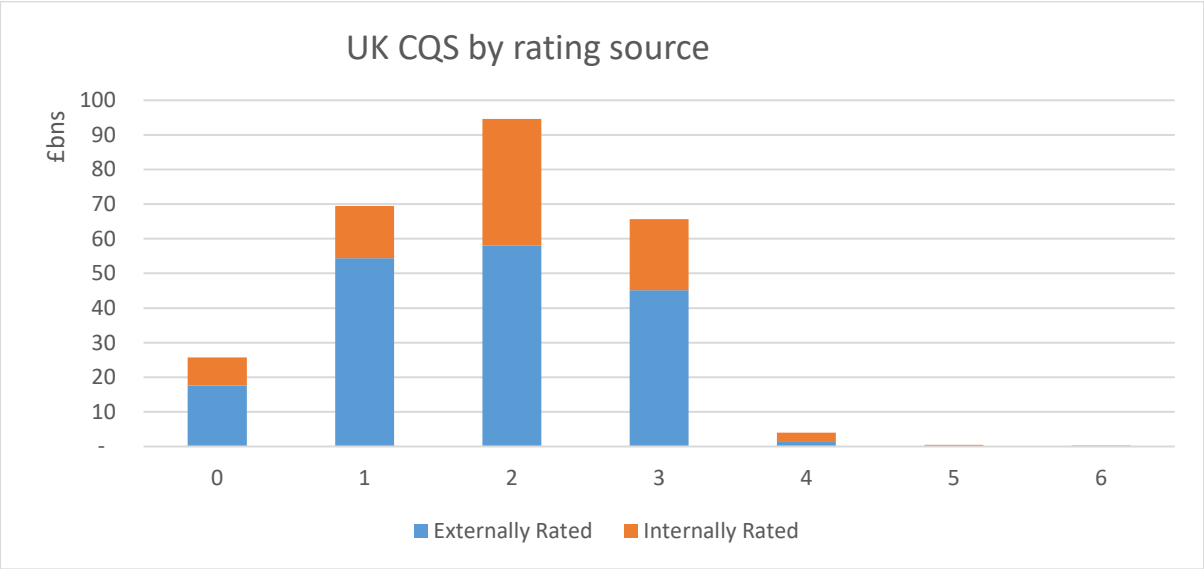
Figure 52: Breakdown per CQS and type of rating of the UK MA portfolios



This figures shows the how the £177 billion externally rated assets and £84 billion internally rated assets are split by CQS, plus the composition for the total assets.

EIOPA then looked at the gross totals of assets in each CQS bucket, excluding the unrated assets (Figure 53).

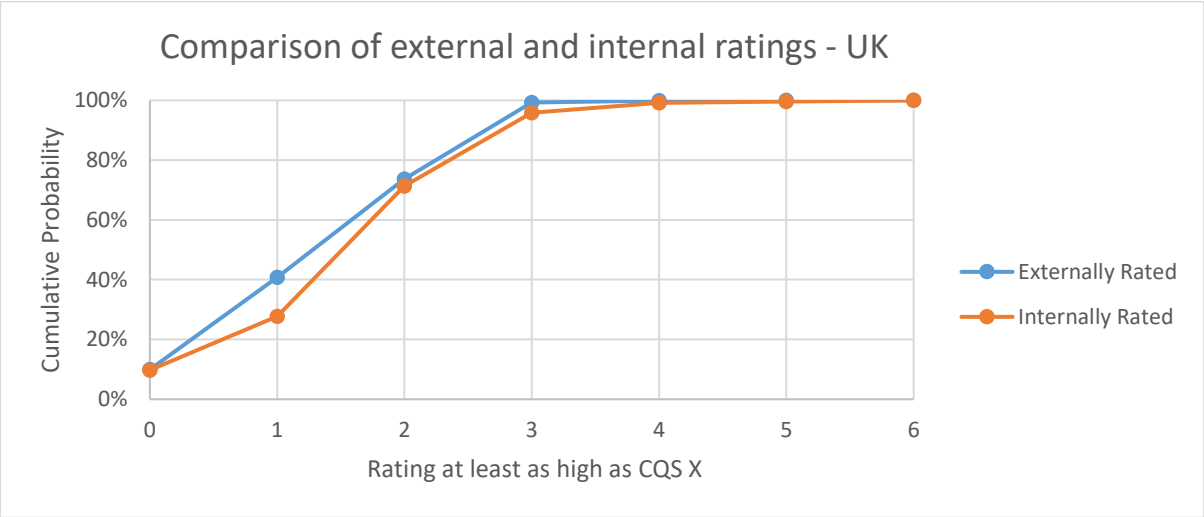
Figure 53: Breakdown per CQS by rating source of the UK MA portfolios



As can be seen, the most common rating (regardless of rating source) is CQS score 2. As expected, for CQS scores 4-6, there are almost negligible sums of assets.

Finally, for a more comparative analysis of internal and external ratings, EIOPA looked at the cumulative distribution of CQS ratings (Figure 54).

Figure 54: Comparison of external and internal ratings' CQS cumulative distribution of the UK MA portfolios



This shows the cumulative density function for both externally rated and internally rated assets. It can be seen that the distribution is largely similar, suggesting no obvious difference between typical ratings assigned internally and externally. The clearest difference seems to be on the split of assets in CQS 1/CQS 2: whereas the proportion of CQS 0 (and in fact also CQS 4, CQS 5 and CQS 6) assets is largely the same, there is a higher percentage of internally rated assets in CQS 2 and there is a larger percentage of externally rated assets in CQS 1.

- Results for the Spanish market

The Spanish results are given in Tables 49 and 50 and Figure 55; it should be noted that, in this market, there are no internal ratings in the MA portfolios and all undertakings use the standard formula.

Table 49: Split per externally rated, internally rated and unrated assets of the Spanish MA portfolios

	Total value (billion euros)	Calculation of credit risk SCR	Value (billion euros)
Gross external	86.88	External rating standard formula	86.880
		External rating internal model	
Gross internal		Internal rating standard formula	
		Internal rating internal model	
Unrated assets	0.17	Unrated assets	0.17

Figure 55: Split per external and internal ratings by SCR calculation method of the Spanish MA portfolios

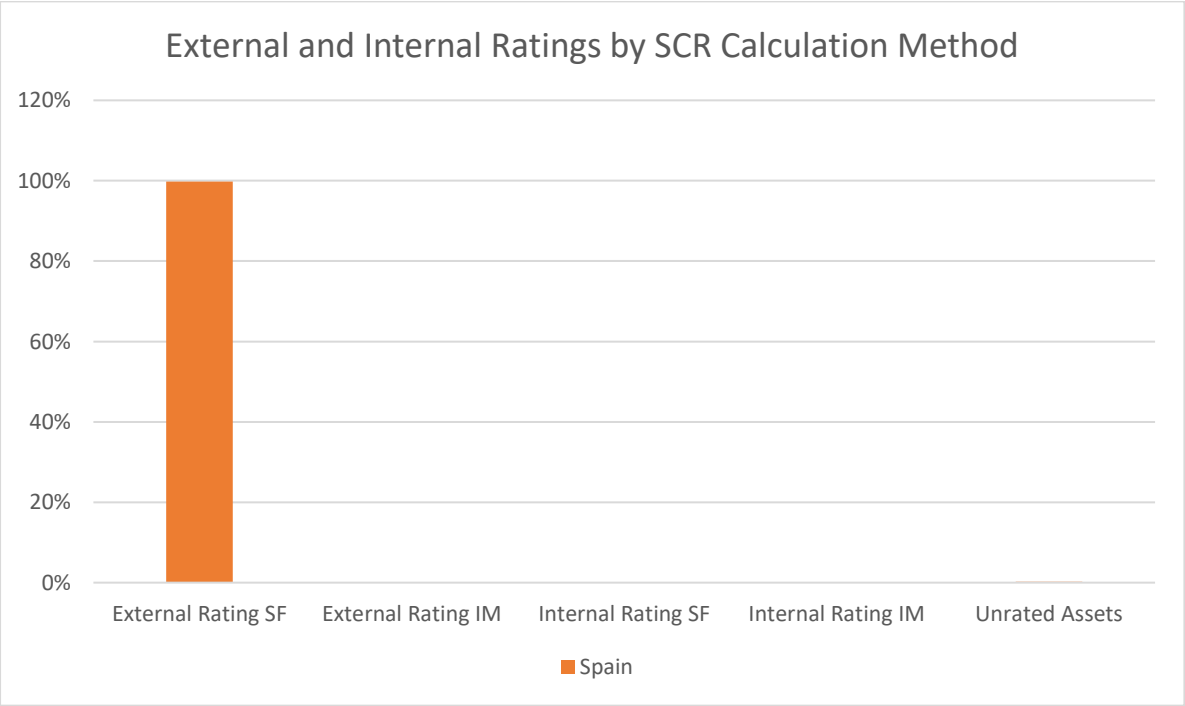


Table 50: Breakdown per CQS and type of rating of the Spanish MA portfolios

	Externally rated			Total assets (billion euros)
CQS	Assets (billion euros)	Percentage of assets	Cumulative	
0	3.3	3.76%	3.76%	3.3
1	2.8	3.18%	6.94%	2.8
2	61.0	70.19%	77.13%	61.0
3	19.7	22.64%	99.77%	19.7
4	0.2	0.23%	100.00%	0.2
5	0.0	0.00%	100.00%	0.0
6	0.0	0.00%	100.00%	0.0
9	0.0	0.00%	100.00%	0.2
Total	86.9	100.00%	100.00%	87.1

Figure 56 shows the gross amount of assets, split by CQS score.

Figure 56: Breakdown per CQS and type of rating of the Spanish MA portfolios

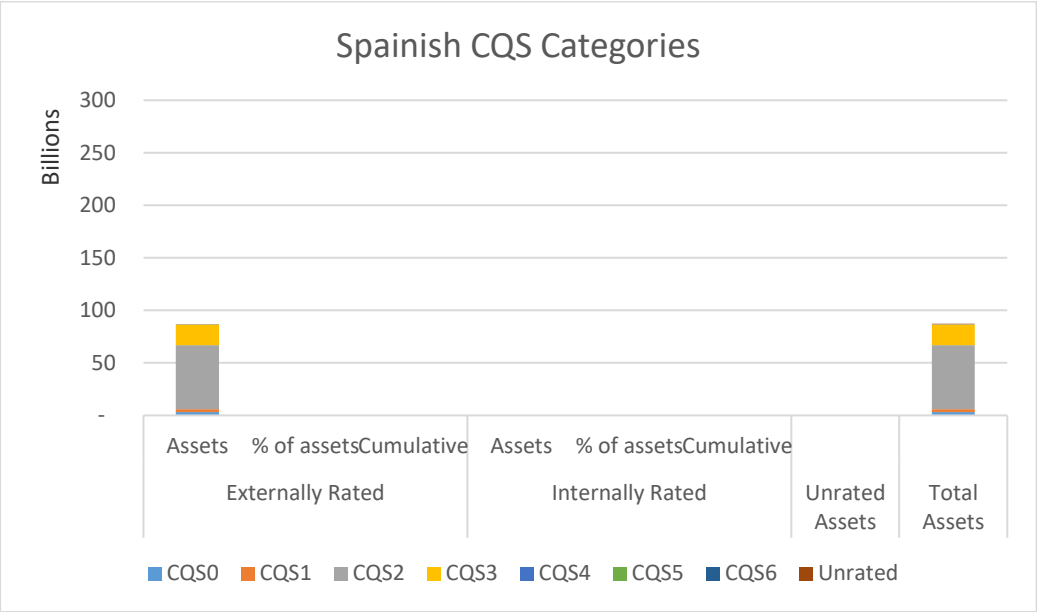
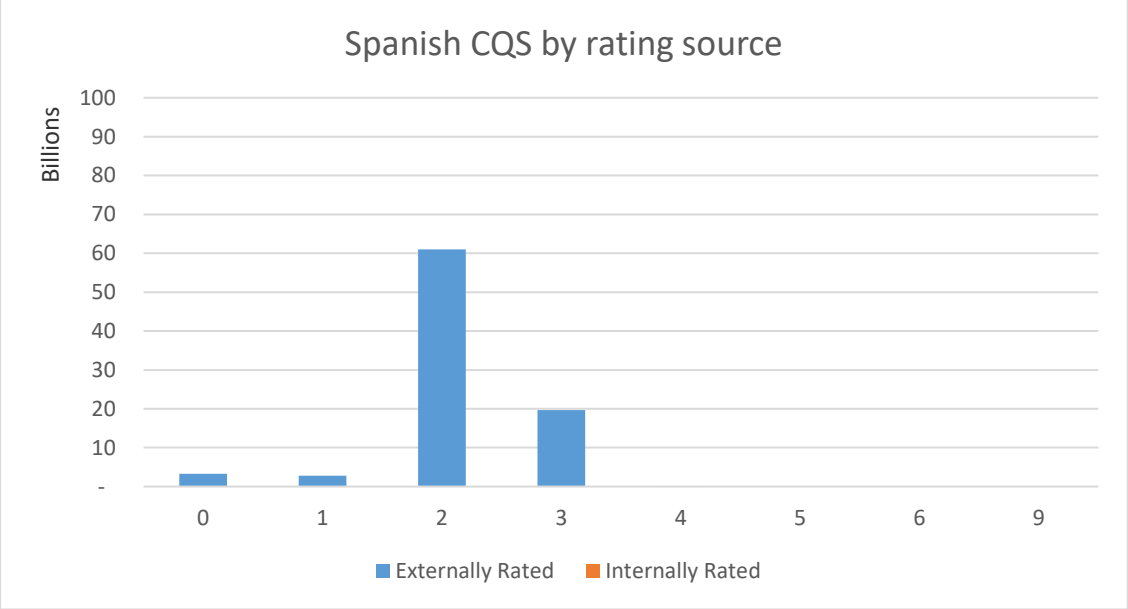


Figure 57 shows the gross total assets in each CQS bucket, excluding the unrated assets.

Figure 57: Breakdown per CQS by rating source of the Spanish MA portfolios



The actual yield obtained by insurers on their investments

To assess the yields obtained by insurers on their investments in the MA portfolios, EIOPA made use of the QRT information (SR.22.03) regarding the components of the MA calculation. This was complemented by information on the actual losses

from defaults and downgrades arising in those portfolios, collected in EIOPA's information request to support the production of EIOPA's LTG report.

To analyse the returns actually obtained by undertakings in their MA portfolios, EIOPA has followed a three-step process focusing on:

A. the gross redemption yield (GRY) on the portfolios;
B. the GRY less the losses actually sustained from defaults and downgrades (giving an indication of the returns that are actually being earned on the assets);
C. the GRY less the fundamental spread on the portfolios, giving an indication of the expected returns that will be earned over the lifetime of the assets.

A. **The GRY on the portfolio** for year-end 2017 can be seen as the expected asset return over the lifetime of the assets in the MA portfolio, prior to any losses arising from defaults and downgrades. In the different EEA markets, we observed the following results:
    - In the UK, the weighted average portfolio had a GRY of 2.55%, with a relatively narrow interquartile range (2.25%-2.76%). The greatest GRY on any single portfolio is 3.20% with the lowest being 1.47%.
    - In Spain, the weighted average portfolio had a GRY of 2.15%, with a narrow interquartile range (1.81%-2.18%). The weight used for the average was the market value of each MA portfolio.

B. **Adjusting the average expected return for the observed defaults and downgrades** gives an indication of the returns that are actually being earned in those portfolios. If there had been no defaults or downgrades in the portfolio over 2018, then this would equal the GRY. In the different EEA markets, we observed the following results:
    - Of the 23 UK portfolios, 10 reported a loss from defaults or downgrades in 2018. Of these 10, 7 had an impact of less than 5 bps on the GRY. This meant that the overall results are broadly similar to approach A. The interquartile range is slightly lower (2.18%-2.75%), as is the mean (2.51%). The highest and lowest GRY in the portfolios (3.20% and 1.47%) did not experience any defaults or downgrades in 2018, so remained unchanged.
    - There were no defaults or downgrades in the Spanish MA portfolios over 2018 and therefore the figures did not change and were the same as for the GRY.

C. **Subtracting the fundamental spread from the average expected return** gives the expected return on assets that are expected to be earned over the lifetime of the asset. For each portfolio, if the approach B value is greater than the approach C value, then we can say that the portfolio is on track to earn at least C across its lifetime.

In both EEA markets, we observed that every portfolio had actual returns (B) greater than expected risk-free returns (C), indicating that those portfolios are on track to earn at least the amounts in C. As the fundamental spread is greater than

the observed losses from defaults and downgrades, all of the statistics of returns net of fundamental spread are lower than the previously noted figures.

In the UK, the weighted average return is 2.15% and the interquartile range is lower and narrow (1.88%-2.29%). The highest GRY net of fundamental spread dropped to 2.68% but came from the same portfolio as the previous highest GRY. The lowest GRY is the same portfolio and is unchanged at 1.47%. This is because this portfolio contains only UK gilts, which means that it has a fundamental spread equals to zero. Therefore, there is no reduction in the GRY, again.

In Spain, the weighted average is 1.85% with a narrow interquartile range (1.52%-1.91%).

Any analysis of returns carried out in 2019 will, however, suffer from the fact that MA assets are intended to be held for a long time, yet only a few years' worth of data have elapsed since the introduction of Solvency II. Therefore, there is not enough experience to be able to state if the observed experience is representative of the returns that can in fact be obtained over the duration of the assets.

3.2. Information about the volatility adjustment

With regard to the volatility adjustment (VA), EIOPA was asked to provide the following information:

> Information per currency and per country on the type and credit quality of the assets included in the reference portfolio used to calculate the VA, covering the type of issuer, the type of instruments and the external credit assessment.

All figures are based on the end of 2018 solo asset and liability data that were reported to EIOPA up to 16 October 2019. Therefore, they will form the basis for the update of the representative portfolios for 2020.

Introduction on the role of the representative portfolios

The objective of the VA is to compensate for the day-to-day fluctuations in bond spreads not directly related to the default characteristics of bonds. As bond spreads drive the market value of bonds, the VA is added to the risk-free rate term structure used to value the insurance liabilities aimed at both sides of the balance sheet moving accordingly (i.e. removing volatility in the balance sheet due to the day-to-day fluctuations mentioned).

To measure bond spreads, the concept of representative portfolios is applied. The representative portfolios are based on all assets from all insurance undertakings and groups. The assets are taken into account to the extent that they cover the BELs only.

The assets are split into bonds and other assets. As bond spreads are, in general, different for government bonds and corporate bonds, the class of bonds is split further into government bonds and corporate bonds. In addition, bond spreads generally differ depending on the country that issued the bond and the currency

in which it is being issued. Furthermore, for corporate bonds, the spreads are typically different for the credit rating of the bond. Finally, to recognise the fact that investment portfolios of insurance undertakings are typically quite different between countries, it is also relevant to measure the different spread movements per country.

For each bond being reported by insurance undertakings, it is known:

- in which country the undertakings reside (i.e. in which country the bond is held or the home country);
- if it is a government or a corporate bond;
- in which country and currency it has been issued.

In addition, for corporate bonds, the credit quality might be reported. Finally, for all bonds, the duration might be reported.

Based on these dimensions, the representative portfolios are derived. To make the VA as effective as possible, the representative portfolios are derived from a combined issuing-currency and issuing-country perspective as well as from a combined holding-country and issuing-country perspective. Finally, these two perspectives are combined to calculate the VA ([35]).

On the process

For each asset being reported, indicators have been created that indicate, for each individual asset, if they belong (or not) to the currency government bond portfolio, the currency corporate bond portfolio, the national government bond portfolio or the national corporate portfolio, according to the definitions below.

Information provided about the currency portfolio

Table 51 shows the underlying data that make up the currency portfolio.

([35]) The full details are available in paragraphs 8 and 9 of the Technical documentation of the methodology to derive EIOPA's risk-free interest rate term structures.

Table 51: Scheme of underlying data that make up the currency portfolio

STEP1 GOV, CORP, OTHER allocation

Currrency portfolio characteristics

Currency GOV-portfolio

STEP2A1 GOV only

issuing currencies		*issuing countries*	
1	EUR	1	AT
2	BGN	2	BE
3	HRK	3	BG
4	CZK	4	HR
5	DKK	5	CY
6	HUF	6	CZ
7	ISK	7	DK
8	NOK	8	EE
9	PLN	9	FI
10	RON	10	FR
11	SEK	11	DE
12	CHF	12	GR
13	GBP	13	HU
14	AUD	14	IE
15	CAD	15	IT
16	JPY	16	LV
17	USD	17	LT
		18	LU
		19	MT
		20	NL
		21	NO
		22	PL
		23	PT
		24	RO
		25	SK
		26	SI
		27	ES
		28	SE
		29	UK
		30	US
		31	IS
		32	LI
		33	AU
		34	CA
		35	CH
		36	JP

Currency CORP-portfolio

STEP2A2 CORP only

issuing currencies		*issuing sector*	*credit rating*	
1	EUR	1 FIN	0	0
2	BGN	2 NONFIN	1	1
3	HRK		2	2
4	CZK		3	3
5	DKK		4	4
6	HUF		5	5
7	ISK		6	6
8	NOK		9	Unrated
9	PLN			
10	RON			
11	SEK			
12	CHF			
13	GBP			
14	AUD			
15	CAD			
16	JPY			
17	USD			

Tables 52 and 53 display the share of the currency government bond and corporate bond portfolios according to the issuing currency and whether it is held by euro or non-euro countries.

Table 52: Breakdown of currency government bond portfolio held by euro and non-euro countries, per issuing currency

Solvency II value (% of column total)			
Issuing currency	Euro countries	Non-euro countries	Total
EUR	97.912	11.890	85.753
GBP	0.549	56.442	8.450
USD	0.896	8.590	1.983
PLN	0.034	5.752	0.843
SEK	0.024	4.904	0.714
NOK	0.024	3.620	0.532
DKK	0.016	2.329	0.343
CZK	0.044	1.914	0.308
HUF	0.007	1.436	0.209
CAD	0.085	0.937	0.205
JPY	0.101	0.510	0.159
AUD	0.096	0.414	0.141
CNY	0.142	0.030	0.126
RON	0.009	0.614	0.095
HRK	0.000	0.323	0.046
HKD	0.033	0.053	0.036
CHF	0.027	0.077	0.034
BGN	0.001	0.093	0.014
ISK	0.000	0.069	0.010
Total	**85.865**	**14.135**	**100.000**

Table 52 shows the currency government bond portfolio split into the part held by euro countries (85.865%) and the part held by non-euro countries (14.135%). For each part, the share of issuing currencies is also shown. For example, for the government bonds being held by euro countries, 97.912% were issued in euros.

Table 53: Breakdown of currency corporate bond portfolio held by euro and non-euro countries, per issuing currency

Solvency II value (% of column total)			
Issuing currency	Euro countries	Non-euro countries	Total
EUR	96.305	6.867	78.336
GBP	0.851	44.392	9.599
USD	2.064	11.607	3.982
PLN	0.186	14.246	3.011
SEK	0.048	11.984	2.446
NOK	0.073	8.301	1.726
DKK	0.210	0.579	0.284
CZK	0.009	0.869	0.182
HUF	0.122	0.183	0.134
CAD	0.007	0.490	0.104
JPY	0.051	0.252	0.092
AUD	0.039	0.030	0.037
CNY	0.024	0.006	0.020
RON	0.000	0.078	0.016
HRK	0.002	0.037	0.009
HKD	0.000	0.039	0.008
CHF	0.010	0.001	0.008
BGN	0.000	0.031	0.006
ISK	0.000	0.007	0.001
Total	**79.909**	**20.091**	**100.000**

Table 53 shows the currency corporate bond portfolio split into the part held by euro countries (79.909%) and the part held by non-euro countries (20.091%). For each part, the share of issuing currencies is also shown. For example, for the government bonds being held by euro countries, 96.305% were issued in euros.

Table 54 shows the breakdown of the currency government bond portfolio per asset type, held by euro and non-euro countries.

In both case, the share of the collective investment undertakings (CIUs) is provided as the percentage of the Solvency II value for the sub-total. In addition, the weighted average duration is provided for each particular type of investment.

Table 54: Breakdown of the currency government bond portfolio per type for euro and non-euro countries

	Solvency II value (% of (sub-)total)	Weighted duration
Held by euro countries	**85.9**	**8.6**
Government bonds	**89.4**	**8.6**
Central government bonds	85.7	8.5
Regional government bonds	7.9	11.4
Other	4.1	6.8
Treasury bonds	1.1	0.5
Local authority bonds	1.0	10.4
Covered bonds	0.1	8.8
National central banks	0.0	12.9
CIUs	**10.6**	**7.2**
Government bonds	100.0	7.2
Held by non-euro countries	**14.1**	**10.7**
Government bonds	**89.5**	**10.9**
Central government bonds	89.7	11.4
Other	4.3	9.0
Treasury bonds	3.2	0.5
Regional government bonds	1.8	8.3
Local authority bonds	0.8	2.2
National central banks	0.1	2.9
Covered bonds	0.0	5.5
CIUs	**10.5**	**2.5**
Government bonds	100.0	2.5
Total	**100.0**	**8.9**

The share of the currency government bonds portfolio that is held by euro countries is 85.9%. A large part of this is central government bonds (85.7%), which have a weighted duration of 8.5.

The share of CIUs amounts to 10.6% for the part held by euro countries and to 10.5% for the part held by non-euro countries.

It can be noted that the weighted duration is lower for the investments held by euro countries (8.6) than for those held by non-euro countries (10.9).

Table 55 shows, per issuing currency, the breakdown of the currency government bond portfolio held by euro countries per type of assets.

Table 55: Breakdown of the currency government bond portfolio held by euro countries only, per issuing currency

Issuing currency	Solvency II value (% of (sub-)total)	Weighted duration
EUR	**97.912**	**8.7**
Government bonds	**89.242**	**8.7**
Central government bonds	85.663	8.6
Regional government bonds	8.110	11.4
Other	4.132	6.8
Local authority bonds	1.044	10.4
Treasury bonds	0.921	0.5
Covered bonds	0.129	8.8
National central banks	0.001	13.1
CIUs	**10.758**	**7.3**
Government bonds	100.000	7.3
USD	**0.896**	**4.8**
Government bonds	**99.387**	**4.8**
Central government bonds	89.588	5.1
Treasury bonds	8.330	0.4
Other	1.163	3.7
Regional government bonds	0.822	2.5
Local authority bonds	0.094	3.0
National central banks	0.001	0.8
Covered bonds	0.001	3.0
CIUs	**0.613**	**3.7**
Government bonds	100.000	3.7
GBP	**0.549**	**7.0**
Government bonds	**95.055**	**7.0**
Central government bonds	90.979	7.3
Other	5.309	5.2
Treasury bonds	3.492	1.8
Regional government bonds	0.218	2.7
Covered bonds	0.003	6.3
CIUs	**4.945**	**6.6**
Government bonds	100.000	6.6
CNY	**0.142**	**3.3**
Government bonds	**100.000**	**3.3**
Central government bonds	97.772	3.4
Treasury bonds	2.144	0.7
Other	0.084	1.8
JPY	**0.101**	**10.0**
Government bonds	**100.000**	**10.0**
Central government bonds	68.930	13.5

Treasury bonds	30.656	0.3
Other	0.414	5.1
AUD	**0.096**	**3.7**
Government bonds	**100.000**	**3.7**
Central government bonds	98.865	3.8
Treasury bonds	1.014	0.1
Other	0.121	3.0
CAD	**0.085**	**2.1**
Government bonds	**100.000**	**2.1**
Central government bonds	52.437	3.4
Treasury bonds	46.583	0.3
Other	0.951	2.9
Regional government bonds	0.029	1.0
CZK	**0.044**	**5.8**
Government bonds	**100.000**	**5.8**
Central government bonds	100.000	5.8
PLN	**0.034**	**3.5**
Government bonds	**100.000**	**3.5**
Central government bonds	99.093	3.4
Regional government bonds	0.751	8.1
Other	0.156	6.4
HKD	**0.033**	**1.8**
Government bonds	**100.000**	**1.8**
Central government bonds	51.446	3.2
Treasury bonds	47.287	0.3
Other	1.267	3.6
CHF	**0.027**	**3.9**
Government bonds	**100.000**	**3.9**
Central government bonds	93.916	3.9
Other	3.536	3.9
Treasury bonds	1.692	0.2
Regional government bonds	0.486	7.7
Covered bonds	0.370	7.9
SEK	**0.024**	**2.6**
Government bonds	**99.833**	**2.6**
Central government bonds	55.048	4.5
Regional government bonds	30.591	0.2
Local authority bonds	8.756	0.3
Treasury bonds	5.432	0.2
Other	0.173	3.2
CIUs	**0.167**	**0.0**
Government bonds	100.000	0.0
NOK	**0.024**	**3.5**
Government bonds	**100.000**	**3.5**
Central government bonds	94.534	3.6
Treasury bonds	4.265	0.4

Other	1.201	2.1
DKK	**0.016**	**2.9**
Government bonds	**99.972**	**2.9**
Central government bonds	97.422	2.9
Treasury bonds	2.578	0.3
CIUs	**0.028**	**1.9**
Government bonds	100.000	1.9
RON	**0.009**	**4.0**
Government bonds	**100.000**	**4.0**
Central government bonds	100.000	4.0
HUF	**0.007**	**3.9**
Government bonds	**100.000**	**3.9**
Central government bonds	100.000	3.9
BGN	**0.001**	**3.4**
Government bonds	**100.000**	**3.4**
Central government bonds	100.000	3.4
HRK	**0.000**	**3.1**
Government bonds	**100.000**	**3.1**
Central government bonds	100.000	3.1
ISK	**0.000**	**1.1**
Government bonds	**100.000**	**1.1**
Central government bonds	100.000	1.1
Total	**100.000**	**8.6**

Table 56 shows the composition and weighted duration of the currency corporate bond portfolio for the investments that are held by euro countries and non-euro countries.

Table 56: Breakdown of the currency corporate bond portfolio per type of investment for euro and non-euro countries

	Solvency II value (% of (sub-)total)	Weighted duration
Held by euro countries	**79.9**	**6.1**
Corporate bonds	64.3	5.9
CIUs	20.7	4.5
Mortgages and loans	6.3	4.1
Government bonds	5.3	10.5
Structured notes	2.8	5.7
Collateralised securities	0.7	4.2
Held by non-euro countries	**20.1**	**5.6**
Corporate bonds	55.9	5.7
CIUs	29.8	4.5
Mortgages and loans	8.1	0.0
Government bonds	4.0	6.9
Structured notes	1.9	3.8
Collateralised securities	0.2	5.6
Total	**100.0**	**6.0**

An additional split — per issuing currency — is provided. Table 57 focuses on the currency corporate bond portfolio that is held by euro countries.

Table 57: The currency corporate bond portfolio held by euro countries only, per issuing currency

Issuing currency	Solvency II value (% of (sub-)total)	Weighted duration
EUR	**96.264**	**6.1**
Corporate bonds	64.066	5.9
CIUs	21.223	4.5
Mortgages and loans	6.176	4.4
Government bonds	5.066	10.9
Structured notes	2.857	5.7
Collateralised securities	0.612	4.1
USD	**2.064**	**5.2**
Corporate bonds	74.139	5.2
Mortgages and loans	9.694	1.0
CIUs	5.115	2.8
Government bonds	4.724	5.9
Collateralised securities	4.382	5.5
Structured notes	1.946	6.9
GBP	**0.851**	**6.1**
Corporate bonds	70.237	6.3
CIUs	9.866	3.6
Mortgages and loans	9.596	3.9
Government bonds	8.155	7.8
Collateralised securities	1.123	2.5
Structured notes	1.023	1.8
CAD	**0.210**	**6.4**
Government bonds	63.599	6.6
Corporate bonds	38.117	6.2
Collateralised securities	0.250	1.3
CIUs	0.043	0.0
Mortgages and loans	-2.009	0.0
DKK	**0.186**	**9.2**
Corporate bonds	99.402	9.2
Mortgages and loans	0.326	0.0
CIUs	0.256	1.9
Structured notes	0.015	2.9
AUD	**0.122**	**3.3**
Corporate bonds	78.542	3.2
Government bonds	12.687	3.5
Mortgages and loans	8.321	0.0
Collateralised securities	0.415	0.1
CIUs	0.034	0.0
SEK	**0.073**	**3.5**
Corporate bonds	59.938	3.1
CIUs	16.326	0.9

Government bonds	11.834	5.6
Mortgages and loans	5.825	0.0
Structured notes	5.648	4.3
Collateralised securities	0.430	0.1
CHF	**0.051**	**5.7**
Corporate bonds	66.093	5.6
CIUs	15.861	1.4
Mortgages and loans	12.056	0.0
Government bonds	5.752	6.9
Structured notes	0.227	3.0
Collateralised securities	0.010	0.0
NOK	**0.048**	**3.1**
Corporate bonds	62.950	3.7
Government bonds	27.353	2.1
Mortgages and loans	5.244	0.0
CIUs	3.185	0.9
Structured notes	0.851	3.4
Collateralised securities	0.417	0.0
JPY	**0.039**	**6.3**
Corporate bonds	57.066	5.8
Structured notes	27.304	6.4
Government bonds	11.826	10.4
CIUs	3.804	0.3
CNY	**0.024**	**3.4**
Government bonds	74.018	3.6
Corporate bonds	25.963	2.8
CIUs	0.019	0.0
HKD	**0.010**	**4.0**
Government bonds	67.371	4.8
Corporate bonds	32.629	2.6
PLN	**0.009**	**3.9**
Mortgages and loans	50.952	0.0
Government bonds	40.918	3.5
Corporate bonds	6.727	6.0
CIUs	1.403	0.0
CZK	**0.007**	**4.8**
Corporate bonds	50.471	3.6
Government bonds	40.246	6.3
CIUs	7.458	0.0
Mortgages and loans	1.825	0.0
MXN	**0.006**	**3.5**
Government bonds	57.477	3.1
Corporate bonds	42.491	4.2
Mortgages and loans	0.032	0.0
INR	**0.005**	**2.2**
Corporate bonds	71.867	1.9
Government bonds	28.133	2.8
BRL	**0.005**	**3.5**
Government bonds	69.099	2.4

Structured notes	0.000	0.2
ZAR	**0.005**	**2.6**
Government bonds	73.051	2.6
Corporate bonds	25.514	2.6
Mortgages and loans	1.435	0.0
SGD	**0.004**	**3.4**
Corporate bonds	135.374	3.4
Government bonds	1.180	1.8
CIUs	0.086	0.0
Mortgages and loans	-36.640	0.0
NZD	**0.004**	**3.5**
Corporate bonds	80.322	3.9
Government bonds	18.417	1.9
CIUs	0.696	0.0
Mortgages and loans	0.566	0.0
RUB	**0.003**	**0.5**
Government bonds	85.043	0.5
Mortgages and loans	10.702	0.0
Corporate bonds	4.255	0.9
IDR	**0.003**	**2.2**
Government bonds	73.893	2.2
Mortgages and loans	16.472	0.0
Corporate bonds	9.635	1.6
KRW	**0.002**	**10.7**
Corporate bonds	100.000	10.7
TRY	**0.002**	**2.3**
Government bonds	95.683	2.4
Corporate bonds	4.263	1.7
Structured notes	0.054	1.0
RON	**0.002**	**0.8**
Corporate bonds	47.257	1.2
Mortgages and loans	26.837	0.0
Government bonds	25.906	0.2
TWD	**0.002**	**4.5**
Corporate bonds	100.000	4.5
KYD	**0.001**	**5.3**
Corporate bonds	100.000	5.3
VND	**0.001**	**2.7**
Corporate bonds	100.000	2.7
AED	**0.000**	**6.7**
Corporate bonds	100.000	6.7
MYR	**0.000**	**0.8**
Corporate bonds	89.991	0.8
Collateralised securities	9.818	1.5
Mortgages and loans	0.192	0.0
ARS	**0.000**	**4.7**
Corporate bonds	63.061	5.7
CIUs	31.121	0.0
Government bonds	5.817	3.3

USN	**0.000**	**5.1**
Corporate bonds	100.000	5.1
UZS	**0.000**	**3.3**
Corporate bonds	100.000	3.3
HRK	**0.000**	**2.5**
Corporate bonds	93.525	2.5
CIUs	6.475	0.0
UYU	**0.000**	**2.4**
Government bonds	100.000	2.4
EEK	**0.000**	**5.6**
Corporate bonds	100.000	5.6
UGX	**0.000**	**0.7**
Corporate bonds	100.000	0.7
UAH	**0.000**	**1.0**
Government bonds	100.000	1.0
COP	**0.000**	**5.9**
Corporate bonds	100.000	5.9
MAD	**0.000**	**0.0**
Mortgages and loans	100.000	0.0
ANG	**0.000**	**0.0**
Corporate bonds		0.0
Overall total	**100.000**	**6.1**

Table 58 reports the breakdown of the currency corporate bond portfolio per CQS and per issuing currency. Shares have been based on the underlying Solvency II asset value.

Table 58: Breakdown of the currency corporate bond portfolio per CQS ([36])

Sum of sumS2val	Column							
Row Labels		1	2	3	4	5	6	9
AUD	31.2%	42.9%	10.2%	5.1%	0.0%			10.6%
BGN								100.0%
CAD	11.2%	42.9%	22.2%	5.7%	0.0%	0.0%		18.0%
CHF	25.9%	16.9%	10.2%	6.3%	0.3%	0.0%		40.4%
CNY	4.2%	3.1%	17.5%	1.3%				74.0%
CZK	8.2%	3.6%	21.6%	8.0%				58.6%
DKK	48.7%	4.4%	1.8%	1.2%	0.1%			43.8%
EUR	12.9%	12.2%	18.7%	16.2%	1.3%	0.2%	0.1%	38.5%
GBP	3.9%	5.3%	10.9%	10.4%	0.7%	0.1%	0.0%	68.7%
HKD		67.1%	23.9%	0.5%				8.5%
HRK			0.7%	0.9%		0.2%		98.1%
HUF		0.1%	10.7%	46.1%	5.2%	0.1%		37.8%
ISK			0.3%	20.6%	0.7%			78.5%
JPY	16.4%	20.5%	26.0%	1.4%				35.6%
NOK	23.0%	6.1%	17.5%	7.3%	0.0%	0.1%		46.0%
PLN	6.0%	1.1%	6.9%	8.7%	2.1%	0.2%		75.0%
RON	8.7%		37.4%	34.8%	0.1%	0.3%		18.6%
SEK	48.3%	3.0%	3.6%	4.3%	0.7%	0.0%	0.1%	39.8%
USD	6.4%	10.7%	23.0%	18.5%	3.2%	2.1%	0.2%	35.8%
Grand Total	**13.7%**	**11.1%**	**17.3%**	**14.8%**	**1.2%**	**0.2%**	**0.1%**	**41.7%**

A large part of the currency corporate bond portfolio has a CQS between 1 and 3. The share of the currency corporate bond portfolio for which no CQS is assigned (column 9 in Table 58) amounts to 41.7%. The breakdowns differ depending on the issuing currency.

([36]) In column 9, no CQS was assigned.

Tables 59 and 60 report the breakdown of the currency government bond portfolio and the currency corporate bond portfolio per duration and issuing currency. Shares have been based on the underlying Solvency II asset value.

Table 59: Breakdown of the currency government bond portfolio per duration

CURGOV	1				
Issuing Currency					
	<0	**0**	**>0 <=50**	**>50**	**missing**
AUD	0.0%	0.0%	100.0%	0.0%	0.0%
BGN	0.0%	0.0%	100.0%	0.0%	0.0%
CAD	0.0%	0.0%	100.0%	0.0%	0.0%
CHF	0.0%	0.6%	98.8%	0.0%	0.6%
CNY	0.0%	0.0%	100.0%	0.0%	0.0%
CZK	0.0%	0.0%	99.8%	0.0%	0.2%
DKK	0.0%	16.4%	83.3%	0.0%	0.4%
EUR	0.0%	5.2%	91.1%	0.0%	3.6%
GBP	0.0%	4.0%	89.8%	0.0%	6.2%
HKD	0.0%	1.0%	99.0%	0.0%	0.0%
HRK	0.0%	2.3%	96.1%	0.0%	1.6%
HUF	0.0%	2.0%	92.2%	0.0%	5.8%
ISK	0.0%	0.0%	96.7%	0.0%	3.3%
JPY	0.0%	0.0%	98.2%	0.0%	1.8%
NOK	0.0%	17.0%	81.9%	0.0%	1.1%
PLN	0.0%	0.0%	94.4%	0.0%	5.6%
RON	0.0%	10.6%	88.7%	0.0%	0.7%
SEK	0.0%	4.9%	84.1%	0.0%	10.9%
USD	0.0%	1.2%	98.2%	0.0%	0.6%
Grand Total	**0.0%**	**5.0%**	**91.2%**	**0.0%**	**3.8%**

Table 60: Breakdown of the currency government bond portfolio per duration

CURCORP	1				
Issuing Currency					
	<0	**0**	**>0 <=50**	**>50**	**missing**
AUD	0.0%	0.5%	92.9%	0.0%	6.6%
BGN	0.0%	0.0%	58.4%	0.0%	41.6%
CAD	0.0%	1.2%	88.9%	0.0%	9.9%
CHF	0.0%	1.4%	79.6%	0.2%	18.8%
CNY	0.0%	0.3%	99.7%	0.0%	0.0%
CZK	0.0%	28.5%	60.0%	0.0%	11.6%
DKK	0.2%	25.3%	71.6%	0.0%	2.8%
EUR	0.1%	9.6%	76.7%	0.0%	13.6%
GBP	0.0%	3.8%	52.8%	0.1%	43.3%
HKD	0.0%	0.0%	100.0%	0.0%	0.0%
HRK	0.0%	1.0%	18.4%	0.0%	80.6%
HUF	0.0%	0.4%	95.7%	0.0%	3.9%
ISK	0.0%	0.0%	85.0%	0.0%	15.0%
JPY	0.0%	7.0%	86.7%	0.0%	6.3%
NOK	0.0%	10.3%	75.6%	0.1%	13.9%
PLN	0.0%	0.7%	37.3%	0.0%	62.1%
RON	0.0%	1.8%	89.7%	0.0%	8.5%
SEK	0.4%	7.0%	69.8%	0.0%	22.8%
USD	0.0%	0.7%	90.8%	0.1%	8.4%
Grand Total	**0.1%**	**9.1%**	**74.6%**	**0.0%**	**16.2%**

Information provided about the country portfolio

Table 61 shows the underlying data that make up the country portfolio.

Table 61: Scheme of underlying data that make up the country portfolio

STEP1 GOV, CORP, OTHER allocation

Country portfolio characteristics

Country GOV-portfolio
STEP2B1 GOV only

home countries	*issuing countries*
1 AT	1 AT
2 BE	2 BE
3 BG	3 BG
4 HR	4 HR
5 CY	5 CY
6 CZ	6 CZ
7 DK	7 DK
8 EE	8 EE
9 FI	9 FI
10 FR	10 FR
11 DE	11 DE
12 GR	12 GR
13 HU	13 HU
14 IS	14 IE
15 IE	15 IT
16 IT	16 LV
17 LV	17 LT
18 LI	18 LU
19 LT	19 MT
20 LU	20 NL
21 MT	21 NO
22 NL	22 PL
23 NO	23 PT
24 PL	24 RO
25 PT	25 SK
26 RO	26 SI
27 SK	27 ES
28 SI	28 SE
29 ES	29 UK
30 SE	30 US
31 CH	31 IS
32 UK	32 LI
33 AU	33 AU
34 US	34 CA
	35 CH
	36 JP
	37 CN
	38 HK

Country CORP-portfolio
STEP2B2 CORP only

home countries	*issuing sector*	*credit rating*	
1 AT	1 FIN	0	0
2 BE	2 NONFIN	1	1
3 BG		2	2
4 HR		3	3
5 CY		4	4
6 CZ		5	5
7 DK		6	6
8 EE		9	Unrated
9 FI			
10 FR			
11 DE			
12 GR			
13 HU			
14 IS			
15 IE			
16 IT			
17 LV			
18 LI			
19 LT			
20 LU			
21 MT			
22 NL			
23 NO			
24 PL			
25 PT			
26 RO			
27 SK			
28 SI			
29 ES			
30 SE			
31 CH			
32 UK			
33 AU			
34 US			

Tables 62 and 63 display the share of the country government bond and corporate bond portfolios according to the home country and whether it is held by euro or non-euro countries.

Table 62: Breakdown of country government bond portfolio held by euro and non-euro countries, per home country

Solvency II value (% of column total)			
Home country	Euro countries	Non-euro countries	Total
FR	35.740	0.000	30.553
IT	20.729	0.000	17.721
DE	20.087	0.000	17.171
UK	0.000	69.423	10.077
BE	6.691	0.000	5.720
NL	6.395	0.000	5.467
ES	3.670	0.000	3.138
IE	2.534	0.000	2.166
DK	0.000	7.988	1.159
AT	1.256	0.000	1.074
PL	0.000	5.506	0.799
LU	0.930	0.000	0.795
PT	0.884	0.000	0.756
SE	0.000	4.894	0.710
NO	0.000	4.822	0.700
EL	0.400	0.000	0.342
FI	0.308	0.000	0.263
CH	0.000	1.803	0.262
CZ	0.000	1.739	0.252
HU	0.000	1.379	0.200
HR	0.000	0.932	0.135
SK	0.114	0.000	0.097
SI	0.112	0.000	0.095
RO	0.000	0.612	0.089
LI	0.000	0.438	0.064
BG	0.000	0.379	0.055
MT	0.064	0.000	0.054
LT	0.024	0.000	0.021
CY	0.022	0.000	0.019
LV	0.019	0.000	0.016
EE	0.019	0.000	0.016
IS	0.000	0.066	0.010
US	0.000	0.019	0.003
Total	**85.485**	**14.515**	**100.000**

Table 62 shows the country government bond portfolio split into the part held by euro countries (85.485%) and the part held by non-euro countries (14.515%). The details per home country are also provided.

Table 63: Breakdown of country corporate bond portfolio held by euro and non-euro countries, per home country

Solvency II value (% of column total)			
Home country	Euro countries	Non-euro countries	Total
FR	39.610	0.000	31.297
IT	33.163	0.000	26.203
DE	0.000	57.203	12.006
UK	8.260	0.000	6.526
BE	5.012	0.000	3.960
NL	0.000	17.298	3.630
ES	3.581	0.000	2.830
IE	0.000	13.196	2.770
DK	2.326	0.000	1.838
AT	0.000	8.750	1.836
PL	2.163	0.000	1.709
LU	2.155	0.000	1.702
PT	1.894	0.000	1.496
SE	0.894	0.000	0.706
NO	0.492	0.000	0.389
EL	0.000	0.901	0.189
FI	0.000	0.888	0.186
CH	0.000	0.687	0.144
CZ	0.000	0.671	0.141
HU	0.144	0.000	0.114
HR	0.089	0.000	0.070
SK	0.071	0.000	0.056
SI	0.066	0.000	0.053
RO	0.045	0.000	0.035
LI	0.000	0.118	0.025
BG	0.024	0.000	0.019
MT	0.000	0.081	0.017
LT	0.000	0.068	0.014
CY	0.000	0.054	0.011
LV	0.000	0.050	0.010
EE	0.000	0.037	0.008
IS	0.006	0.000	0.005
US	0.005	0.000	0.004
Total	**79.012**	**20.988**	**100.000**

Table 63 shows the country corporate bond portfolio split into the part held by euro countries (79.012%) and the part held by non-euro countries (20.988%). For example, 39.610% is held in France and 33.163% is held in Italy.

Table 64 shows the breakdown of the country government bond portfolio per asset type, held by euro and non-euro countries.

The share of the CIUs is provided as the percentage of the Solvency II value for the sub-total. In addition, the weighted average duration is provided for each particular type of investment.

Table 64: Breakdown of the country government bond portfolio per type for euro and non-euro countries

	Solvency II value (% of (sub-)total)	Weighted duration
Held by euro countries	**85.5**	**8.6**
Government bonds	**88.3**	**8.6**
Central government bonds	85.7	8.5
Regional government bonds	7.9	11.4
Other	4.1	6.8
Treasury bonds	1.1	0.5
Local authority bonds	1.0	10.4
Covered bonds	0.1	8.8
National central banks	0.0	12.9
CIUs	**11.7**	**7.0**
Government bonds	100.0	7.0
Held by non-euro countries	**14.5**	**10.7**
Government bonds	**85.7**	**10.9**
Central government bonds	89.7	11.4
Other	4.3	9.0
Treasury bonds	3.3	0.5
Regional government bonds	1.8	8.3
Local authority bonds	0.8	2.2
National central banks	0.1	2.9
Covered bonds	0.0	5.5
CIUs	**14.3**	**2.8**
Government bonds	100.0	2.8
Total	**100.0**	**8.9**

The share of the country government bonds portfolio that is held by euro countries amounts to 85.5%. The large part of this is central government bonds (85.7%), which have a weighted duration of 8.5.

The share of CIUs amounts to 11.7% for the part held by euro countries and 14.3% for the part held by non-euro countries.

It can be noted that the weighted duration is lower for the investments held by euro countries (8.6) than for those held by non-euro countries (10.7).

Table 65 shows, per home country, the breakdown of the country government bond portfolio held by euro countries per type of assets.

Table 65: Breakdown of the country government bond portfolio held by euro countries only, per home country

Home country	Solvency II value (% of (sub-)total)	Weighted duration
FR	**35.740**	**8.0**
Government bonds	**96.411**	**8.0**
Central government bonds	90.679	8.1
Other	6.910	6.0
Regional government bonds	1.753	9.2
Local authority bonds	0.531	7.4
Treasury bonds	0.110	1.6
Covered bonds	0.017	4.1
National central banks	0.000	5.2
CIUs	**3.589**	**4.3**
Government bonds	100.000	4.3
IT	**20.729**	**6.8**
Government bonds	**92.316**	**6.9**
Central government bonds	95.664	7.0
Treasury bonds	1.984	0.5
Other	1.598	5.8
Regional government bonds	0.502	11.8
Local authority bonds	0.242	10.3
Covered bonds	0.009	18.6
CIUs	**7.684**	**2.6**
Government bonds	100.000	2.6
DE	**20.087**	**11.7**
Government bonds	**71.960**	**11.8**
Central government bonds	52.175	11.8
Regional government bonds	38.792	12.0
Other	4.295	11.0
Local authority bonds	3.337	12.3
Treasury bonds	0.815	0.3
Covered bonds	0.586	9.9
National central banks	0.000	4.9
CIUs	**28.040**	**10.2**
Government bonds	100.000	10.2
BE	**6.691**	**9.5**
Government bonds	**95.958**	**9.5**
Central government bonds	93.820	9.5
Regional government bonds	4.447	10.1
Other	0.954	9.6
Local authority bonds	0.647	10.9
Covered bonds	0.093	2.8
Treasury bonds	0.025	0.1
National central banks	0.013	13.3

CIUs	**4.042**	**5.4**
Government bonds	100.000	5.4
NL	**6.395**	**11.9**
Government bonds	**89.618**	**11.9**
Central government bonds	95.000	12.3
Treasury bonds	2.227	0.3
Regional government bonds	2.004	7.5
Local authority bonds	0.510	8.8
Other	0.259	6.2
Covered bonds	0.000	3.0
CIUs	**10.382**	**9.5**
Government bonds	100.000	9.5
ES	**3.670**	**6.8**
Government bonds	**98.695**	**6.8**
Central government bonds	88.557	7.1
Regional government bonds	4.702	4.6
Local authority bonds	2.701	7.5
Other	2.090	3.6
Treasury bonds	1.736	0.7
Covered bonds	0.216	3.0
CIUs	**1.305**	**2.6**
Government bonds	100.000	2.6
IE	**2.534**	**5.9**
Government bonds	**44.631**	**6.0**
Central government bonds	88.699	6.4
Treasury bonds	7.309	1.3
Regional government bonds	2.021	4.7
Other	1.628	3.9
Local authority bonds	0.306	2.2
Covered bonds	0.037	0.4
CIUs	**55.369**	**5.6**
Government bonds	100.000	5.6
AT	**1.256**	**8.7**
Government bonds	**78.212**	**8.6**
Central government bonds	86.323	8.5
Regional government bonds	8.673	10.6
Other	3.518	6.1
Local authority bonds	1.475	10.2
Covered bonds	0.012	1.1
CIUs	**21.788**	**9.5**
Government bonds	100.000	9.5
LU	**0.930**	**5.8**
Government bonds	**67.743**	**5.9**
Central government bonds	82.535	6.0
Other	8.593	5.9
Treasury bonds	4.905	0.5
Regional government bonds	3.112	8.1
Covered bonds	0.608	9.2
Local authority bonds	0.245	11.0

National central banks	0.002	0.8
CIUs	**32.257**	**5.3**
Government bonds	100.000	5.3
PT	**0.884**	**5.0**
Government bonds	**99.218**	**5.0**
Central government bonds	93.181	5.1
Treasury bonds	3.864	0.3
Other	2.336	3.1
Regional government bonds	0.280	20.2
Local authority bonds	0.209	6.6
Covered bonds	0.129	3.8
National central banks	0.000	0.0
CIUs	**0.782**	**0.0**
Government bonds	100.000	0.0
EL	**0.400**	**5.9**
Government bonds	**94.866**	**5.9**
Central government bonds	73.306	7.4
Treasury bonds	26.176	0.3
Other	0.267	7.4
Regional government bonds	0.244	8.0
Covered bonds	0.007	7.4
CIUs	**5.134**	**5.0**
Government bonds	100.000	5.0
FI	**0.308**	**6.4**
Government bonds	**56.199**	**6.5**
Central government bonds	95.096	6.6
Other	2.849	2.7
Local authority bonds	1.056	6.8
Regional government bonds	0.977	5.5
Treasury bonds	0.023	0.0
CIUs	**43.801**	**4.7**
Government bonds	100.000	4.7
SK	**0.114**	**7.0**
Government bonds	**93.444**	**7.0**
Central government bonds	99.743	7.0
Local authority bonds	0.134	5.9
Regional government bonds	0.090	13.9
Other	0.033	9.3
CIUs	**6.556**	**5.3**
Government bonds	100.000	5.3
SI	**0.112**	**5.3**
Government bonds	**96.560**	**5.2**
Central government bonds	92.418	5.4
Other	4.079	3.3
Regional government bonds	1.853	3.6
Treasury bonds	1.573	0.4
Local authority bonds	0.077	4.5
CIUs	**3.440**	**6.7**
Government bonds	100.000	6.7

MT	**0.064**	**6.2**
Government bonds	**94.456**	**6.3**
Central government bonds	81.576	7.1
Other	13.579	2.0
Regional government bonds	4.824	4.2
Treasury bonds	0.020	0.0
CIUs	**5.544**	**3.3**
Government bonds	100.000	3.3
LT	**0.024**	**5.7**
Government bonds	**97.988**	**5.6**
Central government bonds	98.669	5.6
Regional government bonds	1.331	9.9
CIUs	**2.012**	**8.1**
Government bonds	100.000	8.1
CY	**0.022**	**5.0**
Government bonds	**73.713**	**5.1**
Central government bonds	77.542	6.0
Treasury bonds	12.695	0.4
Other	9.206	4.2
Local authority bonds	0.556	8.2
CIUs	**26.287**	**4.1**
Government bonds	100.000	4.1
LV	**0.019**	**4.3**
Government bonds	**98.120**	**4.3**
Central government bonds	99.750	4.3
Other	0.250	5.9
CIUs	**1.880**	**6.7**
Government bonds	100.000	6.7
EE	**0.019**	**7.6**
Government bonds	**64.343**	**7.6**
Central government bonds	93.870	7.7
Regional government bonds	4.918	7.4
Local authority bonds	0.626	8.6
Other	0.586	2.2
CIUs	**35.657**	**5.1**
Government bonds	100.000	5.1
Total	**100.000**	**8.6**

Table 66 shows the composition and weighted duration of the currency corporate bond portfolio for the investments that are held by euro countries and non-euro countries.

Table 66: Breakdown of the country corporate bond portfolio per type of investment for euro and non-euro countries

	Solvency II value (% of (sub-)total)	Weighted duration
Held by euro countries	**79.0**	**6.1**
Corporate bonds	62.0	5.9
CIUs	23.3	4.6
Mortgages and loans	6.2	4.1
Government bonds	5.1	10.5
Structured notes	2.7	5.7
Collateralised securities	0.7	4.2
Held by non-euro countries	**21.0**	**5.6**
Corporate bonds	51.1	5.7
CIUs	35.4	4.5
Mortgages and loans	7.8	0.0
Government bonds	3.7	6.9
Structured notes	1.8	4.3
Collateralised securities	0.2	5.6
Total	**100.0**	**6.0**

An additional split — per home country — is provided. Table 67 focuses on the country corporate bond portfolio that is held by euro countries. It can be noted that 39.610% of the country corporate bond portfolio is held in France and 33.163% is held in Germany.

Table 67: The country corporate bond portfolio held by euro countries only, per home country

Home country	Solvency II value (% of (sub-)total)	Weighted duration
FR	**39.610**	**5.0**
Corporate bonds	68.048	4.9
CIUs	20.134	2.7
Government bonds	5.363	8.3
Structured notes	3.595	5.8
Mortgages and loans	2.523	7.2
Collateralised securities	0.337	3.6
DE	**33.163**	**8.3**
Corporate bonds	58.504	8.0
CIUs	27.825	6.7
Government bonds	5.687	13.6
Mortgages and loans	5.233	3.0
Structured notes	2.145	6.4

Collateralised securities	0.606	4.0
IT	**8.260**	**5.1**
Corporate bonds	65.878	5.1
CIUs	24.158	3.6
Structured notes	3.999	4.2
Government bonds	2.519	9.8
Mortgages and loans	2.332	0.0
Collateralised securities	1.113	2.9
NL	**5.012**	**4.8**
Mortgages and loans	38.463	7.0
Corporate bonds	37.244	4.6
CIUs	16.284	3.3
Government bonds	4.999	10.1
Collateralised securities	2.637	3.4
Structured notes	0.373	0.6
BE	**3.581**	**5.6**
Corporate bonds	63.243	5.1
Mortgages and loans	18.504	0.0
CIUs	9.646	3.0
Government bonds	7.347	10.7
Structured notes	1.040	3.9
Collateralised securities	0.220	4.8
LU	**2.326**	**5.4**
Corporate bonds	45.386	5.6
CIUs	42.062	4.1
Mortgages and loans	7.748	2.8
Government bonds	2.857	5.9
Structured notes	1.854	5.8
Collateralised securities	0.092	3.1
IE	**2.163**	**4.8**
Corporate bonds	48.925	4.8
CIUs	37.827	3.5
Mortgages and loans	6.592	4.3
Collateralised securities	3.187	5.7
Government bonds	3.029	5.8
Structured notes	0.440	3.9
ES	**2.155**	**4.8**
Corporate bonds	77.798	4.6
CIUs	11.019	3.5
Structured notes	4.253	7.8
Mortgages and loans	3.179	0.0
Government bonds	2.635	5.9
Collateralised securities	1.117	9.2
AT	**1.894**	**6.8**
Corporate bonds	58.963	6.4
CIUs	24.313	7.0
Mortgages and loans	9.111	0.0
Government bonds	5.598	10.6
Structured notes	1.898	6.0

Collateralised securities	0.116	8.8
FI	**0.894**	**3.4**
Corporate bonds	52.681	3.4
CIUs	39.630	3.1
Mortgages and loans	6.615	0.0
Government bonds	0.584	10.9
Structured notes	0.491	3.4
PT	**0.492**	**4.2**
Corporate bonds	89.184	4.1
CIUs	5.392	5.9
Government bonds	2.655	8.2
Structured notes	1.317	4.0
Mortgages and loans	1.143	1.7
Collateralised securities	0.309	13.1
EL	**0.144**	**4.3**
Corporate bonds	57.324	4.2
CIUs	27.088	2.8
Government bonds	13.499	6.6
Mortgages and loans	2.061	0.0
Structured notes	0.026	0.8
Collateralised securities	0.002	0.6
SI	**0.089**	**4.2**
Corporate bonds	83.419	4.3
CIUs	9.266	4.6
Government bonds	3.626	3.3
Mortgages and loans	3.438	0.0
Structured notes	0.252	2.1
SK	**0.071**	**6.6**
Corporate bonds	81.511	6.5
Government bonds	9.576	8.3
CIUs	6.327	5.1
Mortgages and loans	1.859	0.0
Structured notes	0.726	4.4
MT	**0.066**	**3.7**
Corporate bonds	48.593	4.2
CIUs	23.489	2.3
Mortgages and loans	18.063	8.1
Government bonds	7.885	5.5
Collateralised securities	1.954	1.3
Structured notes	0.015	3.5
CY	**0.045**	**5.1**
CIUs	47.648	4.0
Corporate bonds	44.268	5.5
Government bonds	3.981	5.1
Mortgages and loans	3.942	0.0
Structured notes	0.161	3.3
EE	**0.024**	**3.7**
Corporate bonds	78.048	3.4
CIUs	16.384	3.3

Government bonds	3.668	11.6
Mortgages and loans	1.169	0.0
Structured notes	0.730	0.8
LT	**0.006**	**5.3**
Corporate bonds	45.224	5.3
CIUs	33.160	3.8
Government bonds	12.261	10.6
Mortgages and loans	5.876	0.0
Structured notes	3.479	1.3
LV	**0.005**	**4.7**
Corporate bonds	52.192	4.8
CIUs	45.732	3.6
Mortgages and loans	2.068	0.0
Structured notes	0.007	0.7
Total	**100.000**	**6.1**

Table 68 reports the breakdown of the country corporate bond portfolio per CQS and per home country. Shares have been based on the underlying Solvency II asset value.

Table 68: Breakdown of the country corporate bond portfolio per CQS ([37])

Sum of sumS2val	Column							
Row Labels		1	2	3	4	5	6	9
AT	14.2%	13.2%	18.4%	17.8%	0.7%	0.1%	0.1%	35.4%
BE	9.0%	12.2%	16.7%	17.4%	0.8%	0.2%	0.0%	43.7%
BG	4.3%	1.9%	15.4%	30.8%	3.6%	0.0%	0.7%	43.2%
CH	30.9%	19.3%	5.4%	0.7%				43.7%
CY	11.1%	6.8%	16.3%	11.9%	2.0%	0.2%	2.1%	49.5%
CZ	4.6%	2.8%	25.4%	20.7%	1.9%			44.6%
DE	23.9%	14.9%	13.2%	8.4%	0.4%	0.1%	0.1%	39.1%
DK	38.5%	4.1%	2.2%	1.9%	0.3%	0.5%	0.1%	52.4%
EE	13.7%	15.4%	22.0%	22.6%	1.8%			24.5%
ES	3.3%	9.0%	21.9%	35.6%	2.4%	0.3%	0.1%	27.4%
FI	5.4%	5.5%	14.0%	19.6%	2.7%	2.2%	0.1%	50.5%
FR	7.7%	12.0%	23.6%	16.4%	1.0%	0.1%	0.1%	39.1%
GR	11.1%	12.8%	18.0%	18.3%	3.5%	1.1%	0.5%	34.6%
HR	0.6%	1.7%	13.7%	10.4%	1.6%	0.1%	0.0%	71.8%
HU		0.1%	6.9%	34.3%	4.0%	0.2%		54.4%
IE	7.4%	7.6%	15.9%	12.7%	1.5%	1.2%	0.1%	53.5%
IS			0.2%	19.7%	0.7%			79.4%
IT	2.8%	5.8%	15.0%	36.4%	5.5%	0.5%	0.1%	33.9%
LI	7.6%	8.1%	7.1%	6.1%	0.0%	0.1%		70.9%
LT	19.5%	9.8%	13.0%	16.4%	2.3%			39.0%
LU	3.3%	4.8%	12.9%	10.1%	1.4%	0.4%	0.1%	67.1%
LV	10.0%	2.9%	18.7%	19.0%	0.7%		0.6%	48.2%
MT	4.2%	4.9%	19.2%	11.0%	1.4%	0.4%		58.9%
NL	7.7%	7.1%	13.9%	16.4%	1.3%	0.3%	0.0%	53.2%
NO	17.8%	5.7%	17.7%	7.1%	0.0%	0.0%	0.0%	51.7%
PL	4.0%	0.9%	8.0%	11.6%	1.0%	0.2%		74.4%
PT	3.3%	8.3%	27.6%	35.0%	6.7%	2.0%	0.1%	17.0%
RO	3.3%		29.4%	33.4%	0.0%			33.8%
SE	39.9%	4.1%	5.9%	6.0%	1.0%	0.2%	0.2%	42.7%
SI	10.3%	8.4%	23.9%	35.8%	5.2%	0.4%		15.9%
SK	10.7%	18.4%	22.9%	28.8%	1.4%			17.8%
UK	3.8%	6.3%	12.4%	9.7%	0.7%	0.3%	0.0%	66.8%
US	5.4%	33.0%	51.9%	8.9%				0.8%
Grand Total	**13.1%**	**10.6%**	**16.5%**	**14.1%**	**1.1%**	**0.2%**	**0.1%**	**44.3%**

A large part of the currency corporate bond portfolio has a CQS between 1 and 3. The share of the currency corporate bond portfolio for which no CQS is assigned (column 9 in Table 68) amounts to 44.3%. The breakdowns differ depending on the issuing currency.

([37]) In column 9, no CQS was assigned.

Tables 69 and 70 report the breakdown of the country government bond portfolio and the country corporate bond portfolio per duration and issuing currency. Shares have been based on the underlying Solvency II asset value.

Table 69: Breakdown of the country government bond portfolio per duration

NATGOV	1				
Issuing Currency					
	<0	**0**	**>0 <=50**	**>50**	**missing**
AT	0.0%	5.4%	88.4%	0.0%	6.2%
BE	0.0%	1.8%	95.8%	0.0%	2.3%
BG	0.0%	0.2%	99.0%	0.0%	0.8%
CH	0.0%	40.1%	59.9%	0.0%	0.0%
CY	0.0%	2.9%	76.1%	0.0%	21.0%
CZ	0.0%	0.1%	99.3%	0.0%	0.6%
DE	0.0%	19.1%	76.2%	0.1%	4.6%
DK	0.0%	12.4%	83.1%	0.0%	4.5%
EE	0.0%	0.6%	64.6%	0.0%	34.8%
ES	0.0%	0.7%	99.3%	0.0%	0.0%
FI	0.0%	2.6%	58.3%	0.0%	39.1%
FR	0.0%	1.8%	96.5%	0.0%	1.7%
GR	0.0%	1.3%	96.2%	0.0%	2.5%
HR	0.0%	3.3%	95.9%	0.0%	0.8%
HU	0.0%	3.0%	90.3%	0.0%	6.7%
IE	0.0%	4.9%	50.5%	0.0%	44.6%
IS	0.0%	0.0%	96.7%	0.0%	3.3%
IT	0.1%	1.6%	95.2%	0.0%	3.0%
LI	0.0%	9.1%	47.7%	0.0%	43.2%
LT	0.0%	0.0%	100.0%	0.0%	0.0%
LU	0.0%	2.1%	76.3%	0.0%	21.7%
LV	0.0%	0.0%	98.1%	0.0%	1.9%
MT	0.0%	3.3%	93.7%	0.0%	2.9%
NL	0.0%	2.1%	92.5%	0.0%	5.4%
NO	0.0%	22.6%	75.5%	0.0%	1.9%
PL	0.0%	0.1%	93.5%	0.0%	6.3%
PT	0.0%	0.0%	99.2%	0.0%	0.8%
RO	0.0%	11.3%	86.5%	0.0%	2.2%
SE	0.0%	5.0%	79.2%	0.0%	15.7%
SI	0.0%	0.3%	96.9%	0.0%	2.8%
SK	0.0%	4.9%	94.5%	0.0%	0.6%
UK	0.0%	4.1%	88.9%	0.0%	7.0%
US	0.0%	0.0%	100.0%	0.0%	0.0%
Grand Total	**0.0%**	**5.5%**	**89.9%**	**0.0%**	**4.6%**

Table 70: Breakdown of the country corporate bond portfolio per duration

NATCORP	1				
Issuing Currency					
	<0	**0**	**>0 <=50**	**>50**	**missing**
AT	0.2%	5.7%	75.2%	0.0%	18.9%
BE	0.1%	5.0%	73.7%	0.0%	21.3%
BG	0.0%	0.5%	76.0%	0.0%	23.5%
CH	0.0%	43.4%	56.3%	0.0%	0.3%
CY	0.0%	8.6%	58.9%	2.1%	30.3%
CZ	0.0%	20.6%	71.6%	0.0%	7.7%
DE	0.0%	15.6%	73.3%	0.0%	11.0%
DK	0.1%	25.9%	66.5%	0.0%	7.4%
EE	0.0%	0.6%	91.3%	0.0%	8.2%
ES	0.1%	9.7%	87.0%	0.0%	3.2%
FI	0.0%	12.1%	60.1%	0.0%	27.8%
FR	0.1%	10.4%	78.9%	0.0%	10.6%
GR	0.2%	6.9%	85.1%	0.0%	7.8%
HR	0.0%	1.1%	49.9%	0.0%	49.0%
HU	0.0%	18.6%	74.1%	0.0%	7.3%
IE	0.0%	1.3%	63.0%	0.0%	35.7%
IS	0.0%	0.0%	82.6%	0.0%	17.4%
IT	0.3%	5.4%	80.4%	0.0%	13.8%
LI	0.1%	11.2%	51.3%	0.9%	36.4%
LT	0.0%	0.1%	94.0%	0.0%	5.9%
LU	0.0%	7.2%	54.1%	0.6%	38.1%
LV	0.0%	0.0%	55.3%	0.0%	44.7%
MT	0.0%	4.0%	66.4%	0.4%	29.2%
NL	0.0%	3.4%	54.1%	0.0%	42.5%
NO	0.0%	10.6%	74.0%	0.1%	15.2%
PL	0.0%	0.6%	39.4%	0.0%	60.0%
PT	0.0%	0.2%	93.6%	0.0%	6.3%
RO	0.0%	1.9%	86.1%	0.0%	12.0%
SE	0.2%	6.9%	67.5%	0.0%	25.4%
SI	0.1%	2.4%	88.8%	0.0%	8.7%
SK	0.0%	2.3%	93.3%	0.0%	4.5%
UK	0.0%	3.5%	58.4%	0.1%	38.1%
US	0.0%	0.0%	100.0%	0.0%	0.0%
Grand Total	**0.1%**	**10.4%**	**72.3%**	**0.0%**	**17.2%**

Collective investment undertakings look-through information

Tables 71 and 72 show all assets and all CIU assets using the look-through approach, respectively. It should be noted that the look-through approach is applied only if the sum of the Solvency II values of the reported underlying assets matches the Solvency II value of the CIU asset. This is the case for 70.7% of all CIU assets.

As the duration and credit quality rating are not available at the look-through level, these are inherited from the CIU asset level, if available. Thus, the weighted duration and credit quality of the look-through assets match, by construction, the level of the CIU asset.

Table 71: Breakdown of all assets of the representative portfolios per asset category

Asset category	Solvency II value (% of total)
Cash and deposits	2.1
Government bonds	25.7
Corporate bonds	23.4
CIUs	30.2
Collateralised securities	0.5
Mortgages and loans	2.6
Structured notes	1.6
Equity	13.7
Other investments	0.2
Total	**100.0**

CIUs represent 30.2% of the total Solvency II value. The share to which look-through applies is 70.7%. Most of this is listed equity (23.1%), corporate bonds (21.6%) and government bonds (12.6%).

Table 72: Breakdown of look-through CIU assets of the representative portfolios per asset category

CIU breakdown per asset category	Government	Corporate	Other	Total
Look-through applied	**12.6%**	**22.5%**	**35.7%**	**70.7%**
Listed equity			23.1%	23.1%
Corporate bonds		21.6%		21.6%
Government bonds	12.6%			12.6%
CIUs			6.5%	6.5%
Cash and deposits			2.8%	2.8%
Unlisted equity			1.5%	1.5%
Other investments			1.2%	1.2%
Collateralised securities		0.6%		0.6%
Properties			0.2%	0.2%
Mortgages and loans		0.1%		0.1%

Structured notes		0.1%		0.1%
Put options			0.1%	0.1%
Swaps			0.1%	0.1%
Credit derivatives			0.0%	0.0%
Call options			0.0%	0.0%
Forwards			0.0%	0.0%
Futures			0.0%	0.0%
Liabilities			0.0%	0.0%
No look-through applied		**11.2%**	**18.1%**	**29.3%**
Debt funds		8.4%		8.4%
Equity funds			5.6%	5.6%
Asset allocation funds			5.0%	5.0%
Other			3.3%	3.3%
Money market funds		2.8%		2.8%
Real estate funds			2.8%	2.8%
Alternative funds			0.6%	0.6%
Private equity funds			0.4%	0.4%
Infrastructure funds			0.3%	0.3%
Total	**12.6%**	**33.7%**	**53.8%**	**100.0%**

3.3. Actual yield obtained by insurers on their investments

The following is the relevant extract from the European Commission's CfI:

With regard to both the volatility adjustment and the matching adjustment, EIOPA is asked to provide information on "actual yield obtained by insurers on their investments." The information should be broken down to different regions, where relevant divergence can be observed.

Asset return data in quantitative reporting templates

Information on asset returns (gains and losses) by asset category is provided in QRT template S.09.01 ([38]). The information contained in this QRT template differentiates between the following sources of gains and losses ([39]):

- interest (amount of interest earned, i.e. interest received less the accrued interest at the start of the period plus the accrued interest at the end of the reporting period);
- rent;
- dividends;
- net gains and losses (resulting from assets sold or matured during the reporting period);
- unrealised gains and losses (resulting from the change in the value of assets not sold or matured during the reporting period).

By categorising these (absolute) asset returns in relation to the value of assets, relative asset returns can be derived.

In should be noted that the analysis on asset return data in this section does not include investments in CIUs, for which there is only very limited information in template S.09.01. Therefore, the data in this section are not fully representative of all fixed-income investments of insurers ([40]).

Table 73, corresponding to year-end 2018 data, summarises this information at the European level for government bonds, which correspond to the asset category with complementary identification code (CIC) 1 (government bonds and corporate bonds). Note that, for the purposes of this analysis, the class of corporate bonds includes not only assets in CIC 2 (corporate bonds), but also assets in CICs 5 (structured notes), 6 (collateralised securities) and 8 (mortgages and loans). In addition, rent and dividend payments are generally not applicable to these asset categories and are hence not included ([41]).

([38]) See template S.09.01.01, which gives information on income, gains and losses in the reporting period.
([39]) For further information, see the LOG file for template S.09.01.
([40]) For some markets, an insurer's indirect investments in CIUs represent a material proportion of overall investments (see, for example, section II.4 of the EIOPA LTG report).
([41]) In relation to 2017 data, we refer to section II.4 of the EIOPA 2018 LTG report.

Table 73: Gains and losses per asset category at the European level

Asset category	Interest	Unrealised gains and losses	Net gains and losses	Total gains and losses
Government bonds	2,4%	-0,7%	-0,1%	1,6%
Corporate bonds	2,6%	-2,2%	-0,2%	0,2%
Total	**2,6%**	**-1,5%**	**-0,2%**	**0,9%**

It should be noted that the relative gains or losses given in Table 73 are determined as the proportion of gains and losses incurred during 2018 of the asset values in the respective asset category at the start of 2018 ([42]). Unit-linked or index-linked assets have been excluded.

This shows that, across all five of the asset categories considered and at the European level, undertakings reported interest gains amounting to 2.6% of the asset values at the start of the period. Changes in the value of these investments during 2018 (when the respective assets were not sold and did not mature) resulted in unrealised losses of 1.5%, whereas assets that were sold or matured in 2017 led to net losses of 0.2%.

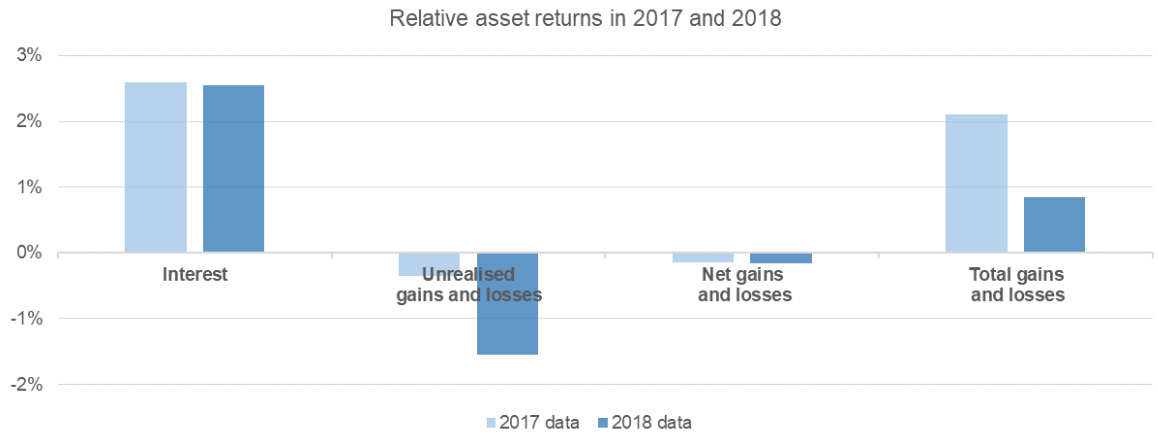
When assessing these numbers, it should be considered that:

- the values above are aggregated at the European level; the corresponding values at the level of individual undertakings are highly dispersed and thus generally differ from values at the European level;
- the asset returns shown above cannot be directly compared with the yield of the respective investments at a given point in time; for example, for a zero coupon bond, no interest gains before maturity are earned, whereas the yield of the bond would generally differ from zero.

Figure 58 shows the evolution of asset returns for all of the government and corporate bonds included in the analysis from 2017 to 2018.

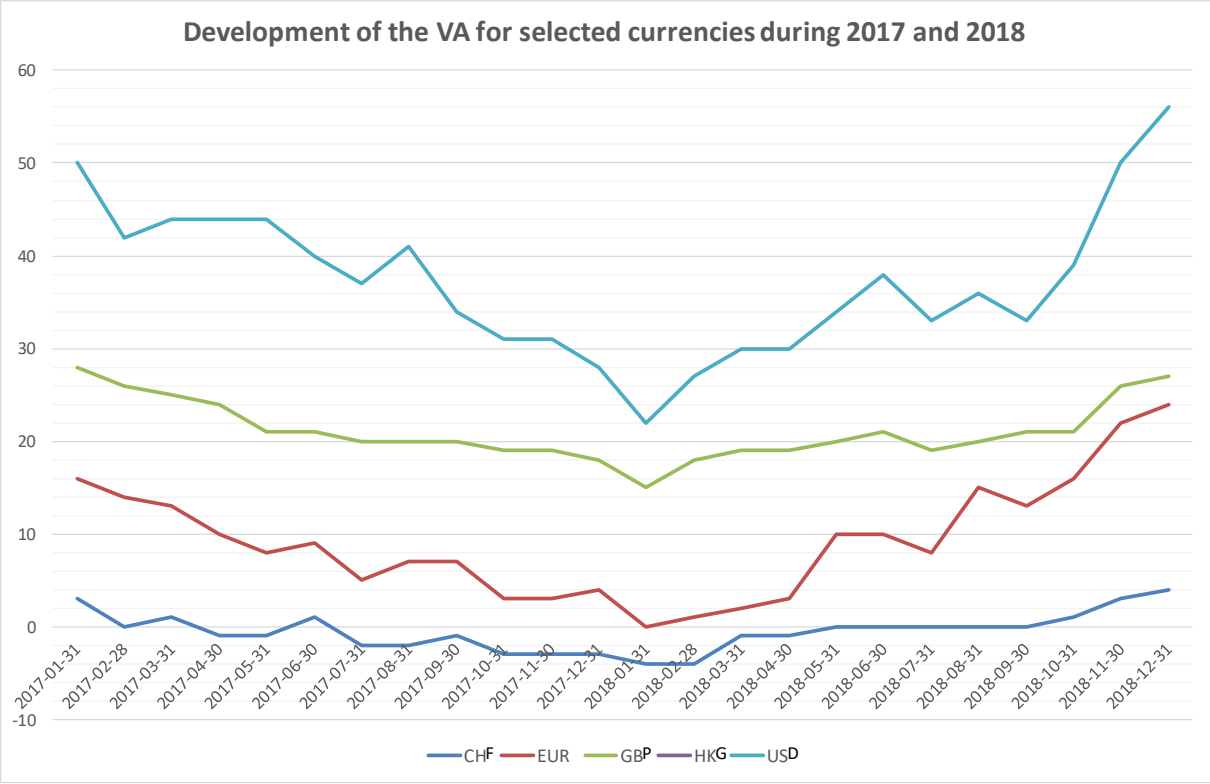
([42]) Specifically, the asset values in the respective asset category on 31 December 2017, as reported asset-by-asset in template S.06.02.

Figure 58: Evolution of asset returns for government and corporate bonds



When comparing asset returns of 2018 with those of the preceding year, it can be observed that the total gains have sharply declined owing to an increase in unrealised losses. This is because of an increase in credit spreads of fixed-income investments in 2018, which led to a decrease in the market prices — and hence an increase in unrealised losses — of the instruments affected. This increase is illustrated in Figure 59, which shows the development of the size of the VA for the Euro, the Pound Sterling and the US dollar over the time period 2017 to 2018.

Figure 59: Development of the VA for selected currencies in 2017-2018



This figure shows a marked increase in the VA values for these currencies, in particular for the euro and the US dollar. Note that the size of the VA is measured on the basis of average risk-corrected spreads of representative fixed-income

investments of the insurers and hence mirrors the development of average spread levels.

Figures 60 and 61 show the distribution of these unrealised losses across individual markets, shown separately for government bonds and corporate bonds, and how they have developed from 2017 to 2018 ([43]).

Figure 60: Unrealised gains and losses in 2017-2018 by country government bonds

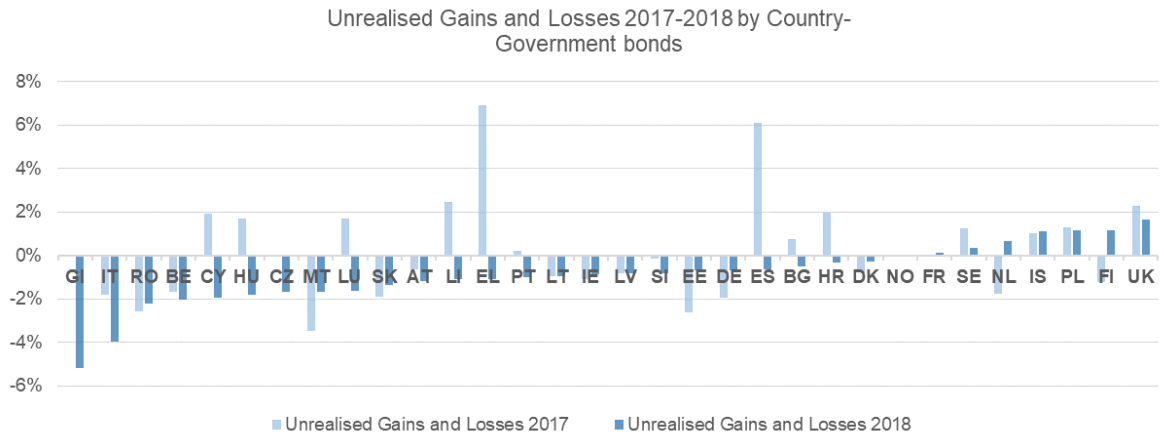
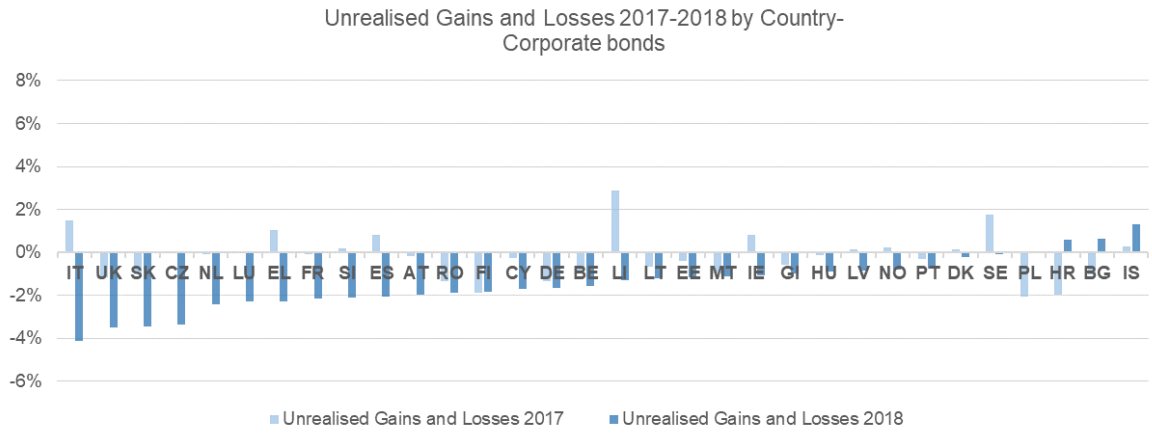


Figure 61: Unrealised gains and losses in 2017-2018 by country corporate bonds



These figures show that the overall observation — higher unrealised losses in 2018 compared with 2017 — applies to almost all markets. However, the average magnitude of this change differs between different markets. This appears plausible given the differences in the average credit quality and duration for insurers' fixed-income investments in different markets ([44]), so that changes in yields of fixed-income investments induced by the evolution of financial markets during the time period 2017-2018 had different effects on insurers' asset returns.

([43]) Note that the ordering corresponds to the magnitude of the average unrealised gains and losses in 2018.
([44]) See, for example, the information on the CQSs of insurers' corporate- and government-bond investments set out in section II.4 in the EIOPA LTG report.

Asset return data and asset yields

The yield of a fixed-income instrument is usually understood as its yield to maturity (YTM) ([45]). The YTM is the total return anticipated on a bond if the bond is held until it matures, expressed as an annual rate.

If a fixed time period is considered, and under the assumption that the YTM of the bond does not change throughout this period, the asset return generated by the bond over this period, relative to its market value at the beginning of the period, would generally coincide with its YTM ([46]). In reality, however, the YTM of the bond will not remain unchanged, owing to changes in risk-free rates and spreads (or both) during the time period ([47]). Therefore, in general, the asset return of the bond does not coincide with its YTM.

It should also be noted that the analysis of actual asset returns or yields does not allow conclusions to be drawn on the adequacy of the yield curve that is used for the valuation of technical provisions. For the sake of policyholder protection, the valuation of technical provisions is based on risk-free interest rate assumptions with the underlying motivation that those liabilities in any case need to be paid (without risk to the policyholders).

In particular, when actual asset returns or yields are observed to be high, this does not prompt an adjustment to the risk-free interest rate term structure in a market-consistent valuation framework. Whereas actual returns earned in the past allow conclusions to be drawn on past returns, the interest rate assumptions reflect required yields that need to be earned in the future as long as liabilities exist. Even if past asset returns always exceed the required yields, this is not a guarantee for the future. In particular, when undertakings are invested in more risky investments, the undertaking may experience losses in the future.

Asset yields in the context of an application of the volatility adjustment

In the context of the application of the VA, a comparison between the actual yield and the required yield could be performed. The valuation of technical provisions is based on risk-free rate assumptions. Therefore, the investments need to earn at least the risk-free rate. When the VA is applied, an additional yield needs to be earned. If the yield required (risk-free plus VA) is not earned, the undertaking experiences future losses on its solvency balance sheet.

EIOPA performed an analysis of the weighted average of the YTM and coupon rate of government and corporate bonds for year-end 2018. The YTM and coupon rate are taken from the CSDB([48]) as of year-end 2018. Information on insurers' government and corporate bond holding by maturity is taken from Solvency II QRT S.06.02 data, as this template provides the list of assets for solo

([45]) The YTM is also sometimes referred to as the internal rate of return.
([46]) This holds in the case of a simple 'plain vanilla' bond without options and assuming that the bond is not sold or does not mature or default during the time period under consideration.
([47]) The YTM of a bond will also change owing to the so-called 'roll down' effect, which stems from the fact that the spot rate curve implicit in the market-consistent valuation of the bond is not flat.
([48]) Centralised Securities Database

undertakings. Figures 62 and 63 are based on prudential data for quarter 4 2018. The weighted average YTM and coupon by maturity buckets are calculated using the Solvency II market value. Only bonds with fixed coupons are considered in the analysis. The sample is left with ca. 80% of the total values of bond in the Solvency II European Union sample.

Figure 62: Coupon and YTM by maturities for government bonds

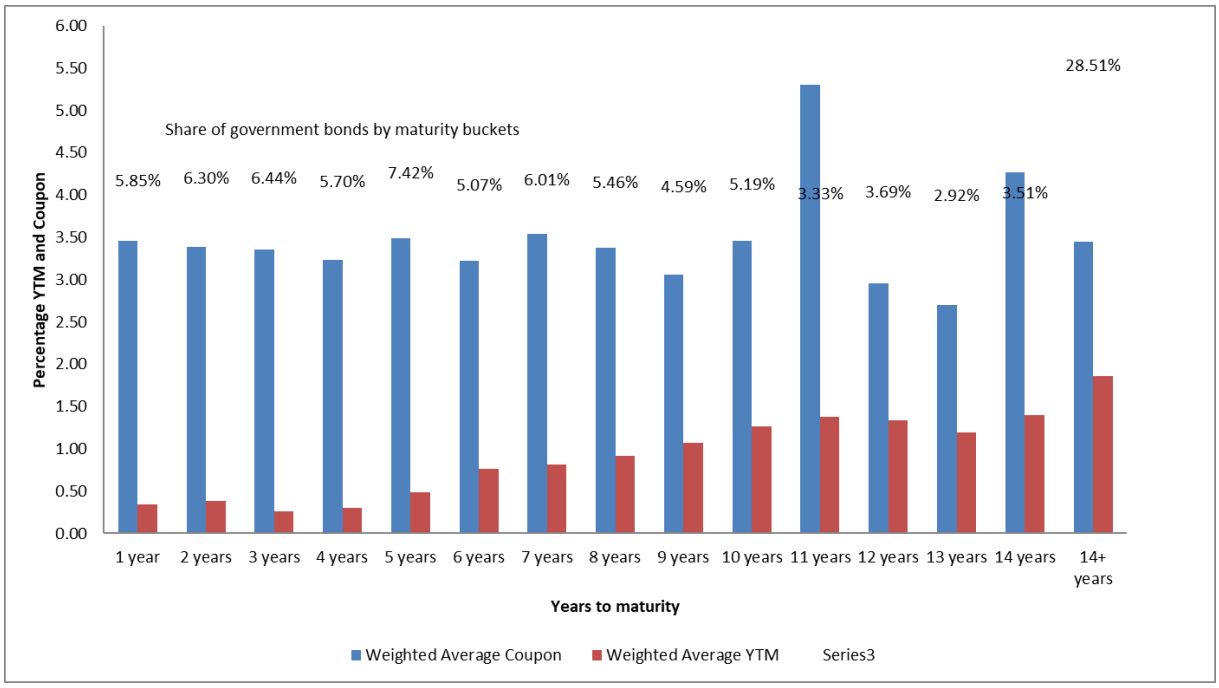


Figure 62 shows that, for example, 5.85% of the government bonds will reach their maturity date in 1 year and that these bonds are yielding a coupon of 3.46% and a YTM of 0.34%. The average YTM of the government bonds across all maturities amounts to 0.92%.

Figure 63: Coupon and YTM by maturities for corporate bonds

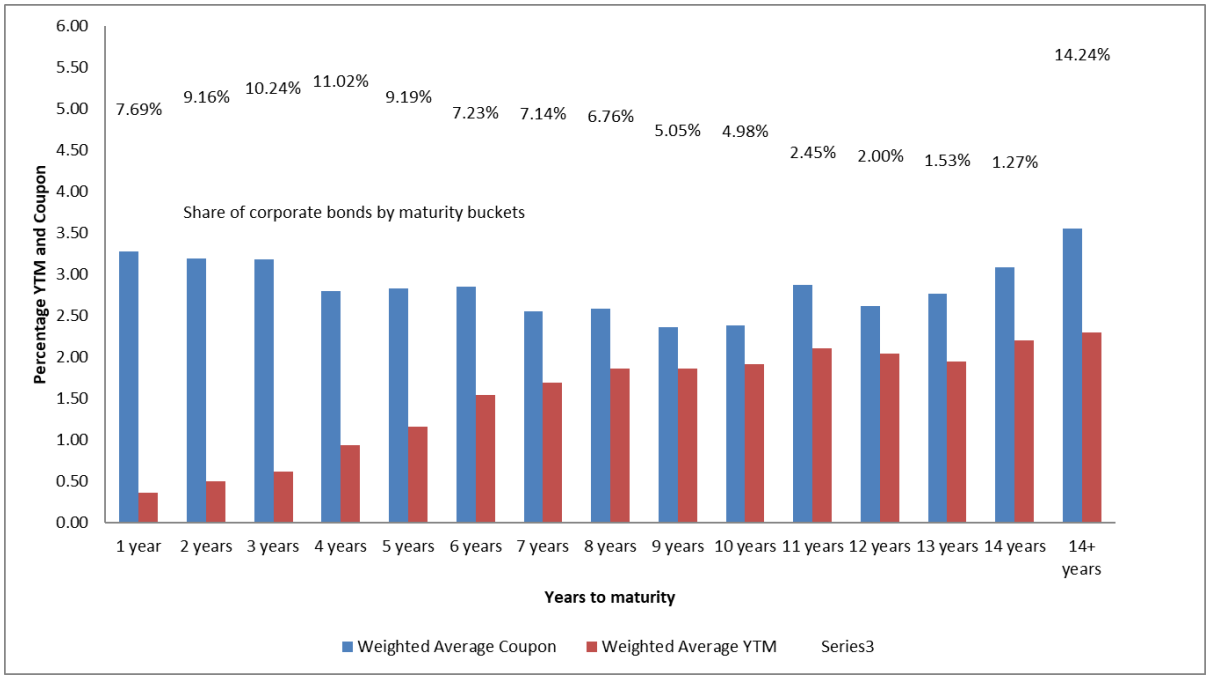


Figure 63 shows that, for example, 7.69% of the corporate bonds will reach their maturity date in 1 year and that these bonds are yielding a coupon of 3.28% and a YTM of 0.36%. The average YTM of the corporate bonds across all maturities amounts to 1.54%.

A comparison between the required and actual yield is not straightforward and has therefore not been performed.

With regard to the required yield, the interest rate to be used in the valuation of technical provisions is not a unique figure but is maturity dependent. Therefore, to allow for a comparison with the actual asset yield, the required yield, composed of the risk-free rate term structure including a VA, needs to be condensed into a required internal rate of return. The size of this internal rate of return is then dependent on the maturity profile of the liabilities. When the liabilities are dominated by short-term cash flows, the internal rate for the required yield will be around the size of the short-term interest rates. For very long-term business, it will be driven by long-term interest rates.

Furthermore, to allow a conclusion to be drawn on whether undertakings can earn the VA, the actual yields would need to be broken down into a risk-free and an additional return. Such a breakdown would necessitate a number of assumptions that are hard to validate and may be valid only for the European average rather than for each undertaking. Any analysis is therefore, per se, limited and no conclusions could be drawn for individual undertakings. The accuracy of the approximations is also considered to be limited, acknowledging the small size of the VA as of year-end 2018.

3.4. Dynamic volatility adjustment

Introduction

Extract from the CfI

> 3.3. Information on long-term guarantee measures
>
> With regards to the volatility adjustment, EIOPA is asked to provide the following information:
>
> - …
> - The potential effect of this measure on the Solvency Capital Requirement in various economic environments, and in particular the impact of EIOPA's opinion[49] related to this measure.

The assessment of this request is considered in the context of the European Commission's CfI ([50]) as well as in the context of EIOPA's 'Opinion on the supervisory assessment of internal models including a dynamic volatility adjustment' (the 'DVA opinion'; see footnote ([48]); developments are monitored using information collected from Member States to assess the implementation of this opinion.

The following sections present the results of EIOPA's analysis in response to the European Commission's CfI ([51]).

Dynamic volatility adjustment in internal models and relevant legal provisions

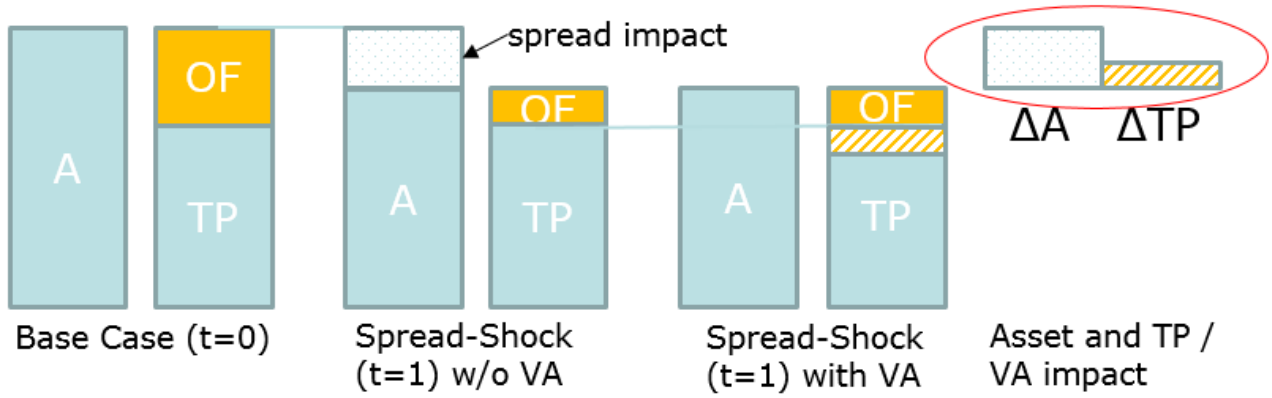
The VA was introduced as one of the LTG measures to mitigate the impact of exaggeration of bond spreads by adjusting the risk-free rates to calculate the technical provisions. As internal models are required to generate a probability distribution forecast that determines changes in basic own funds to calculate the SCR consistent with the methods to calculate the technical provisions, some internal model users implemented so-called 'dynamic volatility adjustment' (DVA) approaches that take the VA into account in the SCR by allowing the VA to move in line with the modelled credit spreads during the 1-year forecast of basic own funds. Some other models keep the VA constant (CVA), as in the standard formula.

([49]) EIOPA-BoS-17/366 (https://eiopa.europa.eu/Publications/Opinions/2017-12-20%20EIOPA-BoS-17-366_Internal_model_DVA_Opinion.pdf).
([50]) https://eiopa.europa.eu/Publications/Requests%20for%20advice/Request%20for%20information%202018-04-25.pdf
([51]) Please note that the figures presented here differ from the figures shown in EIOPA's 'Consultation Paper on the Opinion on the 2020 review of Solvency II', EIOPA-BoS-19/465, section 2.5, in some few details, as recent submissions and corrections in the database were taken into account.

The idea of DVA approaches is illustrated in Figures 64 and 65.

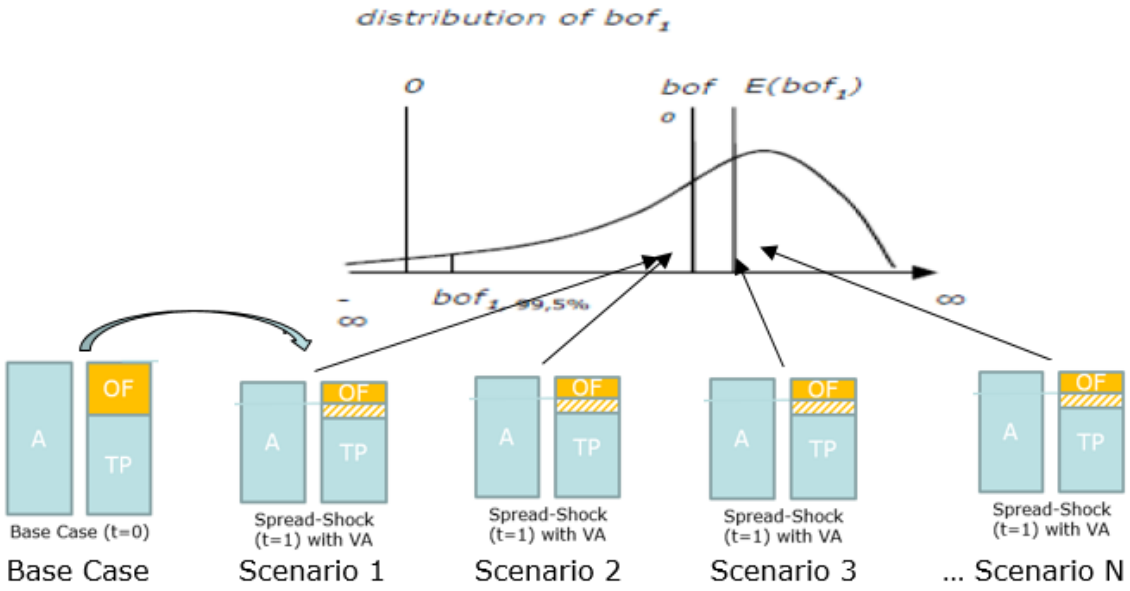
Under the VA, changes in asset values (ΔA) are (partly) compensated by a technical provisions adjustment (ΔTP).

Figure 64: Illustration of VA mechanism



In a generic view, this effect is anticipated in DVA approaches in the scenarios simulated to determine the SCR:

Figure 65: Illustration of DVA mechanism



One of the key questions discussed in the context of the DVA in internal models is if the relationship between the impact on assets and the technical provisions adjustment is sensible. This is addressed in EIOPA's DVA opinion and in the European Commission's CfI under the heading 'Potential disincentives for risk and investment management'. EIOPA is dealing with this and the other topics addressed by the European Commission in its opinion on the Solvency II review, which is currently under development.

The DVA in internal models is governed, in particular, by the regulatory requirements on internal models. These especially are Articles 112-127 of the Solvency II Directive and Articles 222-246 of the Delegated Regulation for single undertakings, as well as the relevant articles for groups. Furthermore, more general requirements on governance, including risk management, and on disclosure to supervisors and the public are relevant.

Of specific importance in the DVA context are the requirements of the statistical quality standards of Article 121 of the Solvency II Directive, including consistency with the methods used to calculate technical provisions, but also the ability to 'rank risks' as mentioned in Article 232 of the Delegated Regulation. At the same time, the requirements on the use test of Article 120 of the Solvency II Directive and its specification in the Delegated Regulation have to be complied with, including fit to the business (Article 224 of the Delegated Regulation) and integration in risk management (Article 226 of the Delegated Regulation). Of more general importance is the coverage of all material risks (Article 233 of the Delegated Regulation).

The frame is set by the regulation of the VA, in particular Articles 77d and 44 of the Solvency II Directive and Articles 49-51 and 278 of the Delegated Regulation.

Basic statistical information on undertakings' and groups' use of the DVA and modelling approaches observed

At year-end 2018, 62 undertakings were using an internal model for solo purposes, including a DVA. Three of these undertakings will drop out during 2019 owing to merger and acquisition.

All of the DVA undertakings belong to eight insurance groups, in each of which the approach to the DVA is homogeneous (i.e. eight DVA approaches are observed in the market). Four of these approaches could be classified as 'direct approaches' (i.e. with the ambition to replicate the EIOPA VA methodology). Those four approaches cover 38 solo undertakings, partly including margins of prudency related to the concrete model setup. The other four DVA approaches could be classified as 'holistic' (i.e. deviate from closely modelling the EIOPA VA methodology with the aim to solve undesirable risk management incentives ([52])). These holistic approaches cover 24 undertakings and differ motivated by their risk management and risk profile analysis. They can be said to implement an alternative measure of credit risk or credit risk impact based on own assessments and vary conceptually in approach and technical specification.

Irrespective of the approach chosen, models were approved only if all credit risks were modelled, including sovereign risk.

([52]) See paragraph 12 of EIOPA's DVA opinion, which mentions explicitly moving asset allocation towards the EIOPA VA reference portfolio with the sole purpose of lowering the SCR while increasing actual risk and putting in place investment strategies that could trigger pro-cyclical behaviour in a stressed situation.

Although the number of DVA users compared with the total number of insurance undertakings falling under Solvency II with 2% is small, the proportion in terms of the volume of assets and technical provisions with 15% is relevant.

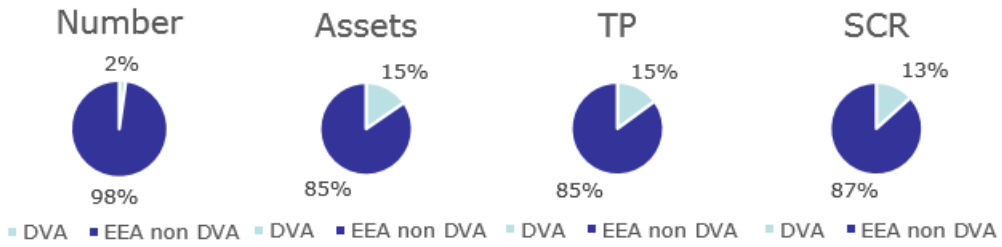
Table 74: Solo undertakings using DVA versus. all Solvency II undertakings (amounts in million euros)

	Number	Assets	Technical provisions	SCR	VA impact on SCR
DVA users	62	1,748,318	1,320,105	86,777	26,273
Total	2,806	11,458,284	8,916,787	655,108	41,397

Table 75: Proportion of solo undertakings using DVA versus. all Solvency II undertakings (portion in %)

	Number	Assets	Technical provisions	SCR	VA impact on SCR
DVA	2%	15%	15%	13%	63%
EEA non-DVA	98%	85%	85%	87%	37%

Figure 66: Proportion of solo undertakings using DVA versus. all Solvency II undertakings (portion in %)



For groups the portion of DVA users in terms of number with 2% is small as for solo undertakings, the portion in terms of volume[53] of assets and technical provisions with approximately 30% is even more relevant:

([53]) Please note that group total amounts are higher than the sum of solo undertakings despite diversification. Reasons for this especially are that some models are partial regarding the scope of entities, for some entities no VA but MA is applied or equivalent third-country regulation does not allow for a VA.

Table 76: Groups using DVA versus. all Solvency II groups (amounts in million euros)

	Number	Assets	Technical provisions	SCR	VA impact on SCR
DVA users	8	2,842,119	2,237,843	129,656	29,401
Total	345	9,278,862	7,419,993	481,369	41,639

Table 77: Proportion of groups using DVA versus. all Solvency II groups (portion in %)

	Number	Assets	Technical provisions	SCR	VA impact on SCR
DVA	2%	31%	30%	27%	71%
EEA non-DVA	98%	69%	70%	73%	29%

Figure 67: Proportion of groups using DVA versus. all Solvency II groups (portion in %)

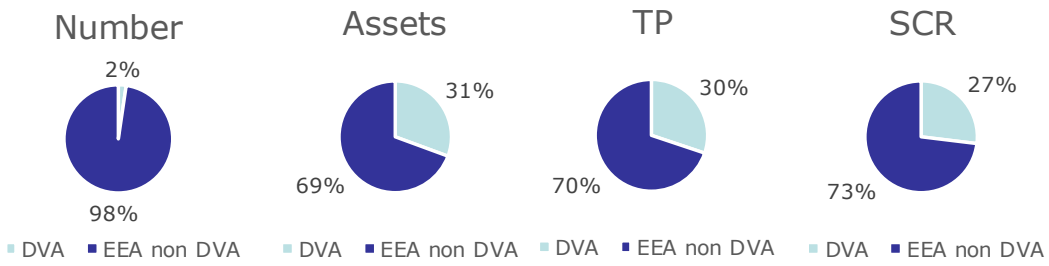


Table 78 provides an overview of the use of DVA by type of business (life, non-life, composite and reinsurance) or by country.

Table 78: Overview of the number of solo undertakings and groups using DVA per country and type of undertaking

Country	Groups	Solo undertakings				
		Life	Non-life	Composite	Reinsurance	Total
AT	0	2	1	1	0	4
BE	0	0	1	1	0	2
CZ	0	0	0	1	0	1
DE	2	11	11	0	2	24
FR	1	6	7	1	1	15
IE	0	0	1	0	1	2
IT	1	1	0	1	0	2
NL	3	6	5	0	1	12
UK	1	0	0	0	0	0

Total	8	26	26	5	5	62

Information and data basis

The analysis was based on data available from NSAs and EIOPA, in particular on model documentation, as well as from QRTs and narrative reporting, supplemented by a dedicated questionnaire that was sent to undertakings that included qualitative information and results from specifically requested calculations. The qualitative part of the questionnaire focused on risk and investment management, but also included questions on the risk profile and the impact of the DVA on the risk profile. The quantitative part of the questionnaire targeted especially calculations under stressed economic environments in the form of spread stress (+100 bps/−50 bps uniformly applied) and the separation of the impact of switching on/off the VA in CVA and DVA and of sovereign risk. The QRTs evaluated inter alia relate to template S.22 (the impacts of LTG measures). In general, please note that SCR figures, especially those under stressed conditions, are affected by the loss-absorbing capacity of technical provisions and of deferred taxes. This might be especially relevant in pronounced cases of the loss-absorbing capacity of deferred taxes supported by deferred tax assets, in which, under a deterioration of economic resilience, it might no longer be probable anymore that future taxable profits exist against which the deferred tax assets could be used. Such cases were analysed but the results did not indicate that changes were required to the statistical figures or to the conclusions.

From the total sample of 62 DVA users at the solo level and eight DVA users at the group level, 15 solo undertakings were exempted from answering the questionnaire, 13 of these owing to materiality criteria and two because merger and acquisition operations were due to be completed before the due date of the questionnaire. Therefore, for 47 of the 62 DVA users, detailed data are available as shown in Table 79.

Table 79: Solo undertakings using DVA: submitted questionnaires versus. all DVA users (amounts in million euros, portion in %)

	SCR	SCR impact	Technical provisions	Own funds
DVA users	86,777	26,273	1,320,105	243,799
Submissions	79,547	24,621	1,232,529	221,724
Proportion	92%	94%	93%	91%

From the group sample, one undertaking located in the UK was exempted, that is, for seven of the eight group DVA users, detailed data are available as shown in Table 80.

Table 80: Groups using DVA: submitted questionnaires versus all DVA users (amounts in million euros)

	SCR	SCR impact	Technical provisions	Own funds
DVA users	129,656	29,401	2,237,843	274,258

Submissions	112,502	28,330	1,875,595	243,411
Proportion	87%	96%	84%	89%

Impact of the introduction of the DVA on the market: 'net DVA impact' for year-end 2018

As described, while in the standard formula and CVA approaches the VA is kept constant, DVA approaches in the SCR predict impacts from changes in the VA according to the credit spread environment in the simulated scenarios. Furthermore, DVA models were approved only if all credit risks were modelled, including sovereign risk for EEA exposures. Correspondingly, DVA users in the questionnaire were asked to calculate the SCR for year-end 2018 in the variations shown in Table 81.

Table 81: SCR variations in the questionnaire sent to DVA users, spring 2019

Variant	No VA, sovereign risk as in the standard formula	No VA	CVA	DVA
VA	None	None	Constant	Dynamic
Sovereign risk	Exposures exempted as in the standard formula	As modelled, including EEA exposures in particular	As modelled, including EEA exposures in particular	As modelled, including EEA exposures in particular

Solo perspective

In a weighted average, the relative impact of the single steps on the SCR could be displayed as shown in Figure 68 and Table 82; the reference point is the SCR 'without VA' as displayed in QRT S.22 (i.e. the variant 'no VA' in Table 81).

Figure 68: Total sample of solo undertakings using DVA — waterfall diagram of the breakdown of using DVA in sovereign risk, CVA and DVA (proportions are given as the percentage relative to the SCR without VA)

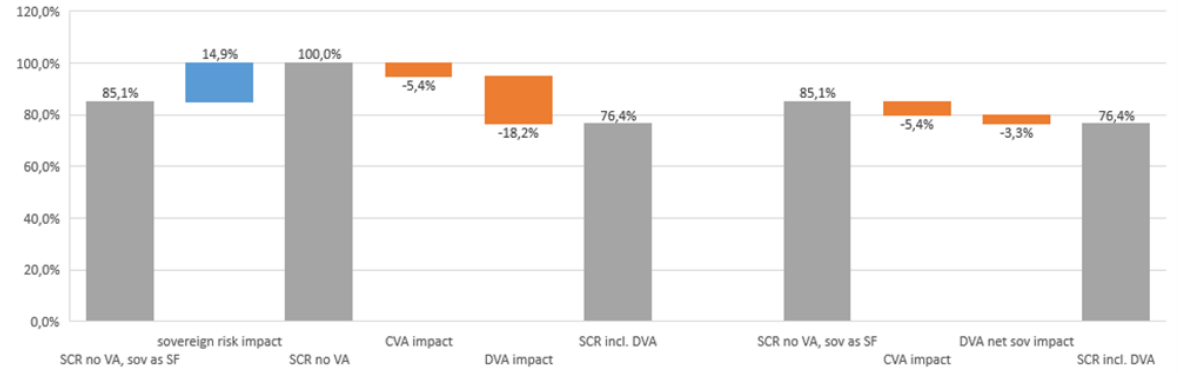


Table 82: Solo undertakings using DVA — breakdown of using DVA in sovereign risk, CVA and DVA (amounts are given in million euros and proportions are given as the percentage relative to the SCR without VA)

	SCR no VA, sovereign risk as in the standard formula	Sovereign risk impact	SCR no VA	CVA impact	SCR with CVA	DVA versus CVA impact	SCR with DVA	DVA net sovereign risk impact
Value (million euros)	88,660	15,508	104,168	−5,628	98,539	−18,993	79,547	−3,485
Relative to the SCR no VA (%)	85.1	14.9	100.0	−5.4	94.6	−18.2	76.4	−3.3

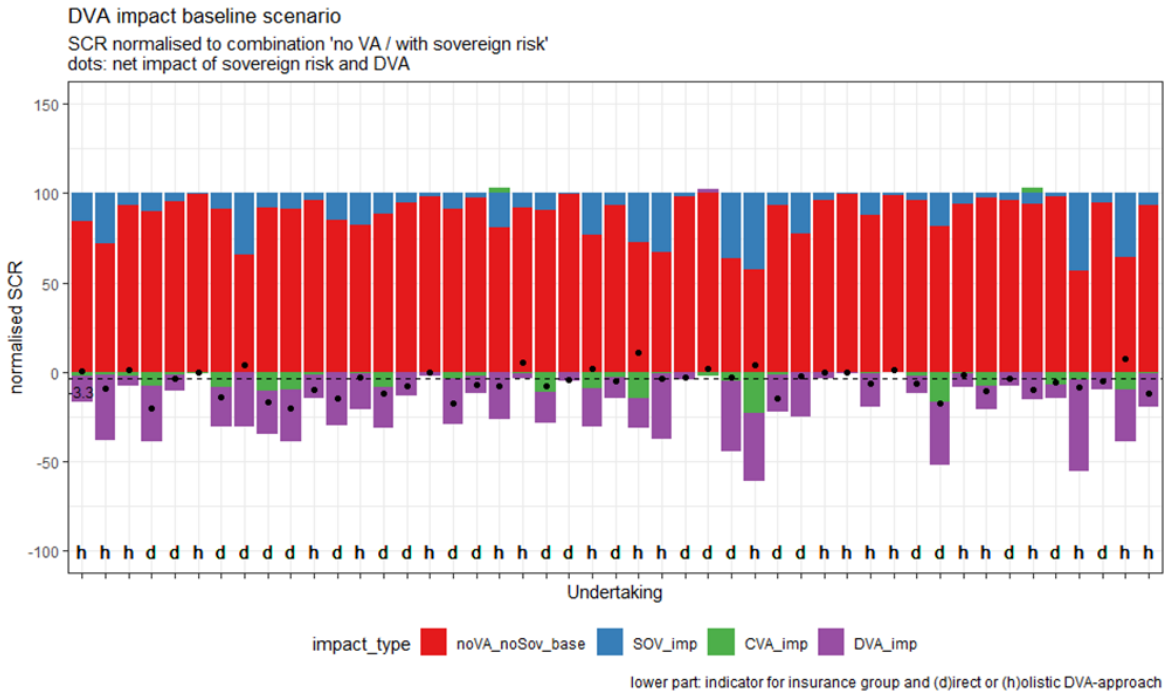
One way of evaluating the impact of the introduction of DVA models into the market is to consider the 'DVA net sovereign risk impact' (i.e. the difference between impacts from CVA and DVA, but subtracting ([54]) the initial increase of the SCR by introducing also sovereign risk for exposures exempted in the standard formula). This impact at year-end 2018 on the sample of 47 DVA users having answered the questionnaire is −3.3% relative to the SCR without VA. The impact of 'switching off' the VA as required in QRT S.22 is −23.6%. Consequently, on weighted average level there is only a limited impact comparing DVA models with constant VA in standard formula or internal models, if not enforcing modelling of sovereign exposures. Please note that there are internal models in the market that include sovereign risk but use neither CVA nor DVA.

([54]) Please note that this calculation is indeed a subtraction of impacts. The 'net DVA impact' is by intention not determined using a model configuration in which DVA would be used without sovereign risk, as this would be in conflict with the EIOPA opinions on DVA and on the treatment of sovereign risk in internal models. However, there is no indication that a 'net DVA impact' calculated differently would lead to materially different results.

At the single undertaking level, the corresponding impacts vary but do not show systematic dependencies on approaches used or on whether a 'direct approach' or a 'holistic approach' is used. Impacts seem to instead depend on the type of business (e.g. life and non-life insurers), but also, within and across these types, further discriminants determining the risk profile seem to be relevant. Inspected discriminants were, among others, country (e.g. influencing products offered or typical investment behaviour as reflected in the country reference portfolios) and the sensitivity of assets and liabilities in terms of 'effective duration'. In addition, a potential striking asset portfolio structure dependency was not detected as dominant.

Figure 69 illustrates the breakdown of DVA impacts as a waterfall diagram on the single undertaking level.

Figure 69: Solo undertakings using DVA — waterfall diagram of the breakdown of using DVA in sovereign risk, CVA and DVA (proportions are given as the percentage relative to the SCR without VA)



The letters at the bottom of Figure 69 indicate whether the approach used was direct ('d') or holistic ('h'). The red bars show in relative terms the SCR before introducing sovereign risk beyond the standard formula exposures and the blue bars show the impact of this introduction (i.e. the sum of the red and blue bars is 100%, corresponding to the SCR without VA as shown in QRT S.22). The green bars show the relative impact of using a CVA and the purple bars show the difference between the impact of using a CVA and the implemented DVA. Finally, the black dots show the net impact of introducing DVA beyond CVA and subtracting the additional sovereign risk charge. The dashed line shows the weighted average for the market of –3.3.

Figure 70 shows the net DVA impact only.

Figure 70: Solo undertakings using DVA — net DVA impact (proportions are given as the percentage relative to the SCR without VA)

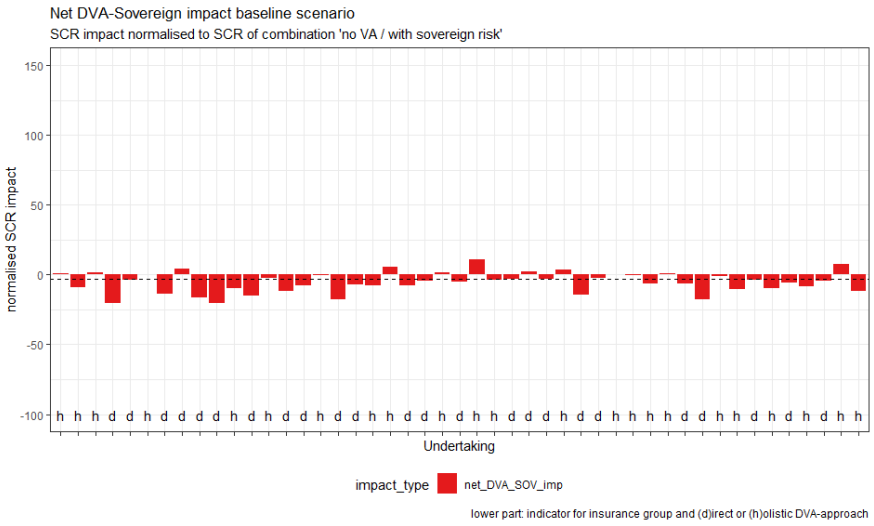
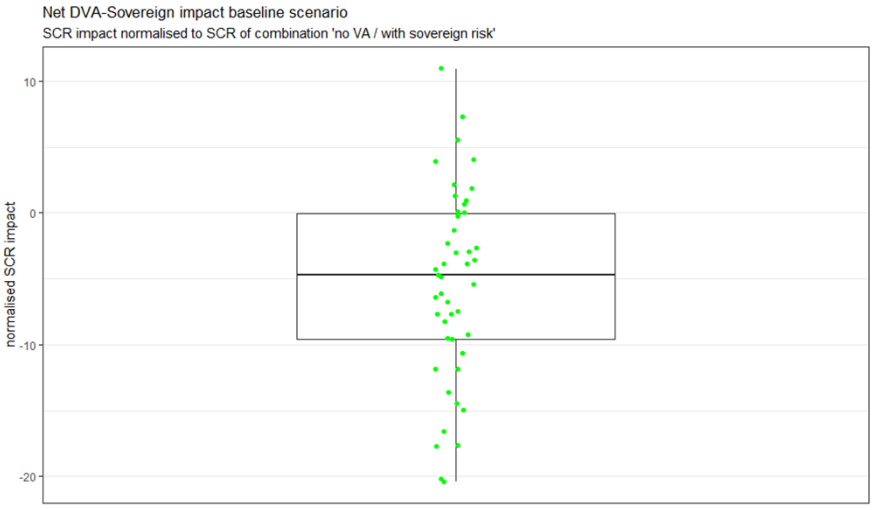


Figure 71 gives the elementary statistics on the sample.

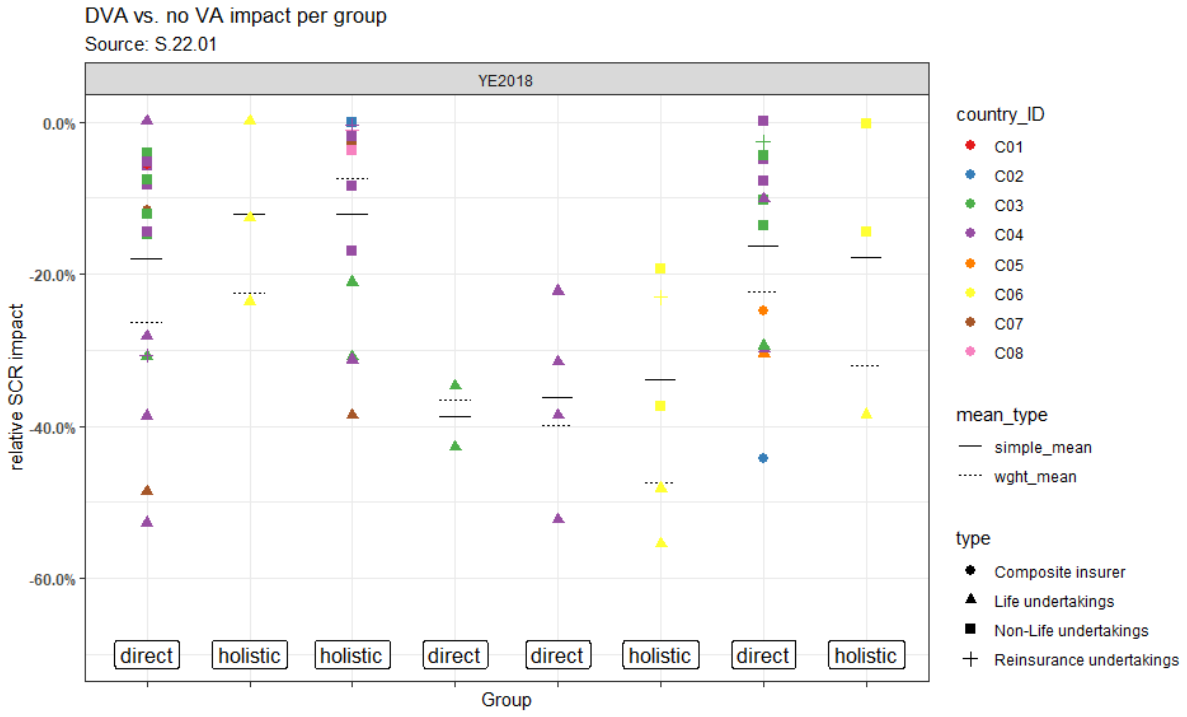
Figure 71: Solo undertakings using DVA — net DVA impact (proportions are given as the percentage relative to the SCR without VA)



The solid line in the box in Figure 71 shows the median (–4.7%), that is, the value for which the net impact is smaller for 50% of the sample, and the lower boundary (–9.5%) of the box shows the value for which 25% of the sample show a smaller value, i.e. in the case of negative impacts shown here, we can conclude that, for 75% of the sample, the net impact is less reduction. Single data points with a net impact stronger than –10% were analysed and, for example, were found to have comparably strong credit spread calibrations before DVA.

Figure 72 is based on publicly available information and shows the impact on the SCR, according to QRT S.22, comparing SCR with DVA with SCR without VA (both including sovereign risk).

Figure 72: Solo undertakings using DVA — impact on SCR according to QRT S.22, presented as the relative reduction of SCR without VA as a percentage



This figure shows the impact by approach (with approaches homogeneous within groups), country and business type. In addition, impacts were plotted against further aspects of the risk profile such as 'effective duration', and certain characteristics of the asset portfolio such as sector and CQS were inspected. No obvious pattern was observed.

Group perspective

For groups, the weighted average net DVA impact of –4.9% is comparable to the impact at the solo level (–3.3%), but the variation overall is less pronounced for groups than at the solo level: the maximum reduction is –9.1% for groups (whereas at the solo level it is –20.4%), the minimum reduction is –2.9% and one group showed an increase of +1.6%.

Figures 73-75 and Table 83 provide an overview for the group level.

Figure 73: Total sample of the groups using DVA — waterfall diagram of the breakdown of using DVA in sovereign risk, CVA and DVA (proportions are given as the percentage relative to the SCR without VA)

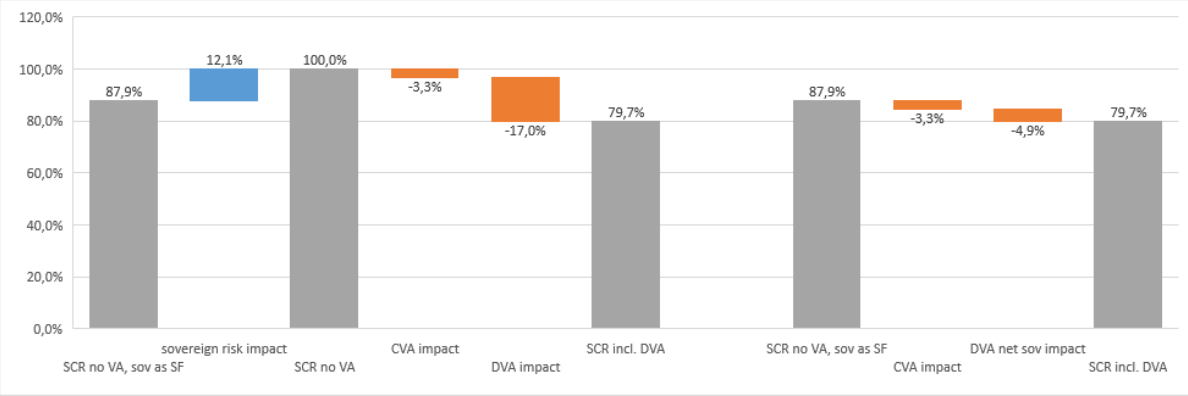


Table 83: Groups using DVA — breakdown of using DVA in sovereign risk, CVA and DVA (amounts are given in million euros and proportions are given as the percentage relative to the SCR without VA)

	SCR no VA, sovereign risk as in the standard formula	Sovereign risk impact	SCR no VA	CVA impact	SCR with CVA	DVA versus CVA impact	SCR with DVA	DVA net sovereign risk impact
Value (million euros)	123,992	17,141	141,132	–4,634	136,498	–23,996	112,502	–6,855
Relative to the SCR no VA (%)	87.9	12.1	100.0	–3.3	96.7	–17.0	79.7	–4.9

Figure 74: Groups using DVA at the single group level — waterfall diagram of the breakdown of using DVA in sovereign risk, CVA and DVA (proportions given as the percentage relative to the SCR without VA)

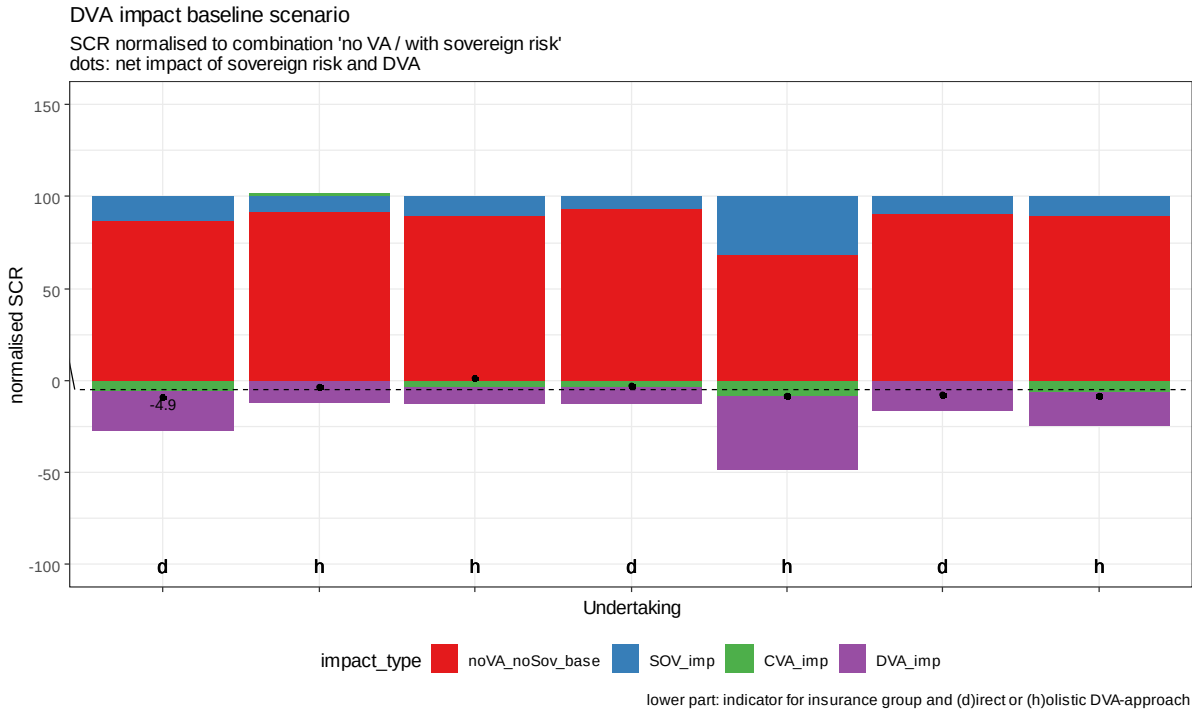
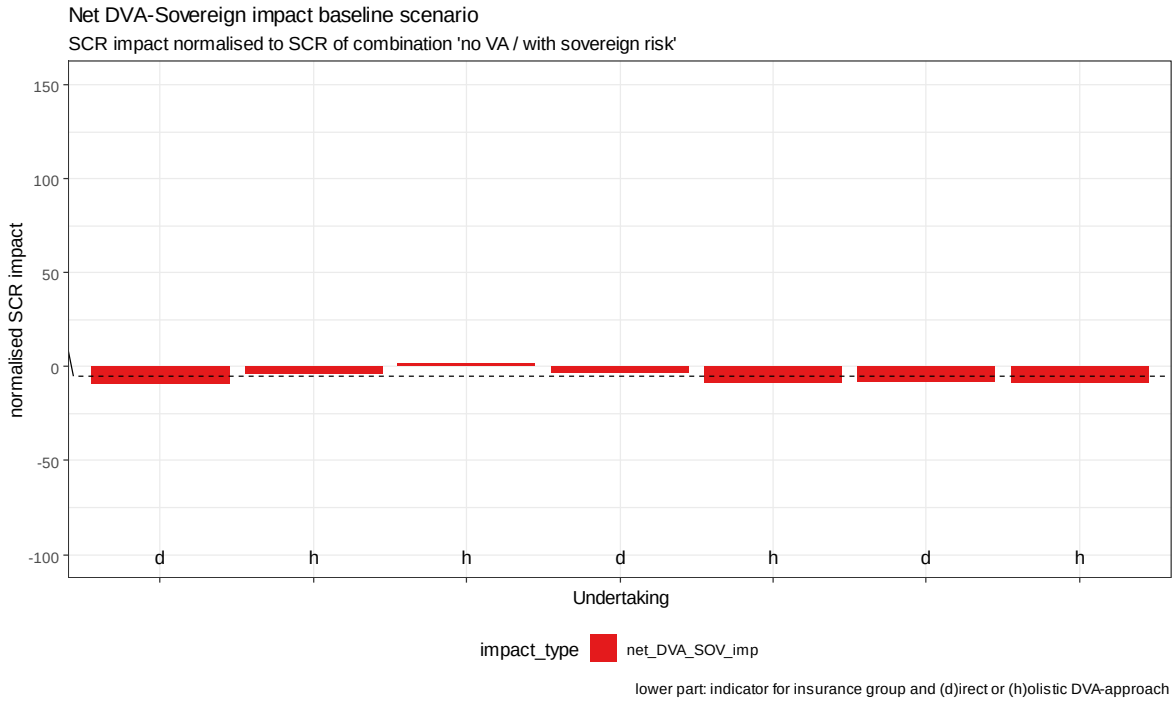


Figure 75: Groups using DVA — net DVA impact (proportions are given as the percentage relative to the SCR without VA)



Impacts of 'switching off the VA' under different economic environments

Description of available data

In the CfI, the European Commission asked EIOPA to provide information on the potential effect of this measure under various economic environments. With respect to this, credit spreads were considered to be the most relevant aspect in the context of the VA and DVA. However, the level of risk-free rates is also relevant to describing the overall economic situation and thus might influence the impact of the VA and DVA, as these are adjustments to the risk-free interest rate term structure.

The primary source of data is, of course, the regular QRTs, especially S.22.01.01 on the impact of LTG measures, which has been available since year-end 2016. These templates comprise SCR values under the application of the VA and without the VA, i.e. as if the regulatory concept of the VA does not exist ('switching off the VA') and neither DVA nor CVA would be used. To check if the related economic conditions could be considered to be sufficiently different for the purpose of the information request, interest rates and the value of the VA as a measure for volatility were first assessed.

Figure 76 and Tables 84 and 85 show that interest rates without VA at key dates year-end 2016, 2017 and 2018 were relatively similar and the differences at the maturities typically considered were below 24 bps. Interest rates increased a little between year-end 2017 and year-end 2018 after having previously decreased. The increase in the VA from 4 bps (2017) to 24 bps (2018) indicates an increase of spreads.

Figure 76: Risk-free interest rates for year-end 2016, 2017 and 2018 with and without VA for maturities up to 60 years

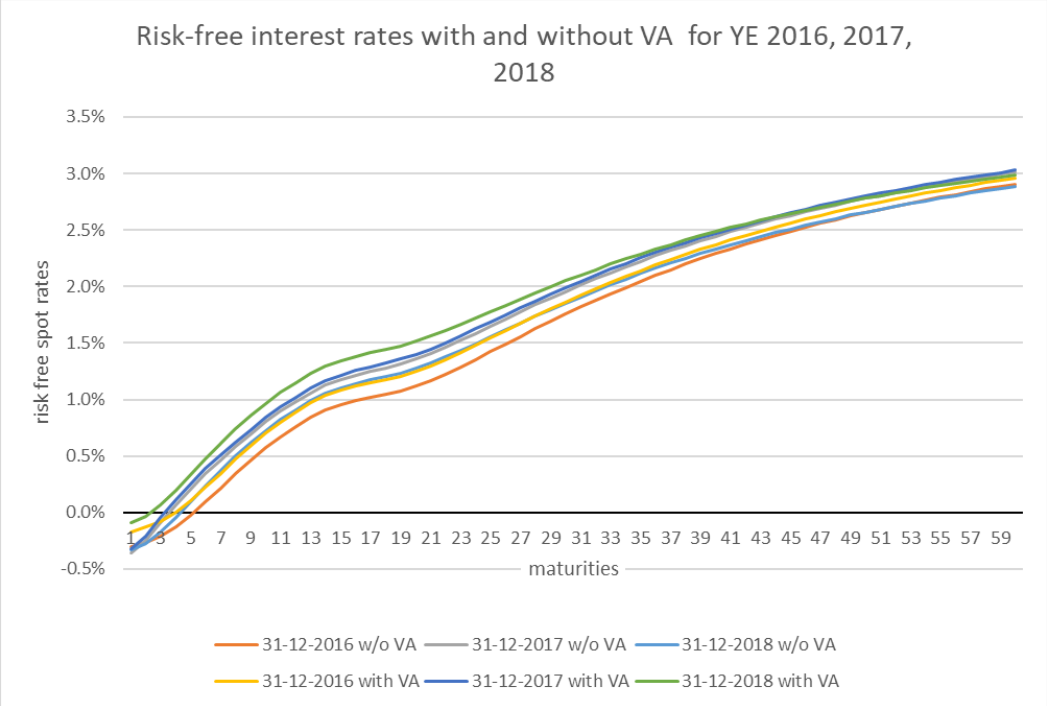


Table 84: Risk-free interest rates for year-end 2016, 2017 and 2018 — VA values and differences without VA for selected maturities up to 60 years

Key date	31-12-2016	31-12-2017	31-12-2018	Difference in spot rates		
VA	13	4	24	31-12-2017 / 31-12-2016	31-12-2018 / 31-12-2016	31-12-2018 / 31-12-2017
Maturity	Risk-free rates without VA (euros)					
1 year	–0.302%	–0.358%	–0.333%	–0.056%	–0.031%	0.025%
5 years	–0.024%	0.209%	0.099%	0.233%	0.123%	–0.110%
10 years	0.571%	0.802%	0.726%	0.231%	0.155%	–0.076%
15 years	0.958%	1.177%	1.105%	0.219%	0.147%	–0.072%
20 years	1.117%	1.357%	1.275%	0.240%	0.158%	–0.082%
25 years	1.423%	1.649%	1.555%	0.226%	0.132%	–0.094%
30 years	1.756%	1.956%	1.854%	0.200%	0.098%	–0.102%
40 years	2.289%	2.445%	2.332%	0.156%	0.043%	–0.113%
60 years	2.906%	3.011%	2.885%	0.105%	–0.021%	–0.126%

Table 85 illustrates the spread level of zero-coupon bonds of a maturity of 5 years at year-end 2017 and year-end 2018 for selected government bonds and corporate bonds in the euro zone, measured against the swap curve and taken from one of the well-known market data providers.

Table 85: Spreads at year-end 2017 and 2018 for selected government bonds and corporate bonds

	Government bonds (spread, bps)			Corporate bonds (spread, bps)			
Country	Year-end 2017	Year-end 2018	Delta	Rating	Year-end 2017	Year-end 2018	Delta
				Financial			
AT	–41.1	–32.0	9.1	AAA	1.7	33.7	32.0
BE	–41.2	–19.7	21.5	AA	2.0	39.7	37.7
DE	–50.9	–49.7	1.2	A	12.7	58.3	45.6
ES	16.7	26.7	10.0	BBB	36.5	167.7	131.2
FR	–41.2	–24.4	16.8	BB	190.4	311.2	120.8
IE	–28.6	–7.4	21.2	Non-financial			
IT	38.8	157.0	118.2	AAA	–2.5	29.8	32.3
NL	–48.0	–41.1	6.9	AA	–2.2	35.0	37.2
PT	45.2	41.3	–3.9	A	7.2	49.1	41.9
UK	–29.1	–37.2	–8.1	BBB	23.9	76.4	52.5
US	–4.7	–5.2	–0.5	BB	164.2	319.4	155.2

To supplement the available data, scenarios of shocked spreads were discussed based on historic experience, the scenarios used in the EIOPA European Insurance Stress Test 2018 and simplified uniform stresses. In view of the economic stress represented, as well as effort and operability, two simple scenarios were chosen in addition to the baseline:

- 'baseline': economic environment as of year-end 2018;
- 'spread-widening scenario': +100 bps uniform, one-off, instantaneous and simultaneous increase of credit spreads for all credit-spread-sensitive financial instruments, irrespective of sector, maturity or credit quality;
- 'spread-tightening scenario': –50 bps uniform, one-off, instantaneous and simultaneous decrease of credit spreads for all credit-spread-sensitive financial instruments, irrespective of sector, maturity or credit quality.

The shocks do not affect the basic risk-free interest rate term structure but change only the VA, which for euros is 71 bps under the spread-widening scenario (increase of +47 bps) and is 2 bps (decrease of –22 bps).

When evaluating the tables and figures presented in the following, please note: compared with the standard formula, the shocks affect not only corporate bonds and non-EEA government bonds, but also EEA government bonds. In this regard, the spread-widening scenario on simplified asset liability portfolios showed impacts more severe than those under the standard formula because of, among

other reasons, the inclusion of sovereign bonds but also because this shock for good CQSs is higher than under the standard formula. Furthermore, in the case of a pronounced CQS allocation mismatch between undertakings' portfolios and the VA reference portfolio, an increase in own funds after the shock was even observed. Finally, an analysis of stresses under a given economic baseline compared with the comparison across key dates has the advantage of a single dimension of change, while under different key-dates more than one economic parameter changes and also assets, liabilities as well as potentially models and also legal conditions.

Observations

In general, one can observe that the effect of the relative reduction of the SCR under the spread-widening scenario is higher than under the baseline and is lower in the spread-tightening scenario than under the baseline. Tables 86 and 87 and Figure 77 give an overview of the SCR reduction in absolute terms and show the weighted average, the average and the mean relative reduction in the baseline and the stressed scenarios.

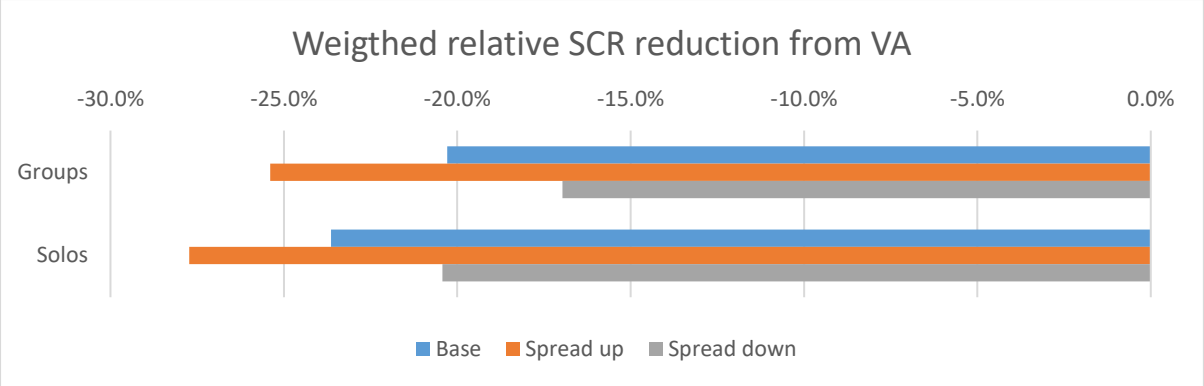
Table 86: SCR without VA for solo and group total samples and the reduction from switching on the VA (amounts in million euros) in the baseline and under the 'spread up' and 'spread down' scenarios

	SCR no VA			Absolute reduction		
	Baseline	Spread up	Spread down	Baseline	Spread up	Spread down
Groups	141,132	153,979	134,788	–28,630	–39,095	–22,862
Solos	104,168	113,045	98,529	–24,621	–31,347	–20,127

Table 87: SCR relative reduction for solo and group total samples from switching on the VA (as percentages) in the baseline and under the 'spread up' and 'spread down' scenarios

	Weighted average reduction			Average reduction			Median reduction		
	Baseline	Spread up	Spread down	Baseline	Spread up	Spread down	Baseline	Spread up	Spread down
Groups	–20.3%	–25.4%	–17.0%	–21.6%	–26.2%	–18.8%	–16.7%	–18.0%	–13.6%
Solos	–23.6%	–27.7%	–20.4%	–21.4%	–24.6%	–19.8%	–19.4%	–20.7%	–19.6%

Figure 77: SCR relative reduction for solo and group total samples from switching on the VA (as percentages) in the baseline and under the 'spread up' and 'spread down' scenarios



Figures 78-81 show the relative reduction of the SCR by switching on the VA under the baseline and the shocked spread scenarios by business type, country, group and type of DVA approach. The figures combine solo and group data.

Figure 78: SCR relative reduction for solo undertakings and groups from switching on the VA (as percentages) in the baseline and under the 'spread up' and 'spread down' scenarios with information on the type of undertaking, group, country and DVA approach

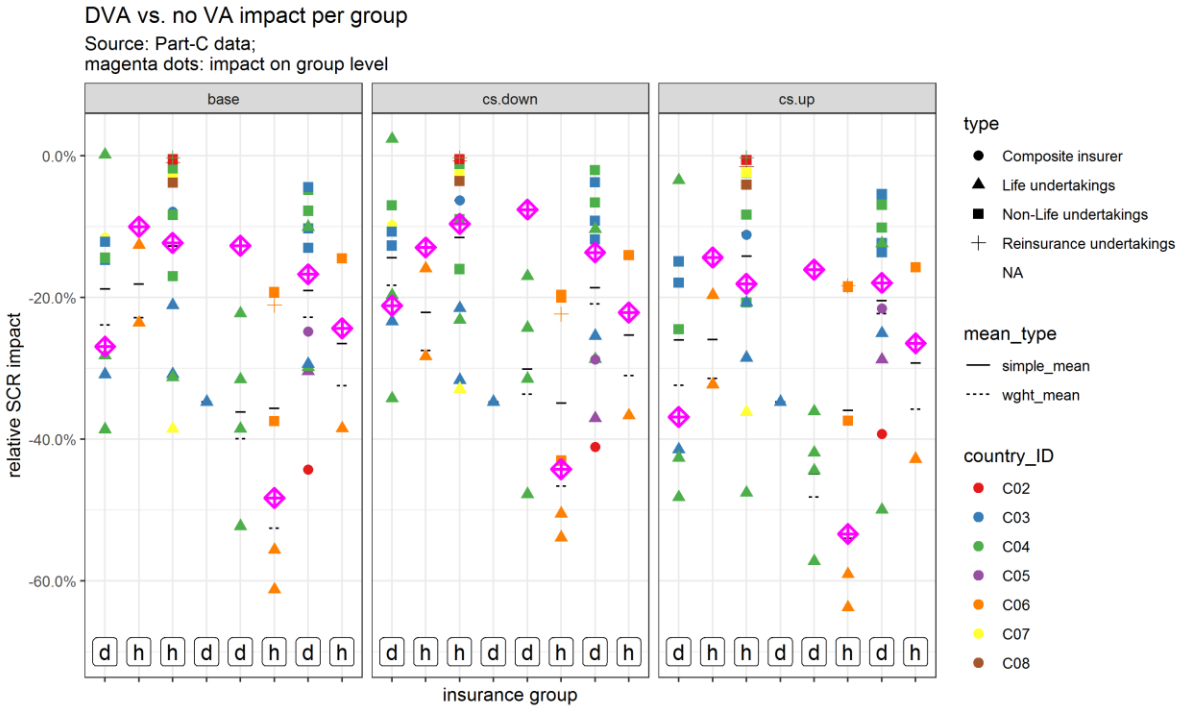
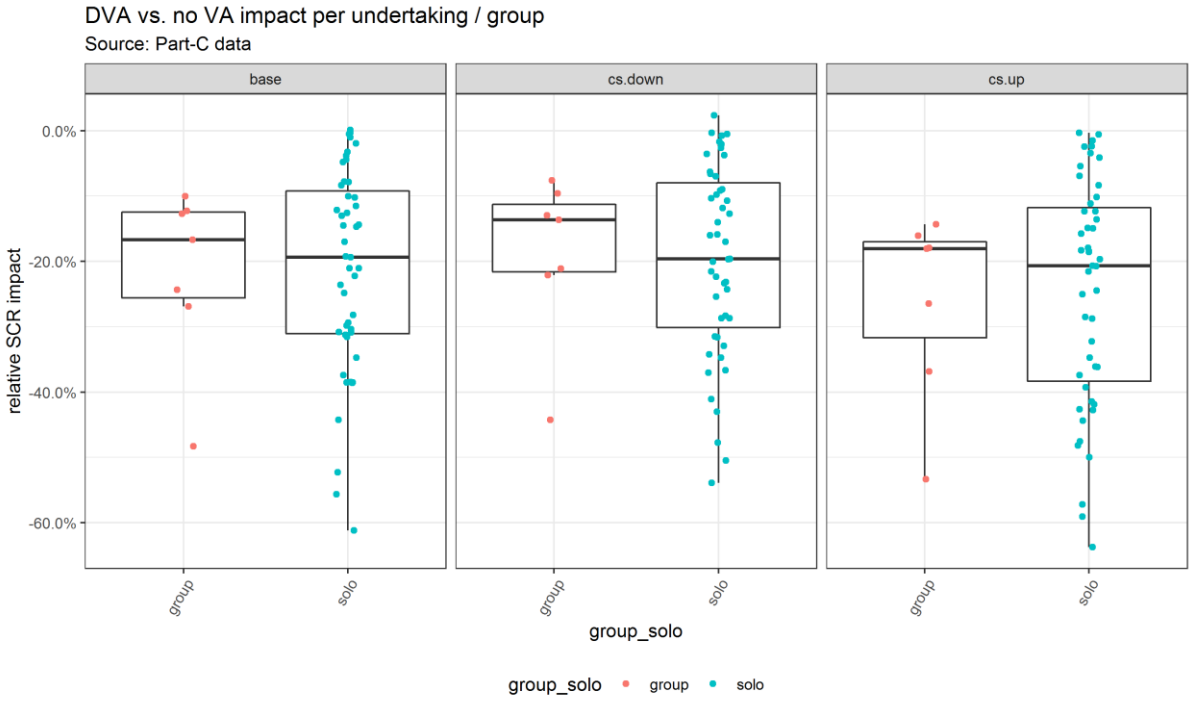


Figure 78 shows the relative reduction of the SCR for solo undertakings and groups from switching on the VA under the baseline, spread-tightening and spread-widening scenarios. The entities are shown per group that participated in the questionnaire. The type of undertaking and the country is also indicated. Furthermore, per group, the mean and the weighted mean are displayed, namely as solid and dashed lines, respectively. The value for the group is presented as a magenta dot. For example, the final column shows one group with one non-life and one life undertaking, both located in the same country. The impact for the life

insurer is a little lower than –40% under the base case and a little higher than this in the credit spread-widening scenario.

Figure 79 shows the same data for groups and solo undertakings without the differentiation in Figure 76. The boxes in this figure are bounded by the 75% quartile at the top and by the 25% quartile at the bottom. This means that 75% and 25% of the values from the sample are lower than the upper and lower lines, respectively. The solid line marks the median (i.e. 50% of the values are lower and 50% are higher than this value).

Figure 79: SCR relative reduction for solo undertakings and groups from switching on the VA (as percentages) in the baseline and under the 'spread up' and 'spread down' scenarios as a boxplot



For example, in the 'spread up' scenario, the relative reduction ranges for solo undertakings from –0.3% to –63.7% with 75% of the sample showing a reduction weaker than –39.3%, while in the base case the values range from +0.1% to –61.2% with 75% of the sample showing a reduction weaker than –31.2%. For groups, the values range from –14.4% to –53.3% in the 'spread up' scenario and from –10.0% to –48.3% in the base case.

The weighted average and other statistics suggest that the relative reduction of the SCR by the DVA is stronger under the 'spread up' scenario than in the base case and that it is weaker under the 'spread down' scenario. While this is true for 29 of the 47 solo undertakings, nine solo undertakings show the reverse, namely weaker relative reduction in the 'spread up' scenario and stronger relative reduction in the base case. In addition, nine participants show different directions (i.e. either up or down compared with the base case in both scenarios). Figures 80 and 81 provide an overview for solo undertakings and groups.

Figure 80: Solo undertakings using DVA — 'line plot' SCR relative reduction from switching on the VA (as percentages) in the baseline and under the 'spread up' and 'spread down' scenarios with means, minimums, maximums, medians and quartiles

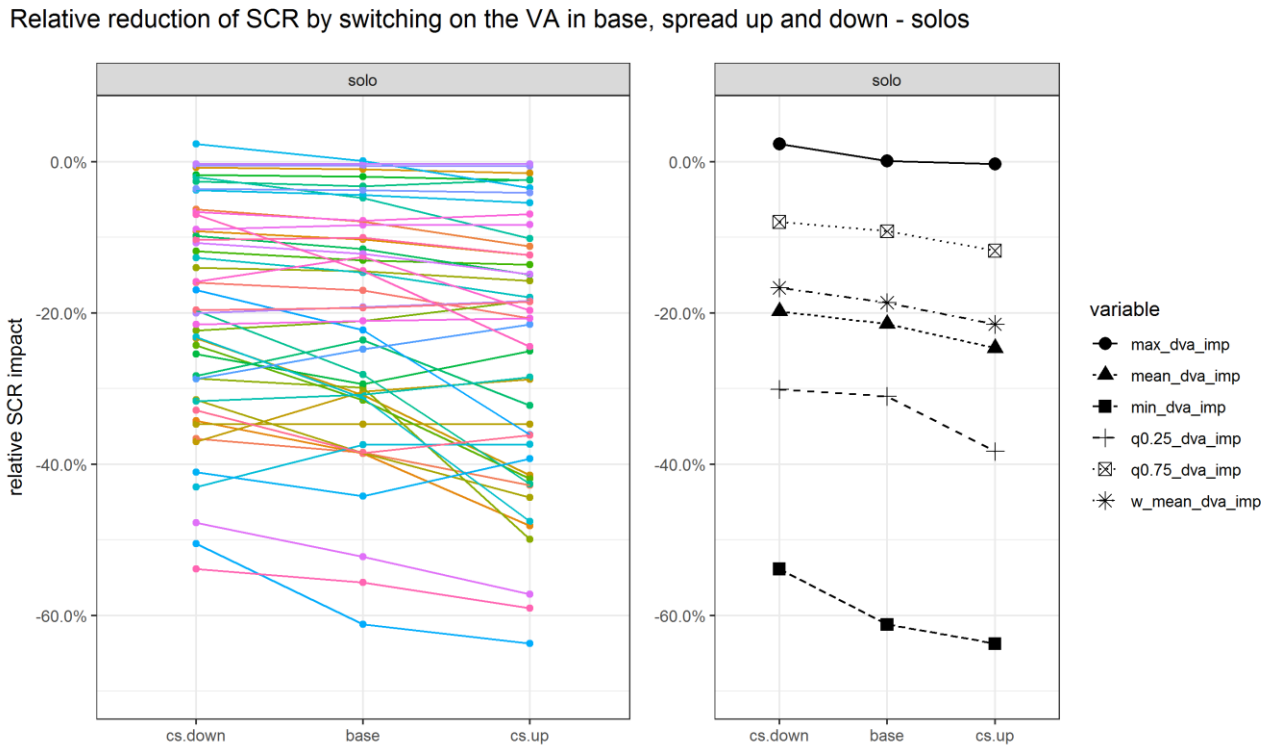
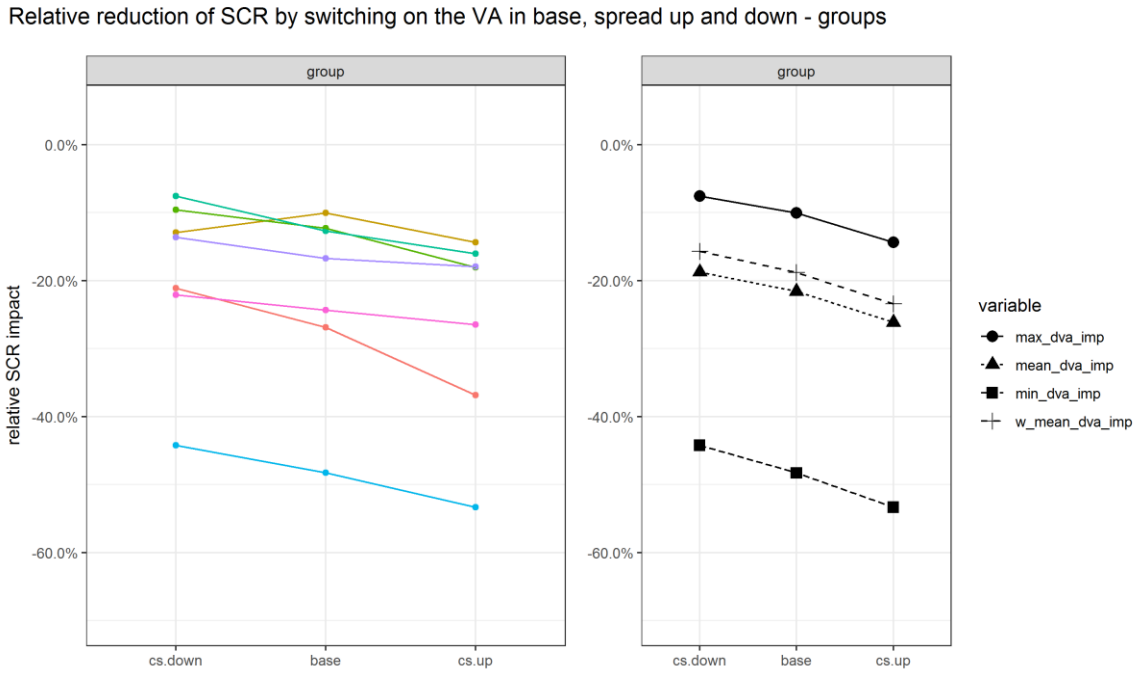


Figure 81: Groups using DVA — 'line plot' SCR relative reduction from switching on the VA (as percentages) in the baseline and under the 'spread up' and 'spread down' scenarios with means, minimums and maximums



The analysis showed that drivers for the behaviours described above are multidimensional and no significant directions where visible. The following were particular considerations in this context: under a spread increase, the market value of bonds would decrease and the SCR under a volume-driven perspective should decrease, while, under a spread decrease, market values would increase as would, potentially, the SCR. By contrast, losses in assets (under a spread increase) weaken economic resilience and conversely, under a spread decrease, economic resilience is strengthened. Economic resilience covers not only market values and unrealised gains and losses but also the loss-absorbing capacity of technical provisions and of deferred taxes.

Under the spread up scenario ([55]), the SCR without VA increases for 33 of 47 participants and decreases for 13 participants, and one participant did not show an impact. The SCR with DVA increases for 27 participants and decreases for 20 participants. In total, 43 participants were able to show the impact separately for the capital requirements associated with credit spread risk. Of those, 28 participants showed a decrease and 15 participants showed an increase in the calculations without VA. With DVA, 31 participants showed a decrease and 12 participants showed an increase in the calculations. Overall, it was observed that the DVA dampened the effect from credit spread shocks on the SCR and in a few cases also turned it around. As, in the majority of cases, overall SCR and credit spread SCR move in different directions, the SCR might also be driven by other risks suffering from loss in resilience.

Summary of observations

On average, implementing a DVA in internal models has only a limited impact compared with CVA in the standard formula or internal models, if the modelling of sovereign exposures is not enforced. The weighted average DVA impact subtracting ([56]) the impacts of CVA and of introducing sovereign risk (beyond standard formula requirements) is –3.3% relative to the SCR without VA, for a representative sample of 47 solo undertakings using DVA and is –4.9% for the sample of seven groups. This 'net DVA impact' for solo undertakings ranges from –20.4% to +11%. For 75% of the sample, the effect is weaker than –10%. Single data points with a net impact stronger than –10% were analysed and, for example, were found to have comparably stronger credit spread calibrations before DVA.

The weighted average gross DVA impact (i.e. from 'switching on' the VA based on the figures included in the QRT on the LTG measures (QRT S.22)) is –23.6% for solo undertakings and –20.3% for groups under the baseline year-end 2018

([55]) Under the spread down scenario, 33 participants showed a decrease of the SCR without VA, 11 showed an increase and three did not show a difference. For the SCR with DVA, 27 showed a decrease and 20 showed an increase. For 32 participants, the SCR without VA and the SCR with DVA showed the same behaviour. From the 43 participants being able to display the CS SCR separately, under the calculations without VA, it increases for 27 participants and decreases for 16 participants. In the calculations with DVA, it increases for 30 participants and decreases for 13 participants. For 34 participants, the reaction without VA and with DVA is in the same direction.

([56]) Please note that this calculation is indeed a subtraction of impacts and is not determined using a model configuration in which the DVA would be used without sovereign risk. In this section, this difference is also presented as the 'net DVA impact'.

scenario. These relative reductions increase under the spread-widening scenario to –27.7% for solo undertakings and to –25.4% for groups. The average weighted reduction decreases under the spread-tightening scenario to –20.4% for solo undertakings and –17.0% for groups. Please note that the sample shows variations in values and behaviour under the spread scenarios. For example, in the base case, for solo undertakings the relative reduction ranges from +0.1% to –61.2% and, under the spread-widening scenario, for 33 of the 47 solo undertakings in the sample, the relative reduction becomes stronger and for 14 solo undertakings becomes weaker.

The variation on the solo entity level was analysed by groups, DVA approaches, countries and business type. In addition, impacts were plotted against further aspects of the risk profile such as 'effective duration', and certain characteristics of the asset portfolio such as sector and CQS were inspected. No obvious pattern was observed. Although all these aspects are either driving some of the observations or good for description, none of these alone would provide a clear picture of dependency; they would also have to be considered in connection with more than one additional dimension. Combined statistics and graphics did not reveal any significant directions.

4. Information on the market valuation of insurance liabilities

In section 3.4 of the European Commission CfI, sent in April 2018, EIOPA was asked to collect information on the following information in relation to the market valuation of liabilities: information on the actual transfer of insurance liabilities between insurance and reinsurance undertakings.

In particular, EIOPA was asked to compare the transfer values with the valuation of the transferred liabilities and assets, if any, under the Solvency II framework.

Article 75 of the Solvency II Directive requires that assets (and liabilities) be valued at the amounts for which they could be exchanged (transferred or settled), between knowledgeable willing parties in an arm's length transaction. The intention of this exercise is to allow an assessment of whether or not the technical provisions as calculated according to Solvency II are sufficient in the case of transfer and thus adequately reflect a transfer value. The actual transfer values of insurance liabilities are also affected by the applicable regulatory regime; all else being equal, lower capital requirements and lower regulatory provisions imply a lower transfer value. The results presented here are based on the current Solvency II regulation regarding capital requirements and the valuation of technical provisions; any change therein may in turn affect the transfer value of the technical provisions.

4.1. Approach

As EIOPA does not collect information on actual transfers in the EEA market as part of the QRTs, an additional information request was sent to NSAs. The purpose of this request was to collect information on historic transactions of insurance liabilities.

The information request covered both qualitative and quantitative information. The qualitative information captured background information (to better understand the underlying rationale of the transfer) and the business covered. The quantitative information captured, in particular, the value of the actual assets and liabilities transferred.

To make the comparison meaningful, the transactions in the scope of the study were those that could be considered to have been undertaken between knowledgeable willing parties in an arm's length transaction. NSAs therefore excluded any transaction that did not meet this criterion. In particular, intra-group transactions may not be carried out on an arm's length basis and so were excluded.

The scope covers all historic transactions (i.e. the transfer of portfolios, mergers and acquisitions) completed after Solvency II came into force (i.e. after 31 December 2015), when both the acquiring and the selling undertaking apply Solvency II.

4.2. Content of the information request

To preserve the anonymity of the information submitted by each NSA, EIOPA requested that the quantitative information be submitted as scaled values relative to a 'premium' of 100. The 'premium' thereby reflects the value of the assets that have been transferred to the acquirer of the business to meet the transferred obligations. This covers both the market value of the investments transferred and the market value of non-financial assets or liabilities transferred. EIOPA requested the following quantitative information for each transaction:

- the premium, split between the market value of assets and non-financial assets, with the total premium equal to 100;
- Solvency II technical provisions, split between best estimates and risk margin, rescaled based on the premium of 100;
- further information on transitional deduction and deferred tax.

To supplement the quantitative information, NSAs were also requested to provide the following qualitative information for each of the transfers:

- a description of the type of business transferred and if the LTG measures (VA or MA) are used;
- a description of the commercial terms of the transfer, such as the types of undertakings, types of assets transferred, payments between parties and if the seller or acquirer is in a run-off situation;
- the motivation for the transfer and the main drivers of the amount transferred;
- a description of the expense basis used as part of the transaction (e.g. from the point of view of the acquirer or seller);
- any non-financial component of the transaction (goodwill, intangibles, etc.).

4.3. Summary of the data received

In total, NSAs submitted information on 44 transactions. These data do not reflect all possible transactions during the period; instead, they reflect the subset of transactions for which NSAs can provide data.

EIOPA then performed a data validation exercise on these transactions, in which transactions were removed from the sample if they did not fit the sample description or if the quantitative information provided was not available or of sufficient quality. Overall, 20 transactions were removed from the sample (Table 88).

Table 88: Reason for exclusion from the sample of transactions

Reason for exclusion	Number of transactions
Transactions not at arm's length (e.g. forced sale)	5
Quantitative data not available or not of sufficient quality	15

Therefore, the final data set for the analysis is given in Table 89, with 24 transactions across different types of business.

Table 89: Final data set for the analysis of the market valuation of insurance liabilities

Country	All	Life	Non-life	Life and non-life
BE	1	1	0	0
DE	1	0	1	0
HR	4	2	2	0
IT	1	0	1	0
LU	5	4	1	0
NL	3	0	0	3
PT	3	2	1	0
RO	1	1	0	0
SI	2	0	1	1
UK	3	2	1	0
Total	24	12	8	4

It should also be noted that these data contained a mix of transactions, including both cases in which the portfolio was still open to new business post transfer and business that was in run-off once transferred. The summary of results below will split the analysis between these two subsets of data, to allow for the significant potential impact of goodwill on the transfers of books that will remain open to new business post transfer.

Results: business in run-off after transfer

Tables 90 and 91 provides a summary of the data provided relating to transfers of closed books of business (i.e. books that were in run-off after having been transferred). In total, NSAs provided EIOPA with data from seven such transactions. These have been split between life and non-life transactions in the tables below and anonymised.

Table 90: Transactions of closed books of life business

Transaction	Types of business	Use of VA/MA	Assets	Technical provisions	Technical provisions/assets
L-1	Life	VA	100.00	96.70	96.7%
L-2	Life	VA	101.05	98.40	97.0%
L-3	Life	MA	100.00	103.26	103.3%
L-4	Life	MA	100.00	96.72	96.7%
Average			100.26	98.77	98.5%

Table 91: Transactions of closed books of non-life business

Transaction	Types of business	Use of VA/MA	Assets	Technical provisions	Technical provisions/assets
NL-1	Non-life	No	83.69	87.84	104.9%
NL-2	Non-life	No	100.00	99.94	99.9%
NL-3	Non-life	No	100.00	99.80	99.8%
Average			94.56	95.86	101.4%

While the sample is small, it can be seen that the value of assets transferred is consistent with the total technical provisions in each of the cases in which the book of business was in run-off post transfer.

In the information request, NSAs were given the opportunity to provide further qualitative and quantitative information, where available, on the motivation for the transfer, and if there were any additional factors accounted for in the transfer value.

In all four transfers of life insurance books, NSAs noted expense synergies as a motivation behind the transfer.

Other reasons given for the transactions were:

- the buyer was looking to enter a new market (L-2 and L-3);
- diversification of the existing portfolio (L-3 and NL-1).

None of the NSAs indicated that accounting measures or taxes were known reasons behind the transfer.

In three of the transactions (L-1, L-4 and NL-3), it was noted that the most significant difference between the valuation of the technical provisions and the assets transferred was due to a difference in expense assumptions between the seller and the acquirer. Different expense assumptions arise when the acquirer and seller have different expense bases (e.g. based on their internal management of expenses and synergies). This affects the assumptions of the valuation of future expenses within the technical provisions, which then differ between the acquirer and the seller. To capture this, NSAs were asked to provide quantitative information on both the acquirer and the seller perspective, where available. However, in practice, only one perspective was generally known by NSAs and provided to EIOPA. The values provided were therefore taken as a basis for the analysis, independent of the whether it reflected the seller or the acquirer perspective.

The majority of transactions in the above analyses used the assumptions from the perspective of the seller (NL-1, NL-2, NL-3 and L-2), while two were from the perspective of the acquirer (L-1 and L-3).

Other reasons given for the difference between the assets transferred and the technical provisions were:

- the acquirer paid goodwill for the knowledge of how to write certain types of business in the future (NL-1);

- the acquirer was looking to grow its assets under management and enter new markets. No figure was provided if there was any value assigned to this in the assets transferred (L-2).

When the MA is applied on the business by the seller, NSAs noted that in both cases it will also be applied by the acquirer.

When the VA is applied by the seller, in one case of two the acquiring undertaking also used the VA (L-1).

Results: business still open to new business after the transfer

Tables 92-94 provide a summary of the data provided relating to transfers of books of business that are still open to new business after the transfer. There are separate tables relating to transfers of life, non-life and mixed life and non-life portfolios.

Table 92: Transactions of life business still open to new business after the transfer

Transaction	Types of business	Use of VA/ MA	Assets	Technical provisions	Technical provisions/assets
L-1	Life	No	101.00	91.00	90.1%
L-2	Life	No	99.65	93.57	93.9%
L-3	Life	No	87.34	51.53	59.0%
L-4	Life	No	98.74	88.92	90.1%
L-5	Life	No	99.07	50.55	51.0%
L-6	Life	VA	100.00	99.64	99.6%
L-7	Life	VA	100.59	99.17	98.6%
L-8	Life	VA	100.00	98.60	98.6%
Average			98.29	83.14	84.6%

Table 93: Transactions of non-life business still open to new business after the transfer

Transaction	Types of business	Use of VA/MA	Assets	Technical provisions	Technical provisions/assets
NL-1	Non-life	No	82.57	76.38	92.5%
NL-2	Non-life	No	100.00	84.12	84.1%
NL-3	Non-life	No	82.81	64.77	78.2%
NL-4	Non-life	No	100.00	61.00	61.0%
NL-5	Non-life	No	96.57	64.71	67.0%
Average			92.39	70.20	76.0%

Table 94: Transactions of life and non-life business still open to new business after the transfer

Transaction	Types of business	Use of VA/MA	Assets	Technical provisions	Technical provisions/assets
L_NL-1	Life and non-life	VA	100.00	80.00	80.0%
L_NL-2	Life and non-life	VA	100.00	78.00	78.0%
L_NL-3	Life and non-life	No	100.00	76.00	76.0%
L_NL-4	Life and non-life	VA	99.00	61.00	61.6%
Average			99.75	73.75	73.9%

In all cases, the value of assets is higher than the value of technical provisions. It is difficult to draw conclusions from this information, as the interpretation depends on the information that was available to the NSA and the treatment of any goodwill. One possible interpretation is that the acquirer is assigning a value to goodwill as an increase on the total asset value. For example, this may be because of new business that the acquirer expects to write or the value of the brand, neither which is included in the Solvency II valuation. This is consistent with the assumption that there is a larger value assigned to goodwill in the transfer of open books of business than in the transfer of closed books.

However, an alternative interpretation could be that goodwill is not included and the values represent the assets and liabilities actually transferred. In this case, the acquiring undertaking is receiving more assets than liabilities, which could imply that the technical provisions are undervalued. In this case, the acquiring undertaking would require assets to be transferred over and above the value of the assets backing the technical provisions, which the acquiring undertaking would use to cover adverse future movements, which they do not believe are captured in the technical provisions.

Unfortunately, it is not possible to determine which of the interpretations above is applicable to each transaction, as it is not possible to isolate the impact of any goodwill or other commercial aspects of the transactions from the elements relating to the valuation of the technical provisions in the information available to NSAs and EIOPA. It is therefore not possible to draw any strong conclusion on the relationship between assets and technical provisions for business that is still open to new business after the transfer.

The level of information available to NSAs and shared with EIOPA in response to the information request was not as detailed as that for the closed books. Therefore, it is not possible to perform the same level of analysis on the specific rationale behind the transfers, nor is it possible to analyse in detail the differences between the value of assets transferred and the technical provisions.

The following points can be observed based on the limited data received:

- In nine of the transactions (a mix of life and non-life books), the NSA noted that the motivation for the transfer was expense synergies;
- In 11 of the transactions, the assumptions used in the valuation of the technical provisions were from the perspective of the seller, with three transactions from the perspective of the acquirer (three are unknown).
- In relation to the use of the VA, there are a variety of situations observed. In the majority of cases, the VA is used by both the selling and the acquiring undertaking; however, there are transactions for which the VA is used only by the seller (L-6) and only by the acquirer (L-7).

4.4. Conclusion

The data used in the analysis presented here are the same as those used for the analysis of the risk margin set out in section 3.2 of the Consultation Paper on the Opinion on the 2020 review of Solvency II, and the conclusions drawn are also consistent between the two.

Any conclusions should be taken with care owing to the limited number of transactions in the final data set.

In general, for portfolios that remain both open and closed to new business post transfer, the figures provided do not show systematic miscalibration of the technical provisions compared with transfer values. There were no cases in which it was identified that the valuation of technical provisions did not reflect a transfer value.

For portfolios in run-off post transfer, the reason for the deviation between the value of assets and liabilities appears to be individual particularities of each transfer (i.e. relating to the business opportunities of the acquirer or the use of different expense assumptions).

For transactions of books that will remain open to new business post transfer, we observe more divergence between the value of assets transferred and the technical provisions than for transactions of portfolios that will be in run-off post transfer, with the value of assets transferred higher than the technical provisions in all cases.

Annex 1. Information on the liabilities per jurisdiction and line of business

Austria								
Line of business ([57])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	100%	n/a	100%
BEL no surrender/cancellation options	10%	19%	−17%	n/a	n/a	89%	n/a	100%
BEL surrender value never exceeds value of the assets	20%	0%	0%	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, no disincentive	35%	44%	97%	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, tax disincentive	8%	11%	0%	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, surrender penalty	35%	32%	0%	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, other disincentive	0%	0%	20%	n/a	n/a	11%	n/a	0%
BEL for which premiums are still being paid	60%	42%	112%	n/a	n/a	64%	n/a	100%
BEL of future benefits corresponding to future premiums	83%	14%	−119%	n/a	n/a	2,061%	n/a	−542%
BEL FDB	12%	0%	−124%	n/a	n/a	33%	n/a	0%
BEL exposed to mortality shock	80%	100%	88%	n/a	n/a	54%	n/a	0%
BEL impact of mortality shock	0%	0%	−13%	n/a	n/a	4%	n/a	0%
BEL exposed to relative lapse up	62%	90%	90%	n/a	n/a	65%	n/a	0%
BEL exposed to mass lapse	7%	53%	70%	n/a	n/a	92%	n/a	100%
BEL impact of relative lapse up	51%	38%	−7%	n/a	n/a	22%	n/a	0%
BEL impact of mass lapse	1%	1%	−62%	n/a	n/a	15%	n/a	−41%

([57]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Belgium								
Line of business ([58])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	n/a	n/a	n/a	100%	n/a	100%
BEL no surrender/cancellation options	2%	0%	n/a	n/a	n/a	50%	n/a	100%
BEL surrender value never exceeds value of the assets	3%	99%	n/a	n/a	n/a	50%	n/a	0%
BEL surrender/cancellation options, no disincentive	9%	0%	n/a	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, tax disincentive	26%	0%	n/a	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, surrender penalty	70%	1%	n/a	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, other disincentive	0%	0%	n/a	n/a	n/a	0%	n/a	0%
BEL for which premiums are still being paid	12%	1%	n/a	n/a	n/a	24%	n/a	146%
BEL of future benefits corresponding to future premiums	7%	0%	n/a	n/a	n/a	534%	n/a	115%
BEL FDB	3%	0%	n/a	n/a	n/a	0%	n/a	0%
BEL exposed to mortality shock	69%	31%	n/a	n/a	n/a	32%	n/a	0%
BEL impact of mortality shock	4%	−1%	n/a	n/a	n/a	−23%	n/a	0%
BEL exposed to relative lapse up	64%	31%	n/a	n/a	n/a	25%	n/a	0%
BEL exposed to mass lapse	58%	31%	n/a	n/a	n/a	4%	n/a	0%
BEL impact of relative lapse up	1%	−1%	n/a	n/a	n/a	−23%	n/a	0%
BEL impact of mass lapse	2%	0%	n/a	n/a	n/a	−34%	n/a	0%

([58]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Cyprus								
Line of business ([59])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	100%	n/a	100%
BEL no surrender/cancellation options	0%	0%	32%	n/a	n/a	−1%	n/a	0%
BEL surrender value never exceeds value of the assets	0%	59%	113%	n/a	n/a	6%	n/a	31%
BEL surrender/cancellation options, no disincentive	0%	0%	31%	n/a	n/a	95%	n/a	69%
BEL surrender/cancellation options, tax disincentive	0%	0%	0%	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, surrender penalty	93%	41%	−16%	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, other disincentive	7%	0%	−61%	n/a	n/a	0%	n/a	0%
BEL for which premiums are still being paid	−1%	10%	145%	n/a	n/a	3%	n/a	0%
BEL of future benefits corresponding to future premiums	34%	200%	859%	n/a	n/a	185%	n/a	0%
BEL FDB	3%	0%	0%	n/a	n/a	0%	n/a	0%
BEL exposed to mortality shock	100%	39%	50%	n/a	n/a	−7%	n/a	0%
BEL impact of mortality shock	93%	−2%	169%	n/a	n/a	0%	n/a	0%
BEL exposed to relative lapse up	93%	1%	39%	n/a	n/a	74%	n/a	0%
BEL exposed to mass lapse	93%	3%	64%	n/a	n/a	73%	n/a	86%
BEL impact of relative lapse up	93%	−1%	52%	n/a	n/a	77%	n/a	0%
BEL impact of mass lapse	93%	−1%	57%	n/a	n/a	97%	n/a	4%

([59]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Czechia								
Line of business ([60])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	n/a	n/a	100%
BEL no surrender/cancellation options	2%	0%	−2%	n/a	n/a	n/a	n/a	100%
BEL surrender value never exceeds value of the assets	45%	100%	82%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, no disincentive	33%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, tax disincentive	1%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, surrender penalty	18%	0%	20%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, other disincentive	0%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL for which premiums are still being paid	31%	3%	51%	n/a	n/a	n/a	n/a	100%
BEL of future benefits corresponding to future premiums	56%	69%	−22%	n/a	n/a	n/a	n/a	26%
BEL FDB	2%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL exposed to mortality shock	69%	49%	112%	n/a	n/a	n/a	n/a	0%
BEL impact of mortality shock	11%	−2%	15%	n/a	n/a	n/a	n/a	0%
BEL exposed to relative lapse up	49%	46%	104%	n/a	n/a	n/a	n/a	0%
BEL exposed to mass lapse	49%	46%	104%	n/a	n/a	n/a	n/a	100%
BEL impact of relative lapse up	9%	−1%	1%	n/a	n/a	n/a	n/a	0%
BEL impact of mass lapse	11%	−1%	−18%	n/a	n/a	n/a	n/a	3%

([60]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Germany								
Line of business ([61])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	100%	n/a	100%	n/a	100%
BEL no surrender/cancellation options	10%	6%	7%	99%	n/a	110%	n/a	133%
BEL surrender value never exceeds value of the assets	11%	49%	0%	0%	n/a	1%	n/a	0%
BEL surrender/cancellation options, no disincentive	10%	7%	2%	1%	n/a	−1%	n/a	−33%
BEL surrender/cancellation options, tax disincentive	50%	22%	0%	0%	n/a	2%	n/a	0%
BEL surrender/cancellation options, surrender penalty	49%	34%	89%	0%	n/a	−4%	n/a	0%
BEL surrender/cancellation options, other disincentive	20%	8%	2%	0%	n/a	−5%	n/a	0%
BEL for which premiums are still being paid	59%	66%	4%	0%	n/a	96%	n/a	48%
BEL of future benefits corresponding to future premiums	47%	78%	4%	0%	n/a	435%	n/a	1,222%
BEL FDB	16%	0%	0%	0%	n/a	92%	n/a	0%
BEL exposed to mortality shock	67%	18%	7%	100%	n/a	108%	n/a	0%
BEL impact of mortality shock	0%	0%	0%	0%	n/a	0%	n/a	0%
BEL exposed to relative lapse up	69%	63%	8%	100%	n/a	99%	n/a	0%
BEL exposed to mass lapse	71%	67%	7%	100%	n/a	63%	n/a	60%
BEL impact of relative lapse up	0%	0%	0%	0%	n/a	10%	n/a	0%
BEL impact of mass lapse	1%	1%	0%	0%	n/a	17%	n/a	31%

([61]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Denmark								
Line of business ([62])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	100%	n/a	n/a
BEL no surrender/cancellation options	11%	1%	40%	n/a	n/a	9%	n/a	n/a
BEL surrender value never exceeds value of the assets	55%	93%	11%	n/a	n/a	42%	n/a	n/a
BEL surrender/cancellation options, no disincentive	0%	0%	0%	n/a	n/a	0%	n/a	n/a
BEL surrender/cancellation options, tax disincentive	8%	0%	0%	n/a	n/a	0%	n/a	n/a
BEL surrender/cancellation options, surrender penalty	34%	6%	49%	n/a	n/a	49%	n/a	n/a
BEL surrender/cancellation options, other disincentive	0%	0%	0%	n/a	n/a	0%	n/a	n/a
BEL for which premiums are still being paid	17%	57%	0%	n/a	n/a	13%	n/a	n/a
BEL of future benefits corresponding to future premiums	8%	9%	0%	n/a	n/a	13%	n/a	n/a
BEL FDB	7%	0%	0%	n/a	n/a	0%	n/a	n/a
BEL exposed to mortality shock	15%	84%	0%	n/a	n/a	0%	n/a	n/a
BEL impact of mortality shock	39%	47%	6%	n/a	n/a	37%	n/a	n/a
BEL exposed to relative lapse up	18%	46%	0%	n/a	n/a	−1%	n/a	n/a
BEL exposed to mass lapse	17%	89%	0%	n/a	n/a	−1%	n/a	n/a
BEL impact of relative lapse up	39%	48%	3%	n/a	n/a	37%	n/a	n/a
BEL impact of mass lapse	39%	49%	3%	n/a	n/a	37%	n/a	n/a

([62]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Spain								
Line of business ([63])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	n/a	n/a	100%
BEL no surrender/cancellation options	0%	37%	6%	n/a	n/a	n/a	n/a	65%
BEL surrender value never exceeds value of the assets	40%	1%	68%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, no disincentive	53%	62%	8%	n/a	n/a	n/a	n/a	35%
BEL surrender/cancellation options, tax disincentive	9%	0%	17%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, surrender penalty	6%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, other disincentive	0%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL for which premiums are still being paid	45%	0%	7%	n/a	n/a	n/a	n/a	–10%
BEL of future benefits corresponding to future premiums	15%	0%	4%	n/a	n/a	n/a	n/a	36%
BEL FDB	9%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL exposed to mortality shock	65%	63%	34%	n/a	n/a	n/a	n/a	0%
BEL impact of mortality shock	2%	–21%	15%	n/a	n/a	n/a	n/a	0%
BEL exposed to relative lapse up	53%	62%	36%	n/a	n/a	n/a	n/a	0%
BEL exposed to mass lapse	52%	62%	33%	n/a	n/a	n/a	n/a	65%
BEL impact of relative lapse up	1%	–17%	19%	n/a	n/a	n/a	n/a	0%
BEL impact of mass lapse	0%	–13%	17%	n/a	n/a	n/a	n/a	4%

([63]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Finland								
Line of business ([64])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	n/a	n/a	n/a	n/a	n/a	n/a
BEL no surrender/cancellation options	39%	12%	n/a	n/a	n/a	n/a	n/a	n/a
BEL surrender value never exceeds value of the assets	60%	61%	n/a	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, no disincentive	0%	0%	n/a	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, tax disincentive	0%	0%	n/a	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, surrender penalty	1%	27%	n/a	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, other disincentive	0%	0%	n/a	n/a	n/a	n/a	n/a	n/a
BEL for which premiums are still being paid	34%	52%	n/a	n/a	n/a	n/a	n/a	n/a
BEL of future benefits corresponding to future premiums	10%	5%	n/a	n/a	n/a	n/a	n/a	n/a
BEL FDB	4%	0%	n/a	n/a	n/a	n/a	n/a	n/a
BEL exposed to mortality shock	83%	83%	n/a	n/a	n/a	n/a	n/a	n/a
BEL impact of mortality shock	56%	58%	n/a	n/a	n/a	n/a	n/a	n/a
BEL exposed to relative lapse up	41%	43%	n/a	n/a	n/a	n/a	n/a	n/a
BEL exposed to mass lapse	67%	98%	n/a	n/a	n/a	n/a	n/a	n/a
BEL impact of relative lapse up	1%	5%	n/a	n/a	n/a	n/a	n/a	n/a
BEL impact of mass lapse	57%	61%	n/a	n/a	n/a	n/a	n/a	n/a

([64]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

France								
Line of business ([65])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	100%	100%	100%	100%	100%
BEL no surrender/cancellation options	13%	10%	57%	33%	66%	88%	38%	60%
BEL surrender value never exceeds value of the assets	3%	87%	−3%	0%	0%	0%	0%	0%
BEL surrender/cancellation options, no disincentive	31%	1%	24%	18%	34%	7%	61%	40%
BEL surrender/cancellation options, tax disincentive	45%	2%	9%	34%	0%	0%	0%	0%
BEL surrender/cancellation options, surrender penalty	1%	0%	1%	0%	0%	0%	0%	0%
BEL surrender/cancellation options, other disincentive	9%	0%	11%	15%	0%	3%	1%	0%
BEL for which premiums are still being paid	15%	20%	−9%	27%	30%	12%	60%	8%
BEL of future benefits corresponding to future premiums	2%	3%	206%	2%	6%	36%	13%	287%
BEL FDB	13%	0%	0%	11%	0%	3%	1%	5%
BEL exposed to mortality shock	55%	72%	52%	47%	0%	36%	4%	0%
BEL impact of mortality shock	2%	2%	30%	0%	0%	0%	0%	0%
BEL exposed to relative lapse up	68%	94%	7%	66%	4%	34%	5%	0%
BEL exposed to mass lapse	34%	76%	−16%	37%	4%	32%	3%	49%
BEL impact of relative lapse up	2%	2%	31%	0%	0%	1%	0%	0%
BEL impact of mass lapse	2%	3%	54%	0%	0%	2%	1%	78%

([65]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Greece								
Line of business ([66])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	100%	n/a	100%
BEL no surrender/cancellation options	5%	1%	0%	n/a	n/a	15%	n/a	48%
BEL surrender value never exceeds value of the assets	37%	67%	74%	n/a	n/a	21%	n/a	4%
BEL surrender/cancellation options, no disincentive	0%	0%	4%	n/a	n/a	64%	n/a	48%
BEL surrender/cancellation options, tax disincentive	1%	2%	0%	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, surrender penalty	58%	32%	22%	n/a	n/a	0%	n/a	0%
BEL surrender/cancellation options, other disincentive	0%	0%	0%	n/a	n/a	0%	n/a	0%
BEL for which premiums are still being paid	23%	14%	4%	n/a	n/a	60%	n/a	16%
BEL of future benefits corresponding to future premiums	29%	4%	31%	n/a	n/a	132%	n/a	23%
BEL FDB	0%	0%	0%	n/a	n/a	0%	n/a	0%
BEL exposed to mortality shock	51%	54%	21%	n/a	n/a	53%	n/a	0%
BEL impact of mortality shock	0%	26%	−3%	n/a	n/a	0%	n/a	0%
BEL exposed to relative lapse up	42%	54%	21%	n/a	n/a	54%	n/a	0%
BEL exposed to mass lapse	47%	54%	23%	n/a	n/a	67%	n/a	12%
BEL impact of relative lapse up	0%	26%	−3%	n/a	n/a	5%	n/a	0%
BEL impact of mass lapse	1%	26%	0%	n/a	n/a	8%	n/a	1%

([66]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Croatia								
Line of business ([67])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	n/a	n/a	100%
BEL no surrender/cancellation options	0%	0%	0%	n/a	n/a	n/a	n/a	78%
BEL surrender value never exceeds value of the assets	100%	100%	100%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, no disincentive	0%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, tax disincentive	0%	0%	0%	n/a	n/a	n/a	n/a	22%
BEL surrender/cancellation options, surrender penalty	0%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, other disincentive	0%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL for which premiums are still being paid	34%	0%	−117%	n/a	n/a	n/a	n/a	15%
BEL of future benefits corresponding to future premiums	89%	38%	270%	n/a	n/a	n/a	n/a	8%
BEL FDB	2%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL exposed to mortality shock	99%	100%	73%	n/a	n/a	n/a	n/a	0%
BEL impact of mortality shock	75%	58%	33%	n/a	n/a	n/a	n/a	0%
BEL exposed to relative lapse up	74%	57%	59%	n/a	n/a	n/a	n/a	0%
BEL exposed to mass lapse	74%	57%	53%	n/a	n/a	n/a	n/a	13%
BEL impact of relative lapse up	51%	57%	36%	n/a	n/a	n/a	n/a	0%
BEL impact of mass lapse	51%	57%	80%	n/a	n/a	n/a	n/a	25%

([67]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Hungary								
Line of business ([68])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	100%	100%	n/a	100%
BEL no surrender/cancellation options	0%	0%	32%	n/a	97%	−57%	n/a	34%
BEL surrender value never exceeds value of the assets	56%	100%	63%	n/a	3%	−362%	n/a	55%
BEL surrender/cancellation options, no disincentive	21%	0%	5%	n/a	0%	519%	n/a	10%
BEL surrender/cancellation options, tax disincentive	6%	0%	0%	n/a	0%	0%	n/a	0%
BEL surrender/cancellation options, surrender penalty	20%	0%	0%	n/a	0%	0%	n/a	0%
BEL surrender/cancellation options, other disincentive	0%	0%	0%	n/a	0%	0%	n/a	0%
BEL for which premiums are still being paid	14%	32%	61%	n/a	0%	498%	n/a	−100%
BEL of future benefits corresponding to future premiums	51%	83%	−120%	n/a	0%	300%	n/a	372%
BEL FDB	13%	0%	0%	n/a	0%	0%	n/a	0%
BEL exposed to mortality shock	97%	97%	118%	n/a	14%	−436%	n/a	0%
BEL impact of mortality shock	18%	0%	−9%	n/a	0%	20%	n/a	0%
BEL exposed to relative lapse up	73%	76%	118%	n/a	14%	−436%	n/a	0%
BEL exposed to mass lapse	83%	81%	111%	n/a	14%	−436%	n/a	31%
BEL impact of relative lapse up	18%	9%	−2%	n/a	0%	153%	n/a	0%
BEL impact of mass lapse	19%	3%	−48%	n/a	0%	146%	n/a	−1%

([68]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Ireland								
Line of business ([69])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	n/a	100%	100%	100%	n/a	n/a	n/a	n/a
BEL no surrender/cancellation options	n/a	−7%	87%	44%	n/a	n/a	n/a	n/a
BEL surrender value never exceeds value of the assets	n/a	107%	13%	56%	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, no disincentive	n/a	0%	1%	0%	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, tax disincentive	n/a	0%	0%	0%	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, surrender penalty	n/a	0%	0%	0%	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, other disincentive	n/a	0%	−1%	0%	n/a	n/a	n/a	n/a
BEL for which premiums are still being paid	n/a	19%	−2%	28%	n/a	n/a	n/a	n/a
BEL of future benefits corresponding to future premiums	n/a	26%	33%	415%	n/a	n/a	n/a	n/a
BEL FDB	n/a	0%	29%	3%	n/a	n/a	n/a	n/a
BEL exposed to mortality shock	n/a	−6%	53%	44%	n/a	n/a	n/a	n/a
BEL impact of mortality shock	n/a	−7%	58%	−23%	n/a	n/a	n/a	n/a
BEL exposed to relative lapse up	n/a	22%	4%	27%	n/a	n/a	n/a	n/a
BEL exposed to mass lapse	n/a	30%	2%	32%	n/a	n/a	n/a	n/a
BEL impact of relative lapse up	n/a	−1%	5%	−10%	n/a	n/a	n/a	n/a
BEL impact of mass lapse	n/a	−8%	8%	−17%	n/a	n/a	n/a	n/a

([69]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Italy								
Line of business ([70])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	100%	n/a	n/a	n/a	100%
BEL no surrender/cancellation options	1%	0%	285%	100%	n/a	n/a	n/a	75%
BEL surrender value never exceeds value of the assets	3%	15%	4%	0%	n/a	n/a	n/a	0%
BEL surrender/cancellation options, no disincentive	53%	54%	−226%	0%	n/a	n/a	n/a	25%
BEL surrender/cancellation options, tax disincentive	7%	7%	2%	0%	n/a	n/a	n/a	0%
BEL surrender/cancellation options, surrender penalty	35%	24%	35%	0%	n/a	n/a	n/a	0%
BEL surrender/cancellation options, other disincentive	1%	0%	0%	0%	n/a	n/a	n/a	0%
BEL for which premiums are still being paid	1%	−1%	−296%	0%	n/a	n/a	n/a	−3%
BEL of future benefits corresponding to future premiums	23%	31%	206%	0%	n/a	n/a	n/a	21%
BEL FDB	5%	0%	0%	0%	n/a	n/a	n/a	0%
BEL exposed to mortality shock	78%	95%	−164%	0%	n/a	n/a	n/a	0%
BEL impact of mortality shock	2%	29%	41%	0%	n/a	n/a	n/a	0%
BEL exposed to relative lapse up	84%	93%	−126%	0%	n/a	n/a	n/a	0%
BEL exposed to mass lapse	61%	89%	−129%	0%	n/a	n/a	n/a	25%
BEL impact of relative lapse up	3%	30%	43%	0%	n/a	n/a	n/a	0%
BEL impact of mass lapse	3%	31%	79%	0%	n/a	n/a	n/a	3%

([70]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Liechtenstein								
Line of business ([71])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	n/a	100%	100%	n/a	n/a	n/a	n/a	n/a
BEL no surrender/cancellation options	n/a	0%	81%	n/a	n/a	n/a	n/a	n/a
BEL surrender value never exceeds value of the assets	n/a	100%	19%	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, no disincentive	n/a	0%	0%	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, tax disincentive	n/a	0%	0%	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, surrender penalty	n/a	0%	0%	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, other disincentive	n/a	0%	0%	n/a	n/a	n/a	n/a	n/a
BEL for which premiums are still being paid	n/a	−1%	−7%	n/a	n/a	n/a	n/a	n/a
BEL of future benefits corresponding to future premiums	n/a	6%	45%	n/a	n/a	n/a	n/a	n/a
BEL FDB	n/a	0%	0%	n/a	n/a	n/a	n/a	n/a
BEL exposed to mortality shock	n/a	98%	20%	n/a	n/a	n/a	n/a	n/a
BEL impact of mortality shock	n/a	80%	21%	n/a	n/a	n/a	n/a	n/a
BEL exposed to relative lapse up	n/a	98%	20%	n/a	n/a	n/a	n/a	n/a
BEL exposed to mass lapse	n/a	98%	20%	n/a	n/a	n/a	n/a	n/a
BEL impact of relative lapse up	n/a	81%	22%	n/a	n/a	n/a	n/a	n/a
BEL impact of mass lapse	n/a	81%	23%	n/a	n/a	n/a	n/a	n/a

([71]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Netherlands								
Line of business ([72])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	100%	100%	100%
BEL no surrender/cancellation options	65%	50%	44%	n/a	n/a	91%	32%	95%
BEL surrender value never exceeds value of the assets	2%	15%	2%	n/a	n/a	7%	0%	–3%
BEL surrender/cancellation options, no disincentive	22%	14%	2%	n/a	n/a	2%	68%	7%
BEL surrender/cancellation options, tax disincentive	5%	20%	47%	n/a	n/a	0%	0%	0%
BEL surrender/cancellation options, surrender penalty	9%	0%	5%	n/a	n/a	0%	0%	0%
BEL surrender/cancellation options, other disincentive	0%	0%	2%	n/a	n/a	0%	0%	0%
BEL for which premiums are still being paid	21%	13%	6%	n/a	n/a	–3%	–28%	10%
BEL of future benefits corresponding to future premiums	23%	9%	8%	n/a	n/a	34%	–77%	236%
BEL FDB	5%	0%	0%	n/a	n/a	0%	0%	0%
BEL exposed to mortality shock	41%	60%	47%	n/a	n/a	7%	–27%	0%
BEL impact of mortality shock	0%	0%	1%	n/a	n/a	0%	0%	0%
BEL exposed to relative lapse up	14%	26%	34%	n/a	n/a	4%	–27%	0%
BEL exposed to mass lapse	11%	35%	20%	n/a	n/a	26%	–12%	91%
BEL impact of relative lapse up	0%	0%	0%	n/a	n/a	1%	–4%	0%
BEL impact of mass lapse	0%	0%	1%	n/a	n/a	3%	–9%	19%

([72]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Norway								
Line of business ([73])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL no surrender/cancellation options	21%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL surrender value never exceeds value of the assets	0%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, no disincentive	17%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, tax disincentive	0%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, surrender penalty	4%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, other disincentive	58%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL for which premiums are still being paid	66%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL of future benefits corresponding to future premiums	45%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL FDB	18%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL exposed to mortality shock	4%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL impact of mortality shock	5%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL exposed to relative lapse up	61%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL exposed to mass lapse	75%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL impact of relative lapse up	5%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BEL impact of mass lapse	20%	n/a	n/a	n/a	n/a	n/a	n/a	n/a

([73]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Poland								
Line of business ([74])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	100%	100%	n/a	100%
BEL no surrender/cancellation options	6%	5%	−6%	n/a	100%	16%	n/a	103%
BEL surrender value never exceeds value of the assets	33%	95%	27%	n/a	0%	61%	n/a	−3%
BEL surrender/cancellation options, no disincentive	5%	0%	77%	n/a	0%	23%	n/a	0%
BEL surrender/cancellation options, tax disincentive	2%	0%	0%	n/a	0%	0%	n/a	0%
BEL surrender/cancellation options, surrender penalty	58%	0%	0%	n/a	0%	0%	n/a	0%
BEL surrender/cancellation options, other disincentive	0%	0%	3%	n/a	0%	0%	n/a	0%
BEL for which premiums are still being paid	58%	23%	85%	n/a	0%	105%	n/a	−14%
BEL of future benefits corresponding to future premiums	30%	21%	4%	n/a	0%	−50%	n/a	13%
BEL FDB	5%	0%	0%	n/a	0%	0%	n/a	0%
BEL exposed to mortality shock	91%	82%	83%	n/a	0%	101%	n/a	0%
BEL impact of mortality shock	28%	16%	136%	n/a	0%	2%	n/a	0%
BEL exposed to relative lapse up	95%	77%	73%	n/a	0%	101%	n/a	0%
BEL exposed to mass lapse	97%	78%	73%	n/a	0%	102%	n/a	100%
BEL impact of relative lapse up	38%	20%	96%	n/a	0%	−25%	n/a	0%
BEL impact of mass lapse	41%	19%	113%	n/a	0%	−41%	n/a	14%

([74]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Portugal								
Line of business ([75])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	n/a	n/a	n/a
BEL no surrender/cancellation options	2%	0%	4%	n/a	n/a	n/a	n/a	n/a
BEL surrender value never exceeds value of the assets	0%	100%	0%	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, no disincentive	1%	0%	3%	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, tax disincentive	95%	0%	97%	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, surrender penalty	62%	0%	85%	n/a	n/a	n/a	n/a	n/a
BEL surrender/cancellation options, other disincentive	0%	0%	−6%	n/a	n/a	n/a	n/a	n/a
BEL for which premiums are still being paid	66%	0%	2%	n/a	n/a	n/a	n/a	n/a
BEL of future benefits corresponding to future premiums	7%	0%	13%	n/a	n/a	n/a	n/a	n/a
BEL FDB	1%	0%	0%	n/a	n/a	n/a	n/a	n/a
BEL exposed to mortality shock	4%	−5%	−6%	n/a	n/a	n/a	n/a	n/a
BEL impact of mortality shock	0%	0%	1%	n/a	n/a	n/a	n/a	n/a
BEL exposed to relative lapse up	25%	−10,421%	92%	n/a	n/a	n/a	n/a	n/a
BEL exposed to mass lapse	25%	−10,440%	92%	n/a	n/a	n/a	n/a	n/a
BEL impact of relative lapse up	1%	−10,452%	2%	n/a	n/a	n/a	n/a	n/a
BEL impact of mass lapse	1%	−10,504%	3%	n/a	n/a	n/a	n/a	n/a

([75]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Romania								
Line of business ([76])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	100%	n/a	n/a	100%
BEL no surrender/cancellation options	3%	2%	95%	n/a	100%	n/a	n/a	−6%
BEL surrender value never exceeds value of the assets	73%	77%	−66%	n/a	0%	n/a	n/a	0%
BEL surrender/cancellation options, no disincentive	0%	0%	71%	n/a	0%	n/a	n/a	106%
BEL surrender/cancellation options, tax disincentive	0%	0%	0%	n/a	0%	n/a	n/a	0%
BEL surrender/cancellation options, surrender penalty	24%	22%	0%	n/a	0%	n/a	n/a	0%
BEL surrender/cancellation options, other disincentive	0%	0%	0%	n/a	0%	n/a	n/a	0%
BEL for which premiums are still being paid	76%	85%	−60%	n/a	23%	n/a	n/a	32%
BEL of future benefits corresponding to future premiums	135%	24%	−599%	n/a	101%	n/a	n/a	192%
BEL FDB	4%	0%	0%	n/a	0%	n/a	n/a	0%
BEL exposed to mortality shock	89%	32%	101%	n/a	11%	n/a	n/a	0%
BEL impact of mortality shock	55%	0%	28%	n/a	0%	n/a	n/a	0%
BEL exposed to relative lapse up	83%	12%	111%	n/a	11%	n/a	n/a	0%
BEL exposed to mass lapse	83%	11%	106%	n/a	11%	n/a	n/a	−6%
BEL impact of relative lapse up	56%	0%	−9%	n/a	0%	n/a	n/a	0%
BEL impact of mass lapse	59%	0%	−77%	n/a	0%	n/a	n/a	−4%

([76]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Sweden								
Line of business ([77])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	n/a	n/a	100%
BEL no surrender/cancellation options	50%	14%	378%	n/a	n/a	n/a	n/a	100%
BEL surrender value never exceeds value of the assets	24%	59%	−278%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, no disincentive	16%	27%	0%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, tax disincentive	0%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, surrender penalty	11%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL surrender/cancellation options, other disincentive	1%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL for which premiums are still being paid	8%	0%	439%	n/a	n/a	n/a	n/a	−40%
BEL of future benefits corresponding to future premiums	1%	0%	−3,215%	n/a	n/a	n/a	n/a	193%
BEL FDB	3%	0%	0%	n/a	n/a	n/a	n/a	0%
BEL exposed to mortality shock	23%	33%	630%	n/a	n/a	n/a	n/a	0%
BEL impact of mortality shock	1%	0%	−487%	n/a	n/a	n/a	n/a	0%
BEL exposed to relative lapse up	54%	55%	950%	n/a	n/a	n/a	n/a	0%
BEL exposed to mass lapse	61%	57%	954%	n/a	n/a	n/a	n/a	100%
BEL impact of relative lapse up	2%	0%	−24%	n/a	n/a	n/a	n/a	0%
BEL impact of mass lapse	4%	1%	−383%	n/a	n/a	n/a	n/a	7%

([77]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Slovenia								
Line of business ([78])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	100%	n/a	n/a	100%
BEL no surrender/cancellation options	5%	0%	−46%	n/a	100%	n/a	n/a	69%
BEL surrender value never exceeds value of the assets	76%	98%	89%	n/a	0%	n/a	n/a	31%
BEL surrender/cancellation options, no disincentive	0%	0%	−8%	n/a	0%	n/a	n/a	0%
BEL surrender/cancellation options, tax disincentive	0%	0%	0%	n/a	0%	n/a	n/a	0%
BEL surrender/cancellation options, surrender penalty	19%	2%	65%	n/a	0%	n/a	n/a	0%
BEL surrender/cancellation options, other disincentive	0%	0%	0%	n/a	0%	n/a	n/a	0%
BEL for which premiums are still being paid	31%	12%	143%	n/a	0%	n/a	n/a	15%
BEL of future benefits corresponding to future premiums	31%	69%	459%	n/a	0%	n/a	n/a	56%
BEL FDB	2%	0%	0%	n/a	0%	n/a	n/a	0%
BEL exposed to mortality shock	74%	66%	−22%	n/a	0%	n/a	n/a	0%
BEL impact of mortality shock	22%	15%	196%	n/a	100%	n/a	n/a	0%
BEL exposed to relative lapse up	28%	81%	−121%	n/a	0%	n/a	n/a	0%
BEL exposed to mass lapse	31%	82%	−93%	n/a	0%	n/a	n/a	140%
BEL impact of relative lapse up	22%	18%	195%	n/a	100%	n/a	n/a	0%
BEL impact of mass lapse	22%	21%	255%	n/a	100%	n/a	n/a	67%

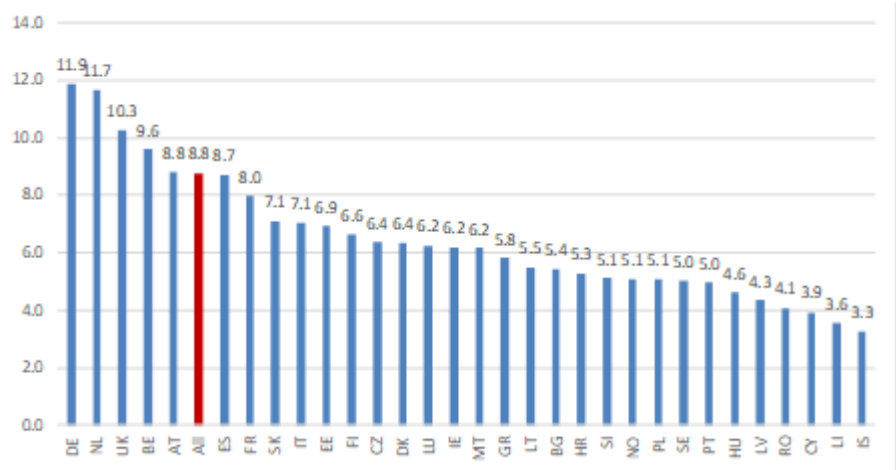
([78]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Slovakia								
Line of business ([79])	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Total BEL	100%	100%	100%	n/a	n/a	100%	n/a	n/a
BEL no surrender/cancellation options	39%	0%	103%	n/a	n/a	5%	n/a	n/a
BEL surrender value never exceeds value of the assets	0%	35%	2%	n/a	n/a	0%	n/a	n/a
BEL surrender/cancellation options, no disincentive	0%	0%	0%	n/a	n/a	0%	n/a	n/a
BEL surrender/cancellation options, tax disincentive	0%	0%	0%	n/a	n/a	0%	n/a	n/a
BEL surrender/cancellation options, surrender penalty	61%	65%	19%	n/a	n/a	0%	n/a	n/a
BEL surrender/cancellation options, other disincentive	0%	0%	-24%	n/a	n/a	55%	n/a	n/a
BEL for which premiums are still being paid	47%	55%	86%	n/a	n/a	56%	n/a	n/a
BEL of future benefits corresponding to future premiums	70%	121%	271%	n/a	n/a	0%	n/a	n/a
BEL FDB	10%	0%	0%	n/a	n/a	45%	n/a	n/a
BEL exposed to mortality shock	91%	65%	80%	n/a	n/a	100%	n/a	n/a
BEL impact of mortality shock	31%	22%	116%	n/a	n/a	0%	n/a	n/a
BEL exposed to relative lapse up	76%	65%	-69%	n/a	n/a	100%	n/a	n/a
BEL exposed to mass lapse	76%	65%	-69%	n/a	n/a	100%	n/a	n/a
BEL impact of relative lapse up	21%	28%	-27%	n/a	n/a	-17%	n/a	n/a
BEL impact of mass lapse	22%	28%	6%	n/a	n/a	-16%	n/a	n/a

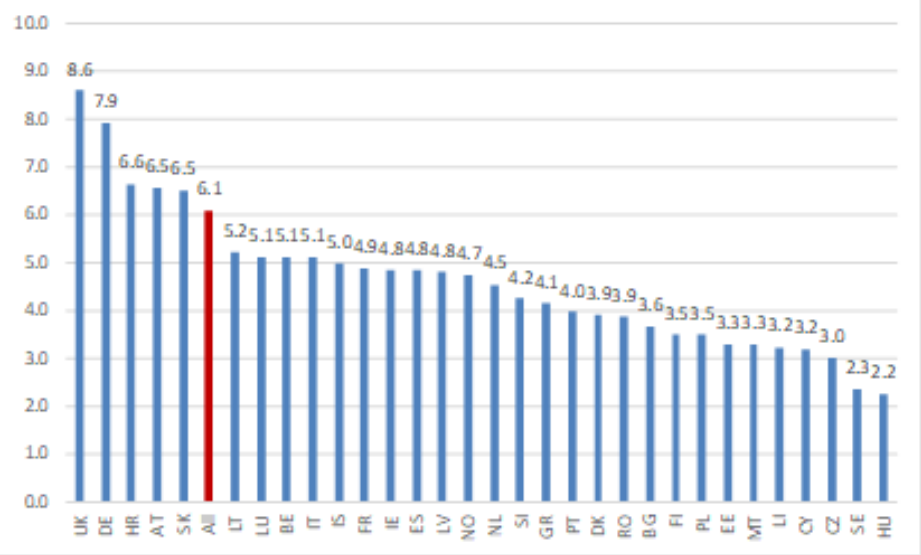
([79]) 1, insurance with profit participation; 2, index-linked and unit-linked insurance; 3, other life insurance; 4, accepted reinsurance; 5, annuities stemming from non-life contracts; 6, health insurance; 7, health reinsurance; 8, best-estimate premium provisions (gross).

Annex 2. Detailed average weighted duration per country

Government bonds



Corporate bonds



Annex 3. Information on the coverage of biometric risks by country

The tables in this annex display the weight of the coverage against biometrical risk per country in the different lines of business. The European market is heterogeneous.

Austria	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	100%	0%	17%
30 — Insurance with profit participation	23%	77%	58%
31 — Index-linked and unit-linked insurance	53%	47%	22%
32 — Other life insurance	11%	89%	3%
35 — Health reinsurance	100%	0%	0%
36 — Life reinsurance	61%	39%	0%
Total	43%	57%	100%

Belgium	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	78%	22%	1%
30 — Insurance with profit participation	10%	90%	69%
31 — Index-linked and unit-linked insurance	91%	9%	20%
32 — Other life insurance	58%	42%	4%
35 — Health reinsurance	100%	0%	2%
36 — Life reinsurance	0%	100%	3%
Total	31%	69%	100%

Bulgaria	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	100%	0%	0%
30 — Insurance with profit participation	37%	63%	55%
31 — Index-linked and unit-linked insurance	0%	100%	41%
32 — Other life insurance	0%	100%	4%
35 — Health reinsurance	n/a	n/a	n/a
36 — Life reinsurance	n/a	n/a	n/a
Total	20%	80%	100%

Croatia	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
30 — Insurance with profit participation	5%	95%	68%
31 — Index-linked and unit-linked insurance	64%	36%	26%
32 — Other life insurance	16%	84%	6%
Total	21%	79%	100%

Czechia	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	88%	12%	17%
30 — Insurance with profit participation	8%	92%	48%
31 — Index-linked and unit-linked insurance	0%	100%	26%
32 — Other life insurance	0%	100%	9%
Total	19%	81%	100%

Denmark	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
30 — Insurance with profit participation	65%	35%	17%
31 — Index-linked and unit-linked insurance	99%	1%	78%
32 — Other life insurance	67%	33%	2%
Void	96%	4%	3%
Total	92%	8%	100%

Estonia	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
30 — Insurance with profit participation	29%	71%	61%
31 — Index-linked and unit-linked insurance	22%	78%	29%
32 — Other life insurance	43%	57%	10%
Total	29%	71%	100%

Finland	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	30%	70%	2%
30 — Insurance with profit participation	54%	46%	11%
31 — Index-linked and unit-linked insurance	82%	18%	82%
32 — Other life insurance	41%	59%	6%
Total	76%	24%	100%

France	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	66%	34%	3%
30 — Insurance with profit participation	68%	32%	64%
31 — Index-linked and unit-linked insurance	82%	18%	23%
32 — Other life insurance	8%	92%	5%
33 — Annuities stemming from non-life insurance contracts and relating to health insurance obligations	100%	0%	0%
35 — Health reinsurance	99%	1%	0%
36 — Life reinsurance	63%	37%	5%
Total	68%	32%	100%

Germany	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	55%	45%	5%
30 — Insurance with profit participation	48%	52%	75%
31 — Index-linked and unit-linked insurance	51%	49%	11%
32 — Other life insurance	69%	31%	8%
36 — Life reinsurance	–5%	105%	1%
Total	50%	50%	100%

Greece	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	100%	0%	37%
30 — Insurance with profit participation	46%	54%	26%
31 — Index-linked and unit-linked insurance	60%	40%	20%
32 — Other life insurance	29%	71%	17%
Total	66%	34%	100%

Hungary	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	43%	57%	0%
30 — Insurance with profit participation	9%	91%	40%
31 — Index-linked and unit-linked insurance	26%	74%	52%
32 — Other life insurance	23%	77%	8%
Total	19%	81%	100%

Iceland	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	100%	0%	69%
31 — Index-linked and unit-linked insurance	0%	100%	1%
32 — Other life insurance	0%	100%	9%
36 — Life reinsurance	0%	100%	21%
Total	69%	31%	100%

Ireland	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	45%	55%	4%
30 — Insurance with profit participation	16%	84%	5%
31 — Index-linked and unit-linked insurance	61%	39%	85%
32 — Other life insurance	36%	64%	6%
35 — Health reinsurance	49%	51%	0%
36 — Life reinsurance	13%	87%	0%
Total	56%	44%	100%

Italy	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	99%	1%	0%
30 — Insurance with profit participation	1%	99%	64%
31 — Index-linked and unit-linked insurance	77%	23%	33%
32 — Other life insurance	3%	97%	3%
Total	26%	74%	100%

Latvia	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
30 — Insurance with profit participation	33%	67%	97%
31 — Index-linked and unit-linked insurance	0%	100%	1%
32 — Other life insurance	0%	100%	2%
Total	33%	67%	100%

Liechtenstein	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
30 — Insurance with profit participation	96%	4%	9%
31 — Index-linked and unit-linked insurance	33%	67%	80%
32 — Other life insurance	55%	45%	11%
Total	41%	59%	100%

Lithuania	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	0%	100%	7%
30 — Insurance with profit participation	0%	100%	59%
31 — Index-linked and unit-linked insurance	0%	100%	30%
32 — Other life insurance	0%	100%	4%
Total	0%	100%	100%

Luxembourg	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
30 — Insurance with profit participation	85%	15%	29%
31 — Index-linked and unit-linked insurance	90%	10%	51%
32 — Other life insurance	4%	96%	2%
35 — Health reinsurance	26%	74%	5%
36 — Life reinsurance	33%	67%	13%
Total	77%	23%	100%

Malta	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
30 — Insurance with profit participation	0%	100%	74%
31 — Index-linked and unit-linked insurance	100%	0%	8%
32 — Other life insurance	0%	100%	18%
Total	8%	92%	100%

Netherlands	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	100%	0%	0%
30 — Insurance with profit participation	26%	74%	10%
31 — Index-linked and unit-linked insurance	84%	16%	28%
32 — Other life insurance	60%	40%	43%
Void	80%	20%	18%
Total	67%	33%	100%

Norway	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	100%	0%	4%
30 — Insurance with profit participation	98%	2%	51%
31 — Index-linked and unit-linked insurance	99%	1%	42%
32 — Other life insurance	48%	52%	3%
Total	97%	3%	100%

Portugal	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
30 — Insurance with profit participation	1%	99%	23%
31 — Index-linked and unit-linked insurance	100%	0%	34%
32 — Other life insurance	1%	99%	44%
Total	34%	66%	100%

Romania	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	100%	0%	8%
30 — Insurance with profit participation	22%	78%	36%
31 — Index-linked and unit-linked insurance	4%	96%	32%
32 — Other life insurance	2%	98%	24%
36 — Life reinsurance	0%	100%	0%
Total	18%	82%	100%

Slovakia	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	91%	9%	5%
30 — Insurance with profit participation	14%	86%	27%
31 — Index-linked and unit-linked insurance	7%	93%	19%
32 — Other life insurance	53%	47%	50%
Total	36%	64%	100%

Slovenia	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	77%	23%	0%
30 — Insurance with profit participation	5%	95%	38%
31 — Index-linked and unit-linked insurance	11%	89%	49%
32 — Other life insurance	10%	90%	13%
Total	9%	91%	100%

Spain	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
30 — Insurance with profit participation	6%	94%	8%
31 — Index-linked and unit-linked insurance	0%	100%	18%
32 — Other life insurance	0%	100%	73%
36 — Life reinsurance	0%	100%	0%
Total	1%	99%	100%

Sweden	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	100%	0%	1%
30 — Insurance with profit participation	82%	18%	36%
31 — Index-linked and unit-linked insurance	100%	0%	59%
32 — Other life insurance	3%	97%	4%
35 — Health reinsurance	100%	0%	0%
36 — Life reinsurance	100%	0%	0%
Total	90%	10%	100%

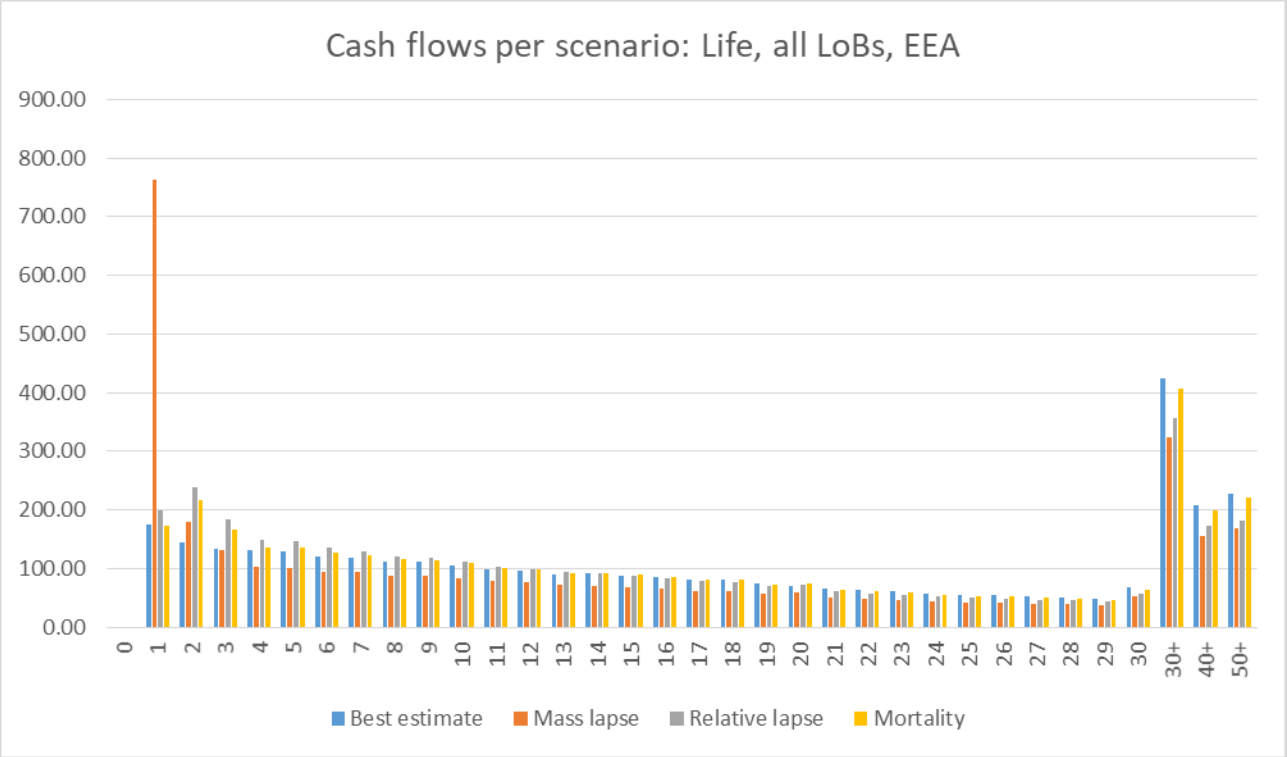
UK	Percentage in terms of written premiums		
Line of business	Not exposed to biometrical risk	Exposed to biometrical risk	Weight of the line of business
29 — Health insurance	75%	25%	1%
30 — Insurance with profit participation	0%	100%	31%
31 — Index-linked and unit-linked insurance	58%	42%	42%
32 — Other life insurance	74%	26%	23%
35 — Health reinsurance	0%	100%	0%
36 — Life reinsurance	66%	34%	3%
Total	45%	55%	100%

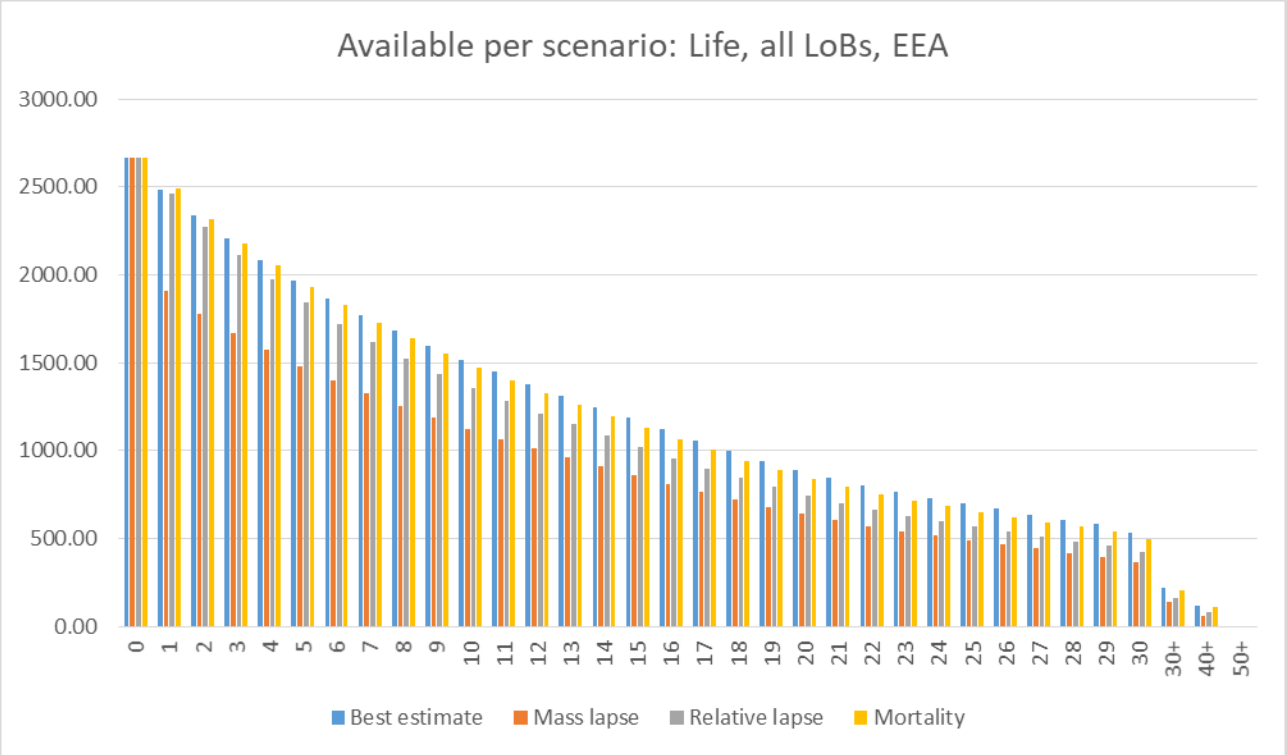
Annex 4. Illiquid, best-estimate and stress cash flows

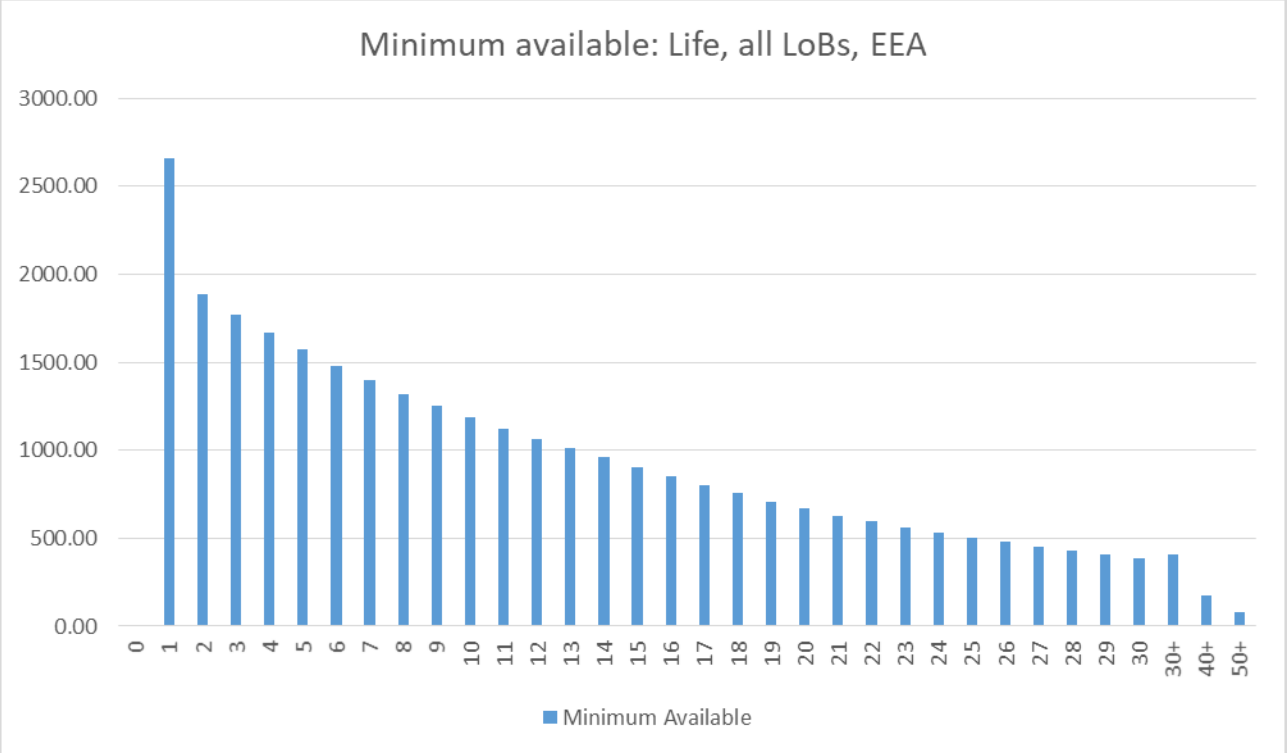
This annex displays the illiquid, best-estimate and stress cash flows per type of undertaking, per line of business and per jurisdiction. It should be noted that negative cash flows are not displayed in the figures (or are displayed as zero), but the calculations did make use of the negative cash flows.

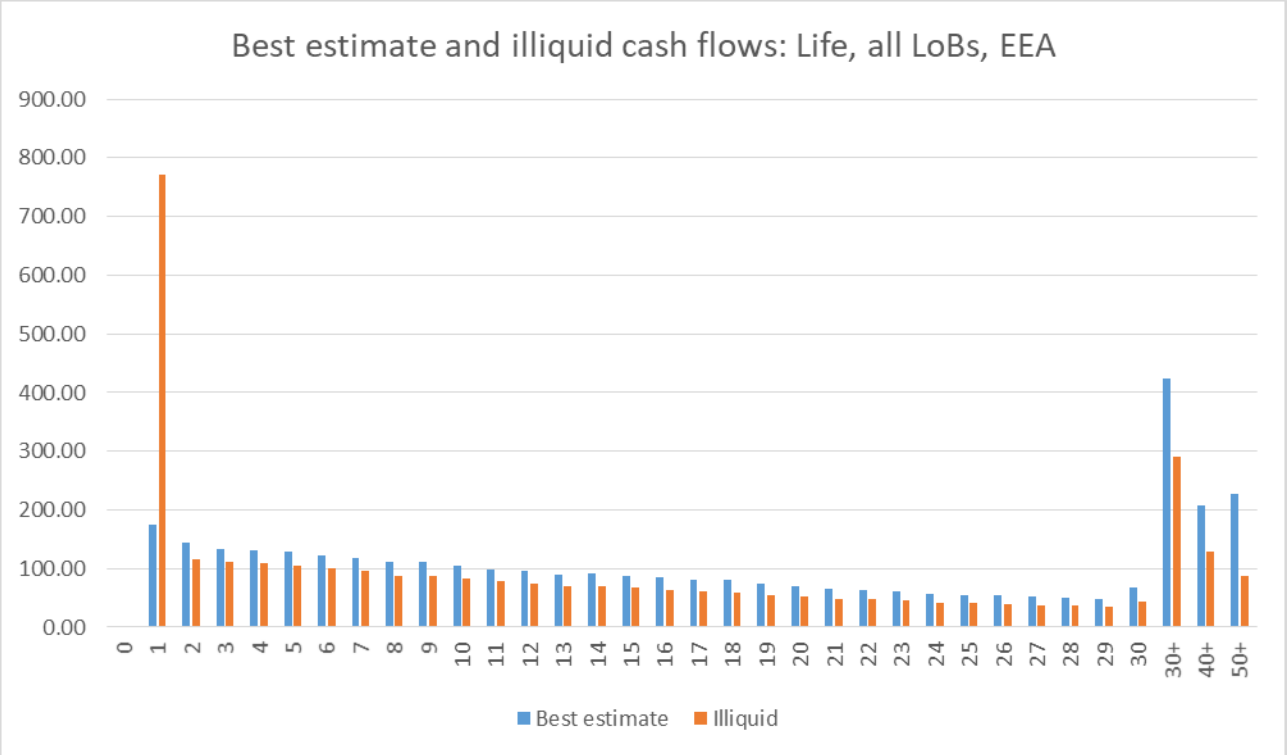
Per type of undertaking

Life

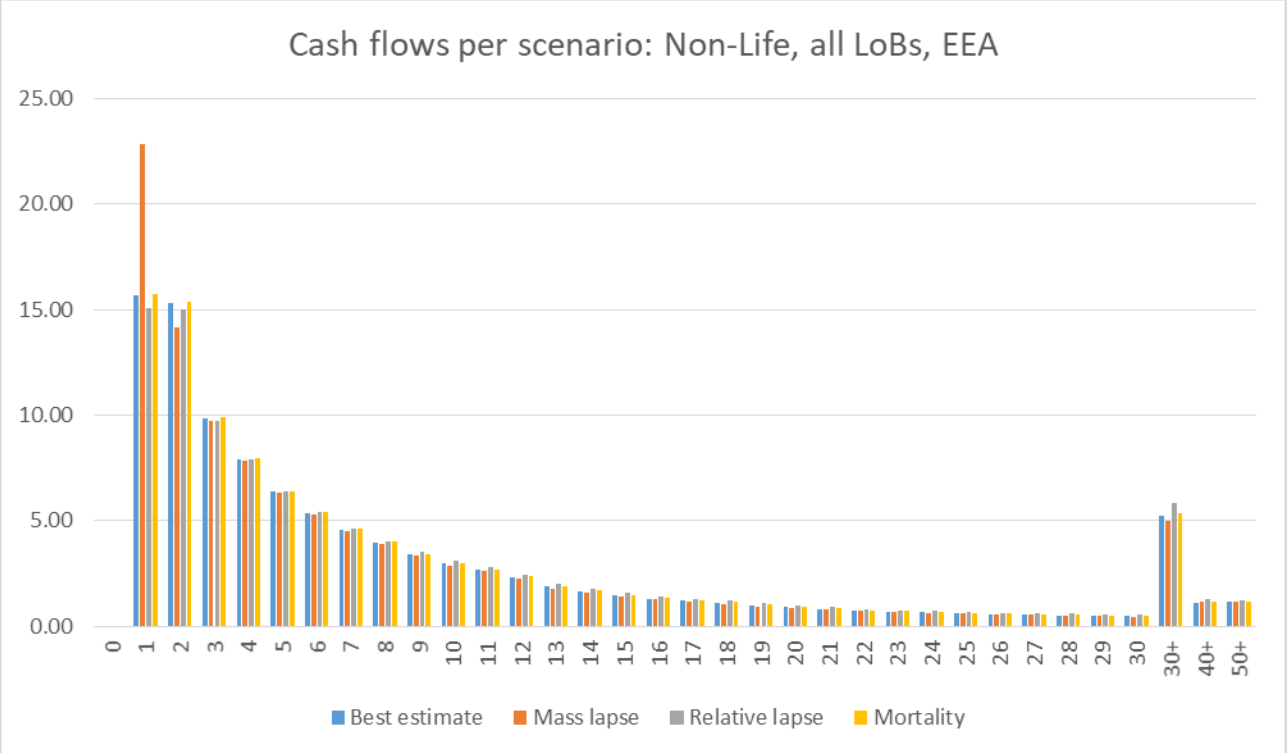


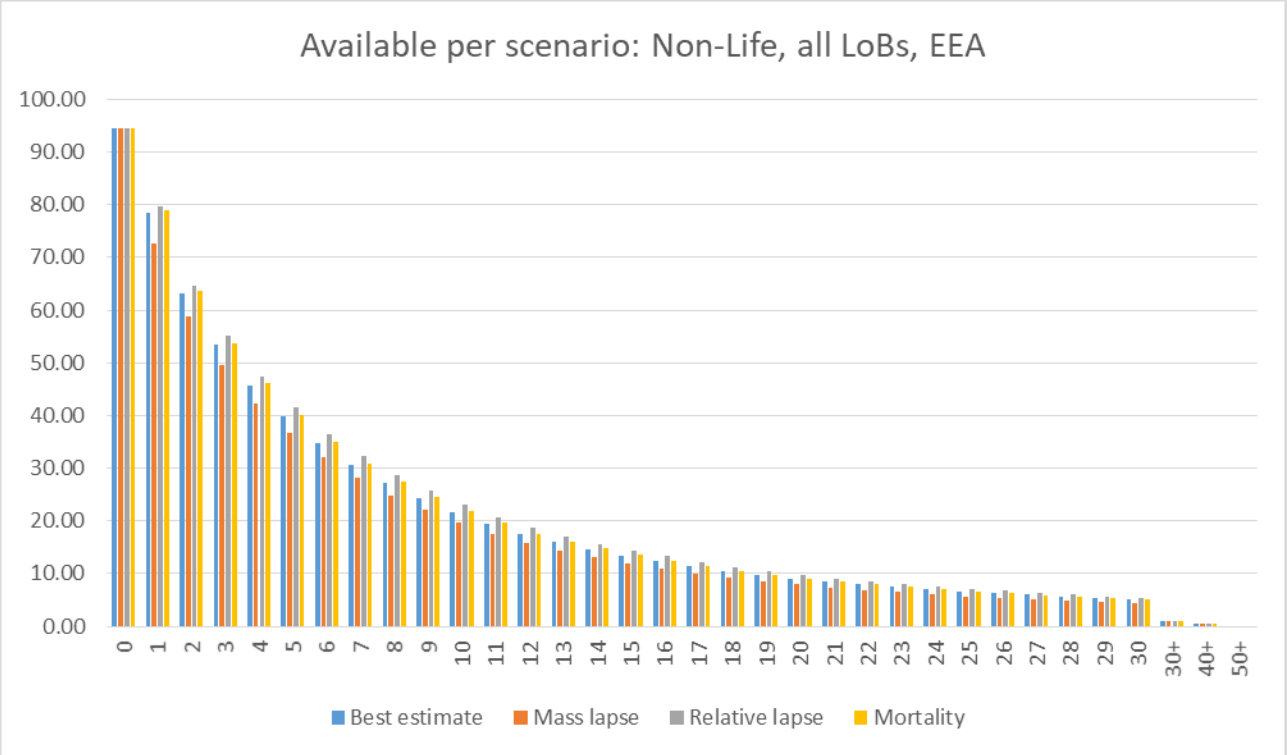

Available per scenario: Life, all LoBs, EEA
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

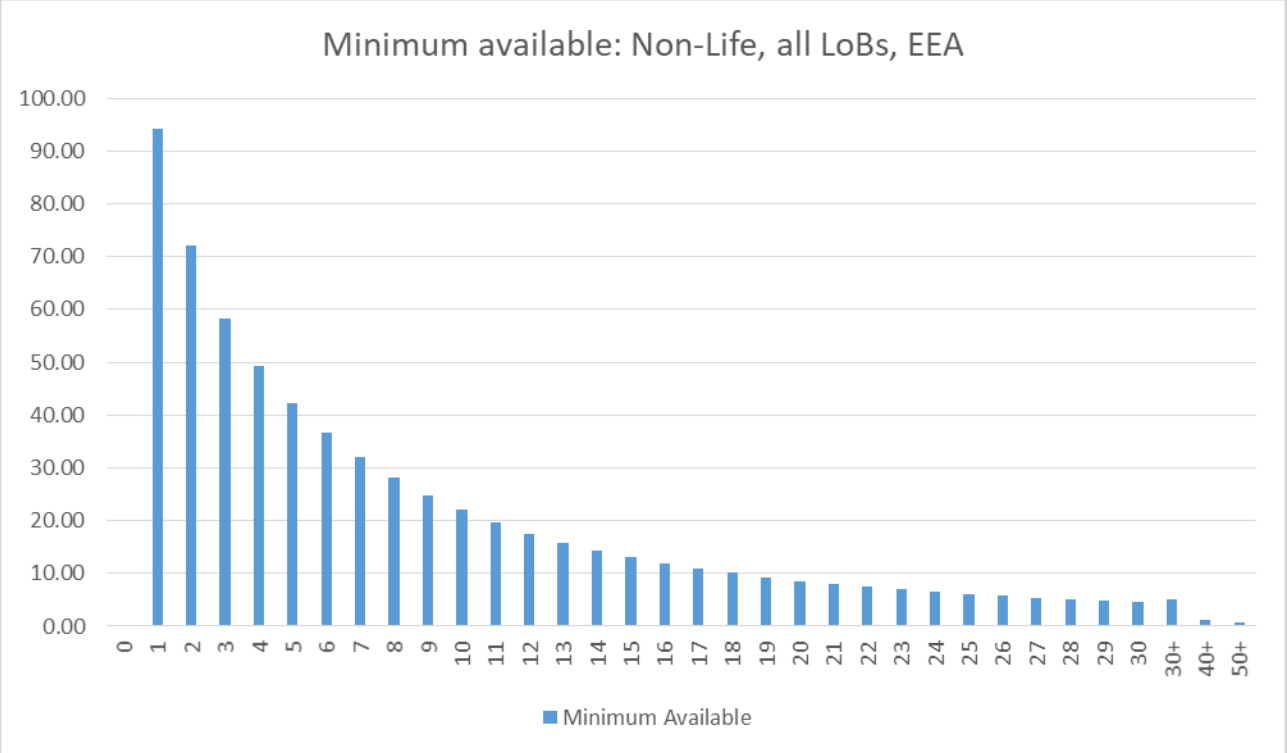

Minimum available: Life, all LoBs, EEA
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

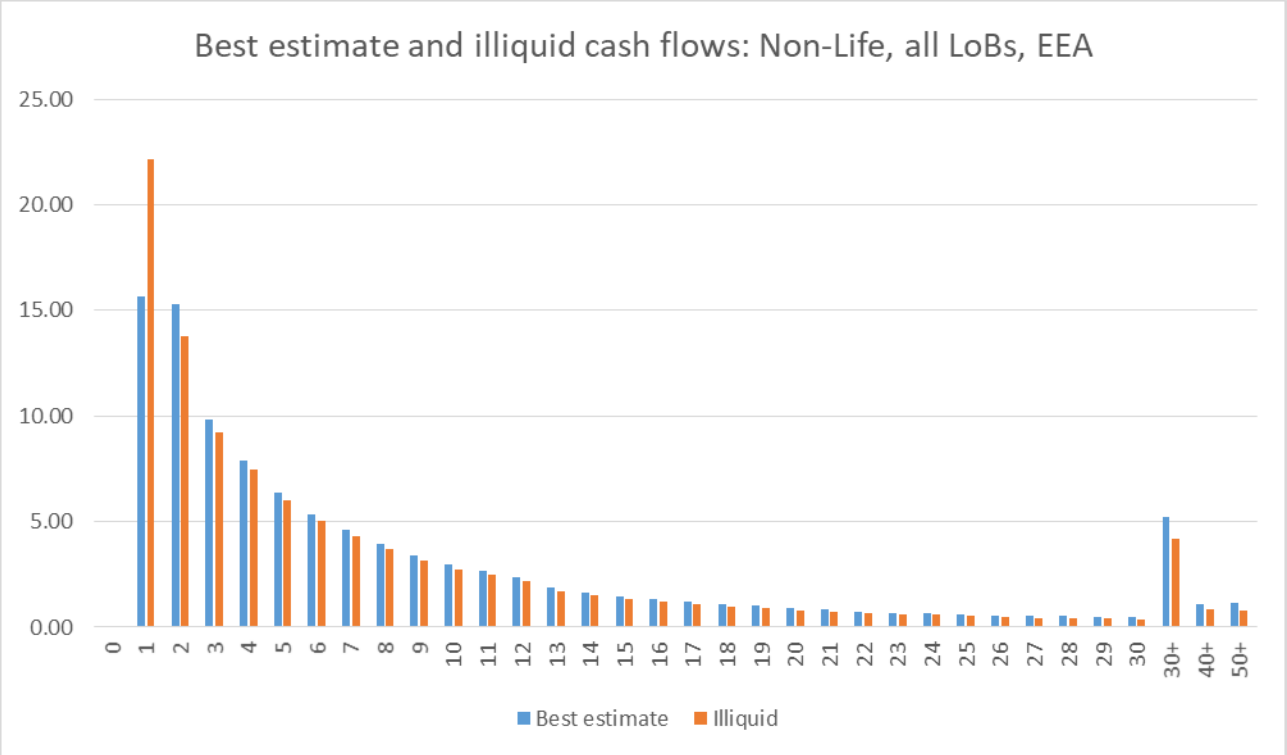

Best estimate and illiquid cash flows: Life, all LoBs, EEA
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Non-life

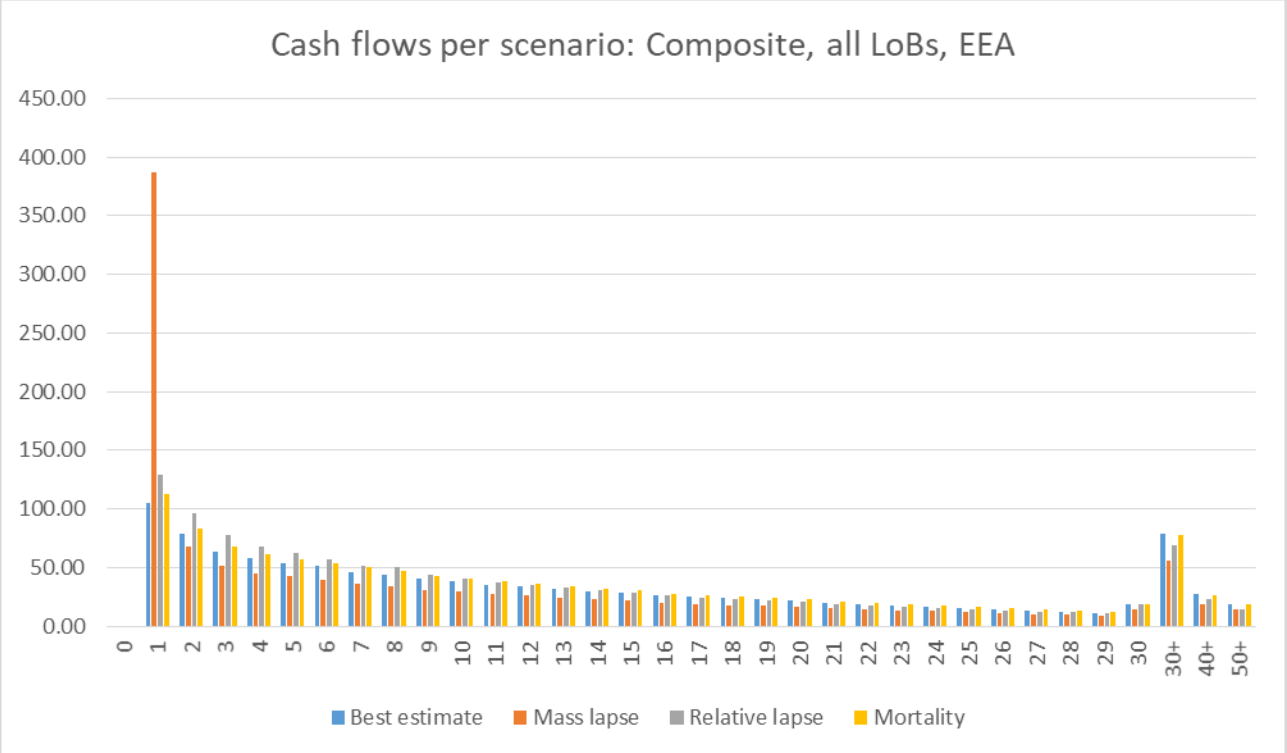

Cash flows per scenario: Non-Life, all LoBs, EEA
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

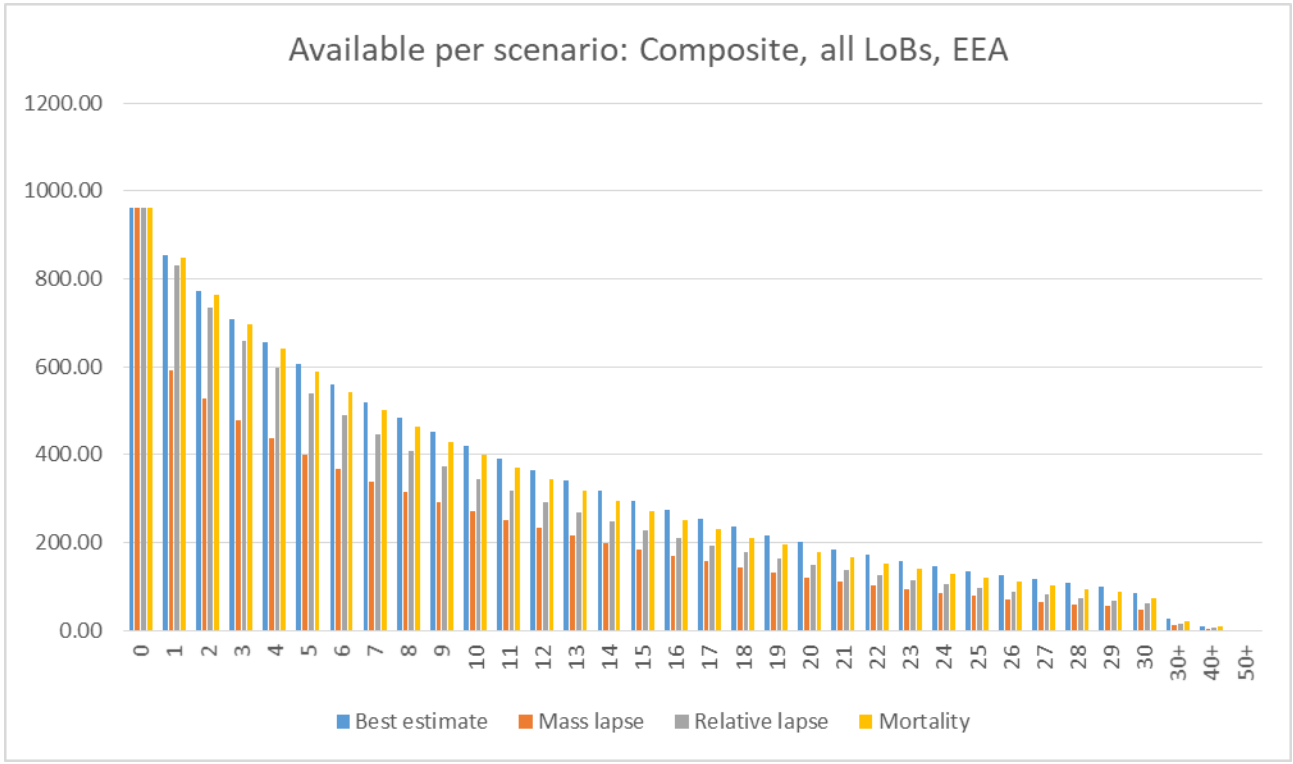

Available per scenario: Non-Life, all LoBs, EEA
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

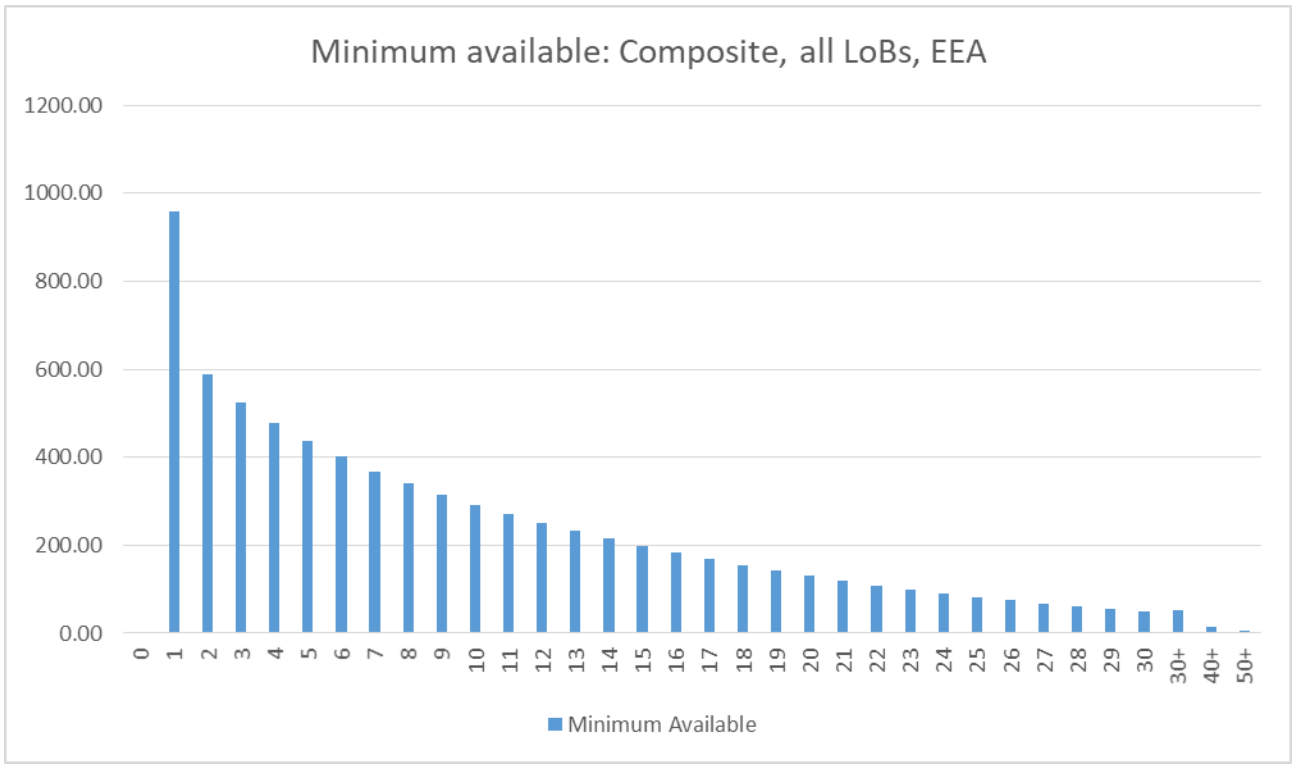

Minimum available: Non-Life, all LoBs, EEA
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

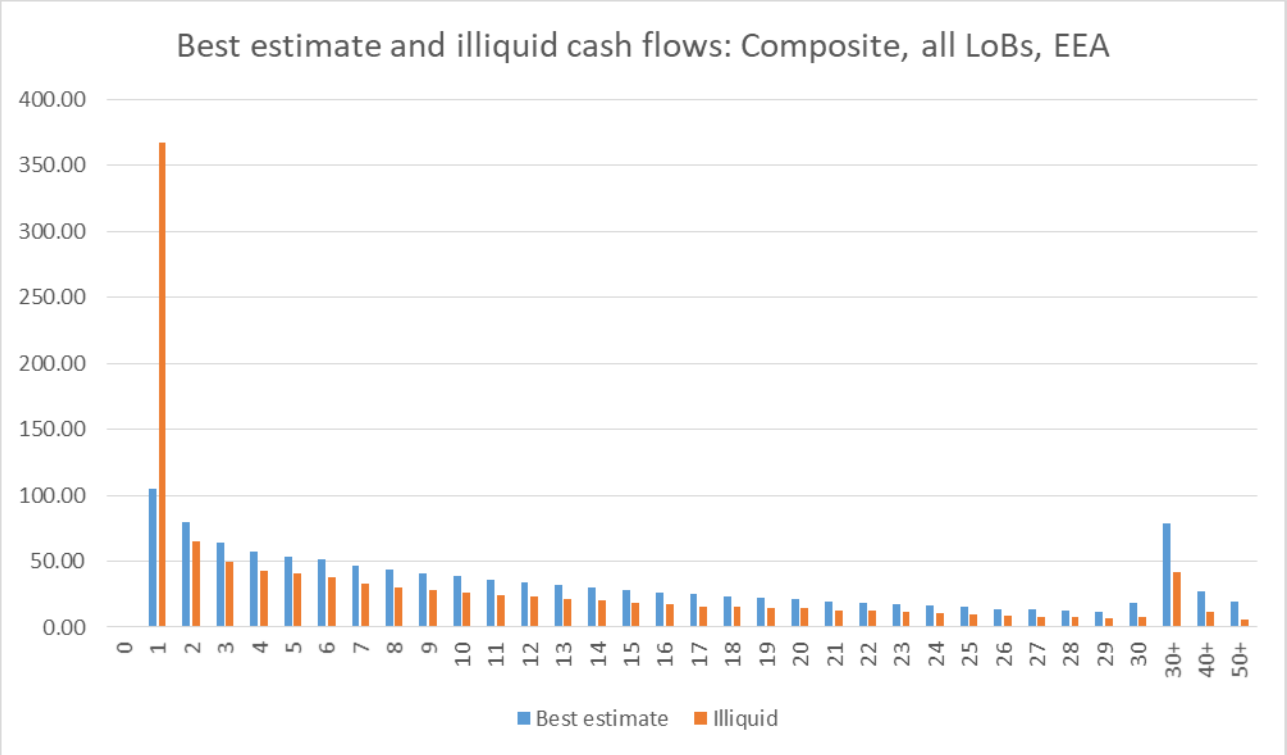


Composite/pursuing both life and non-life business



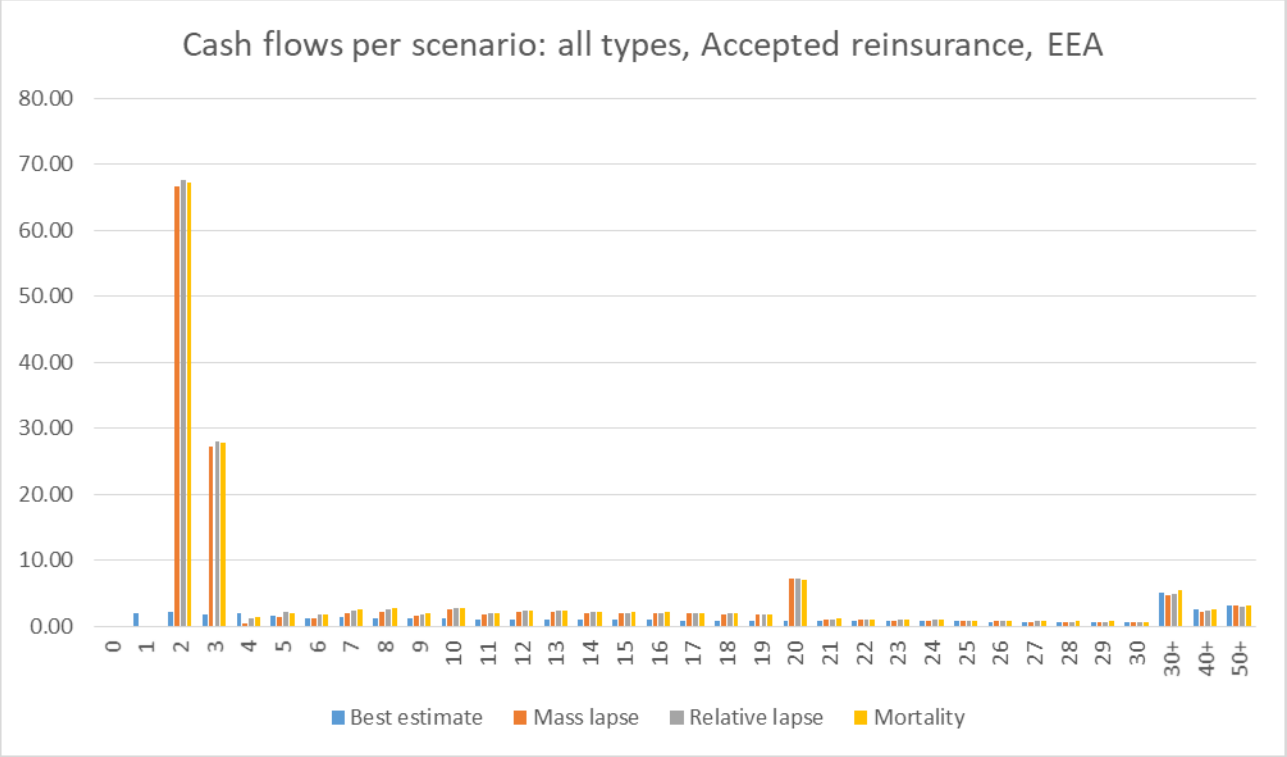

Available per scenario: Composite, all LoBs, EEA
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

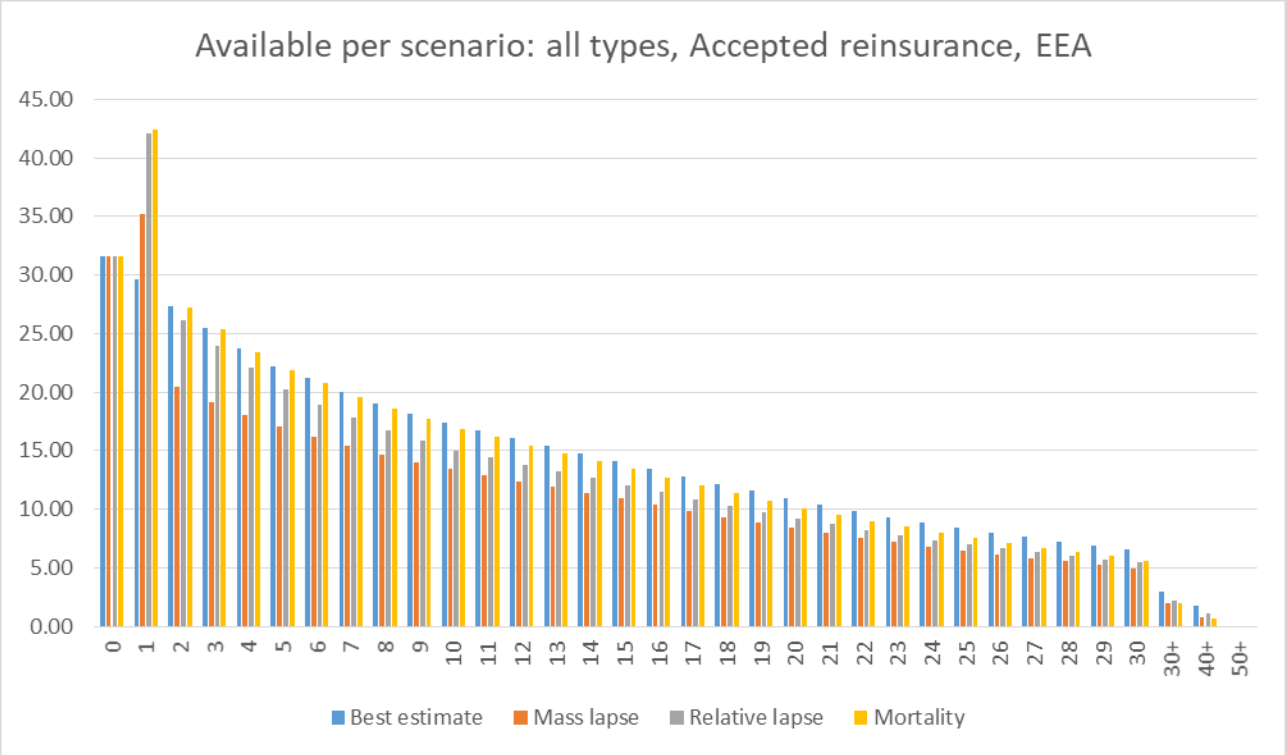

Minimum available: Composite, all LoBs, EEA
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

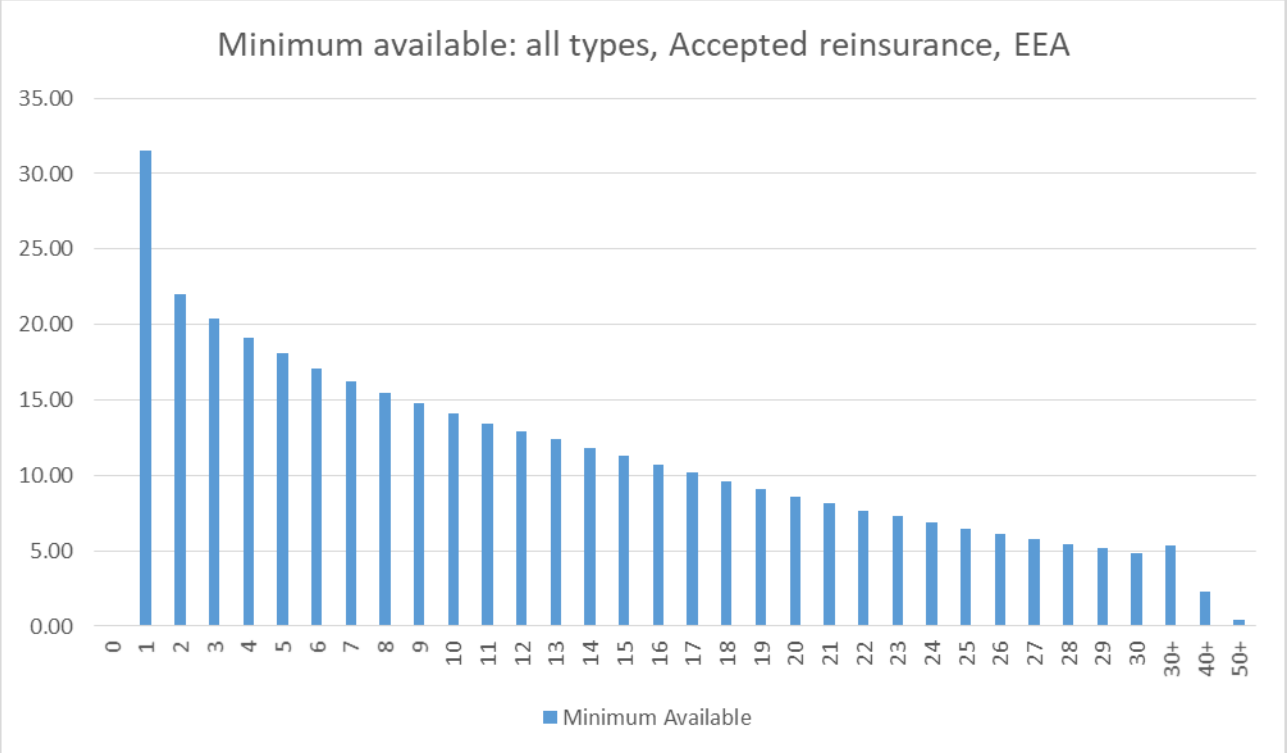


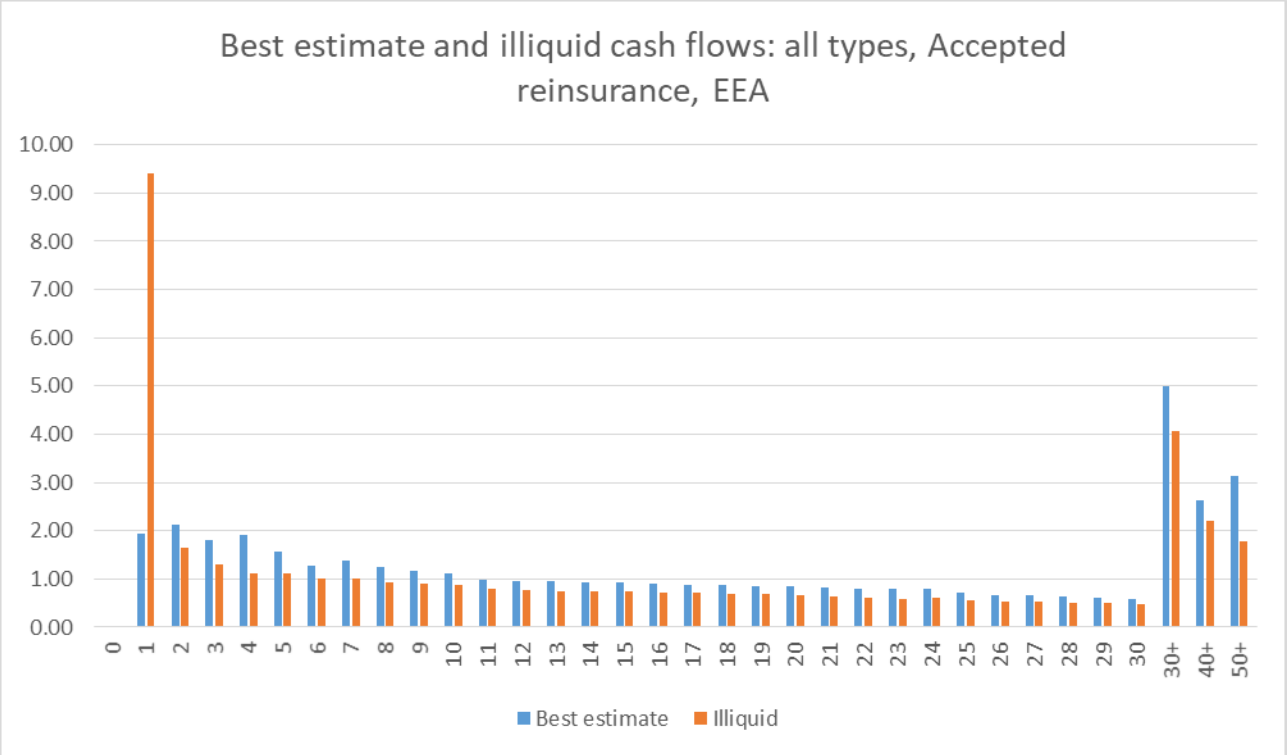
Per line of business

Accepted reinsurance

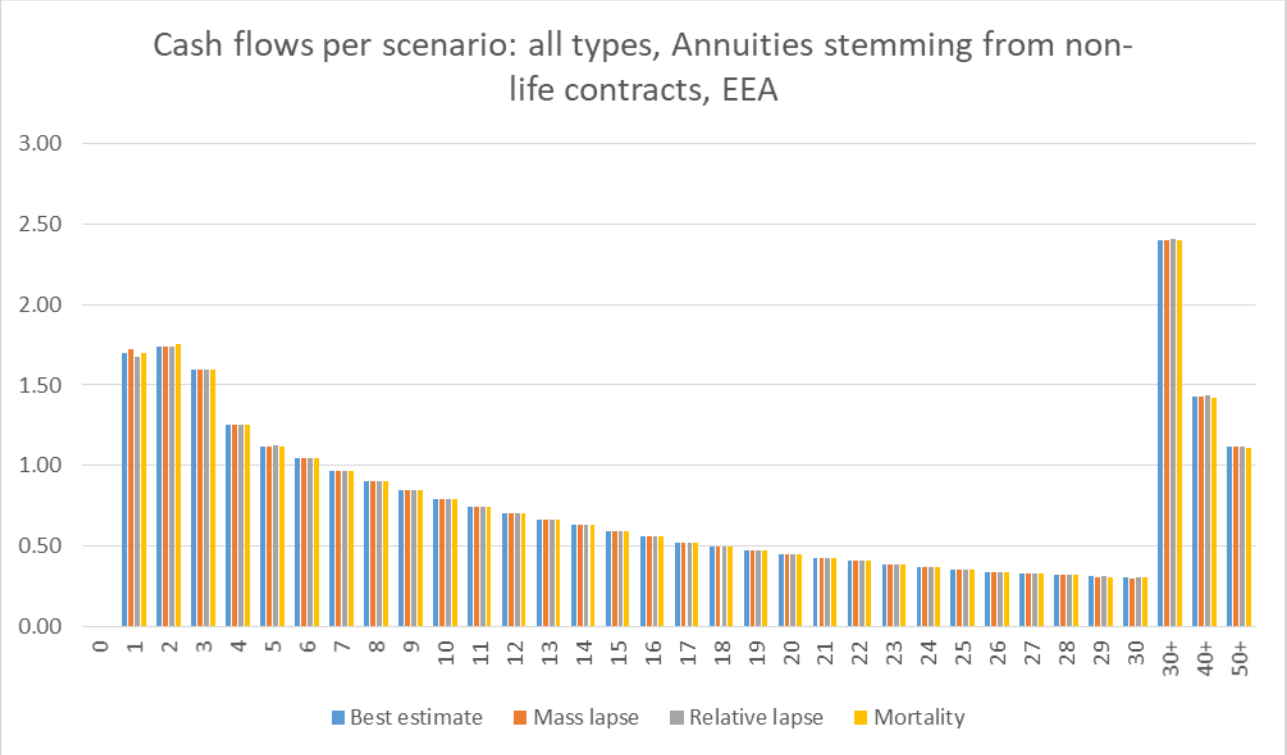


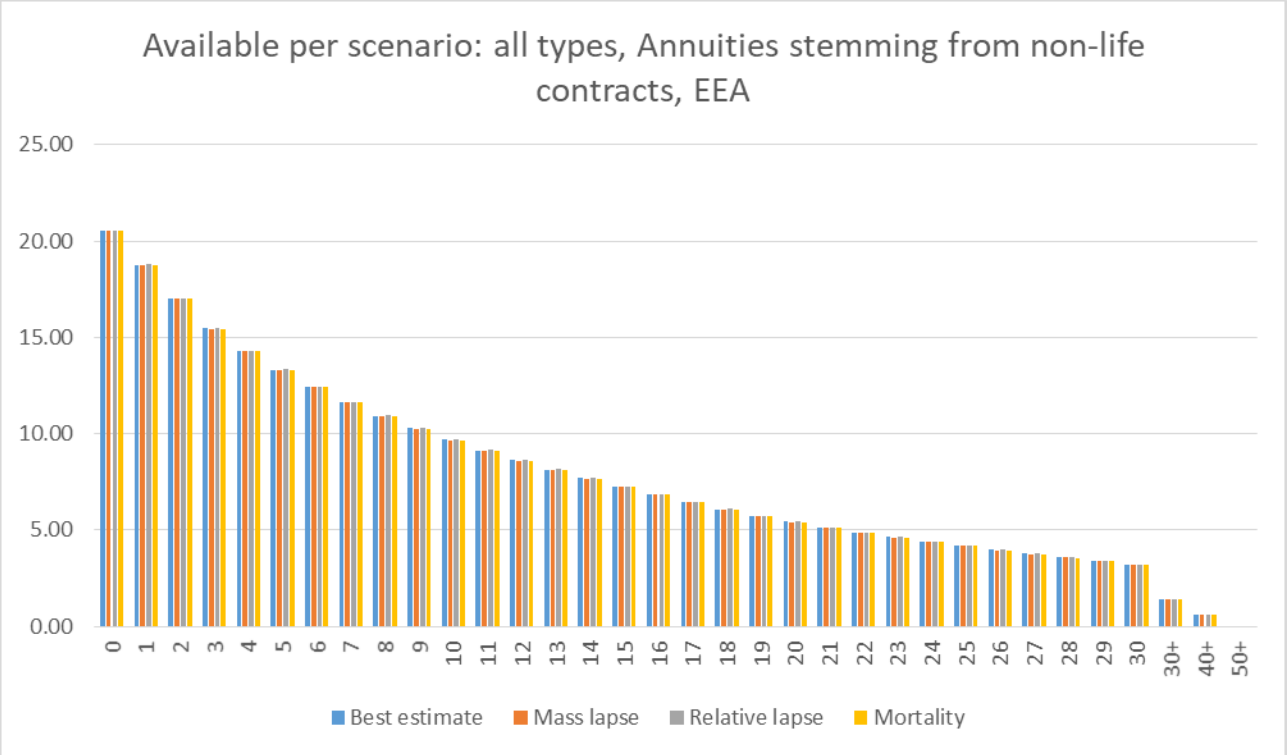

Available per scenario: all types, Accepted reinsurance, EEA
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

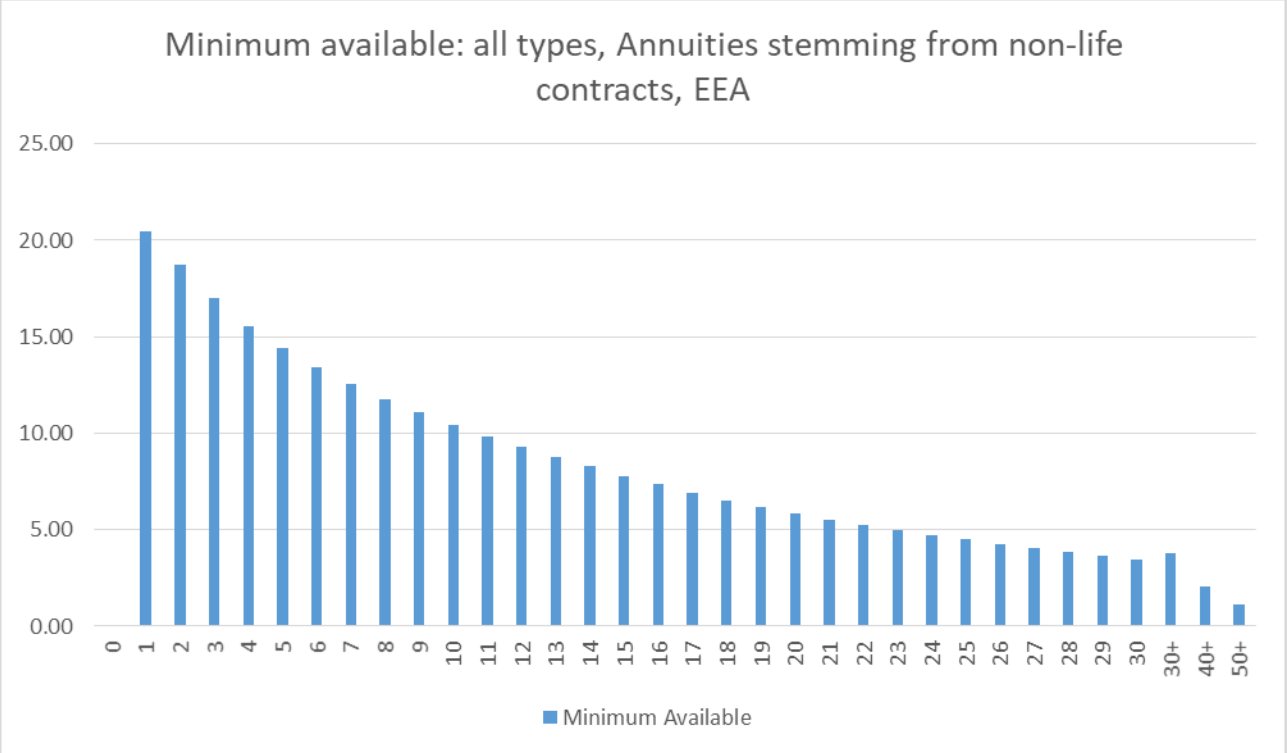

Minimum available: all types, Accepted reinsurance, EEA
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

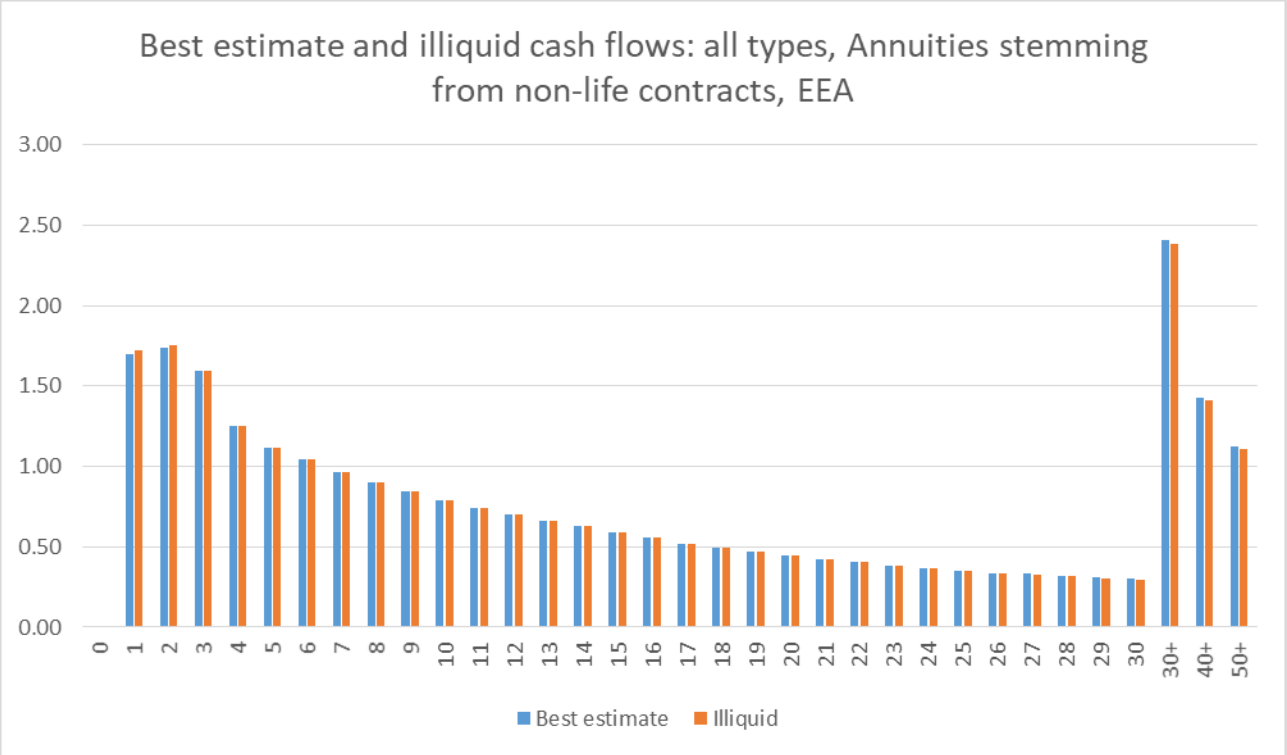


Annuities stemming from non-life contracts

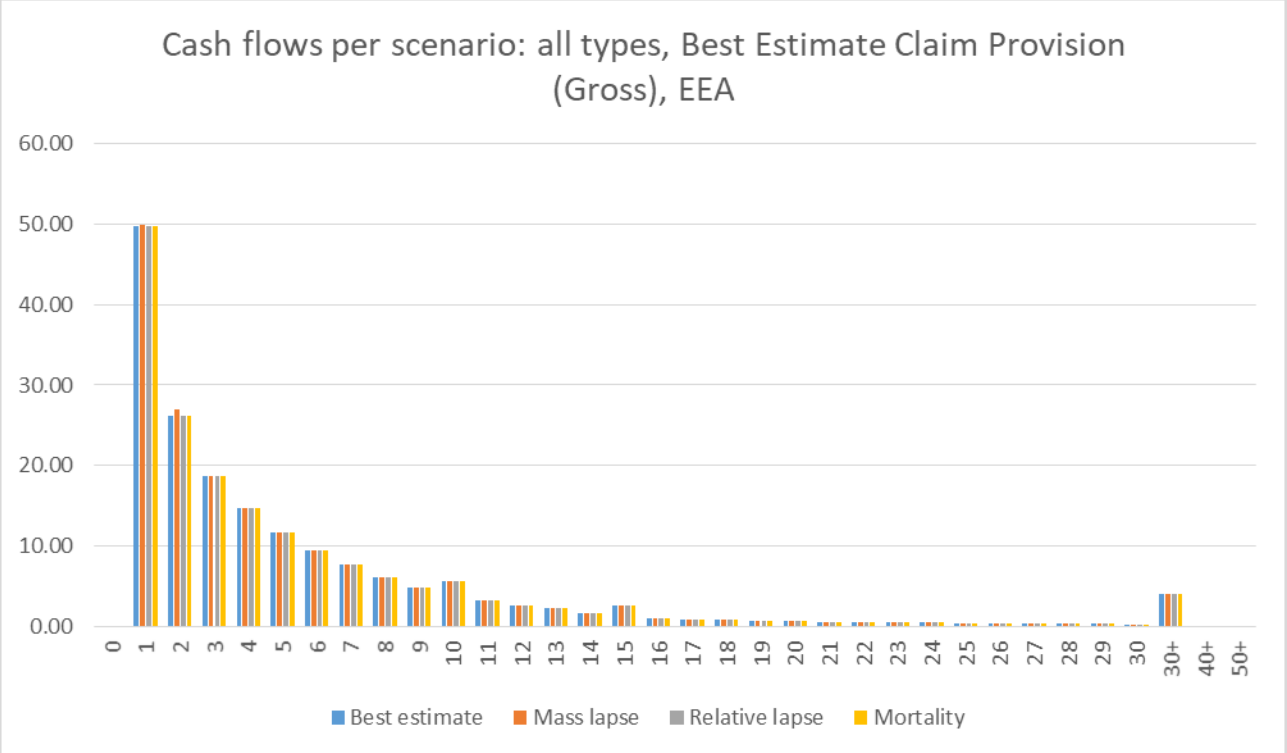


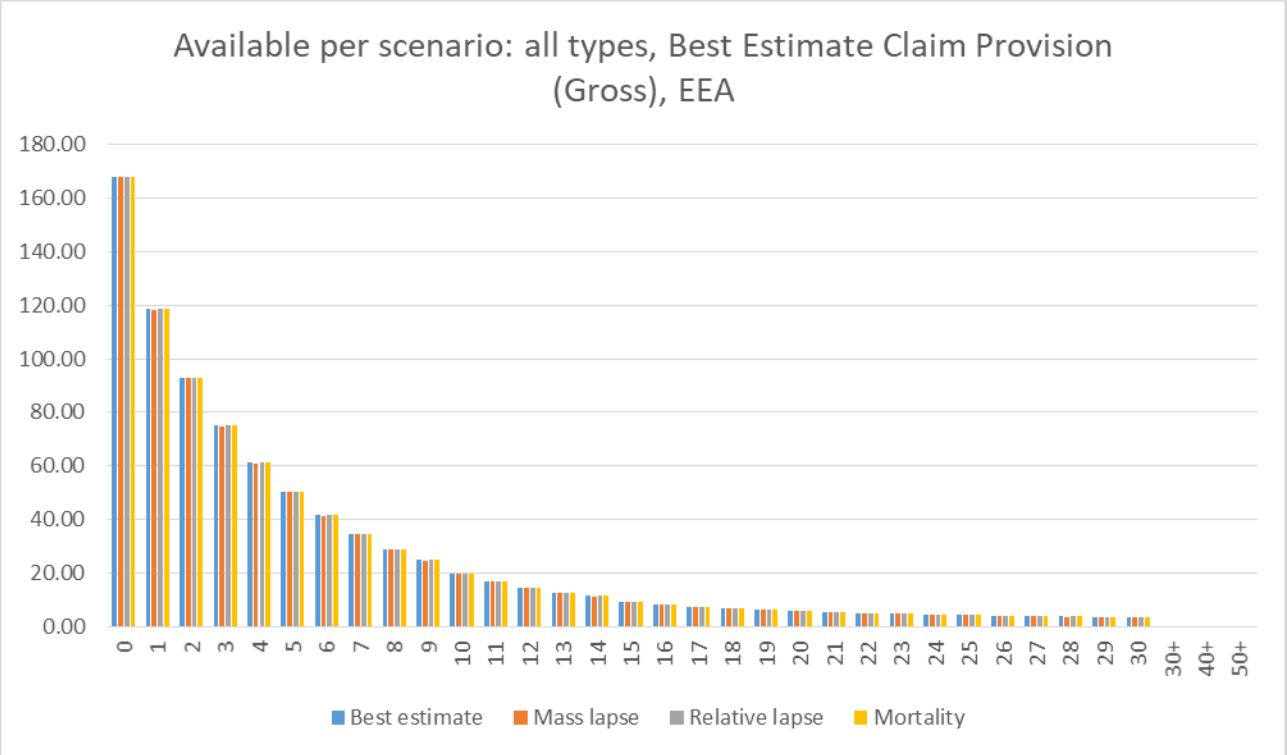

Available per scenario: all types, Annuities stemming from non-life contracts, EEA
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

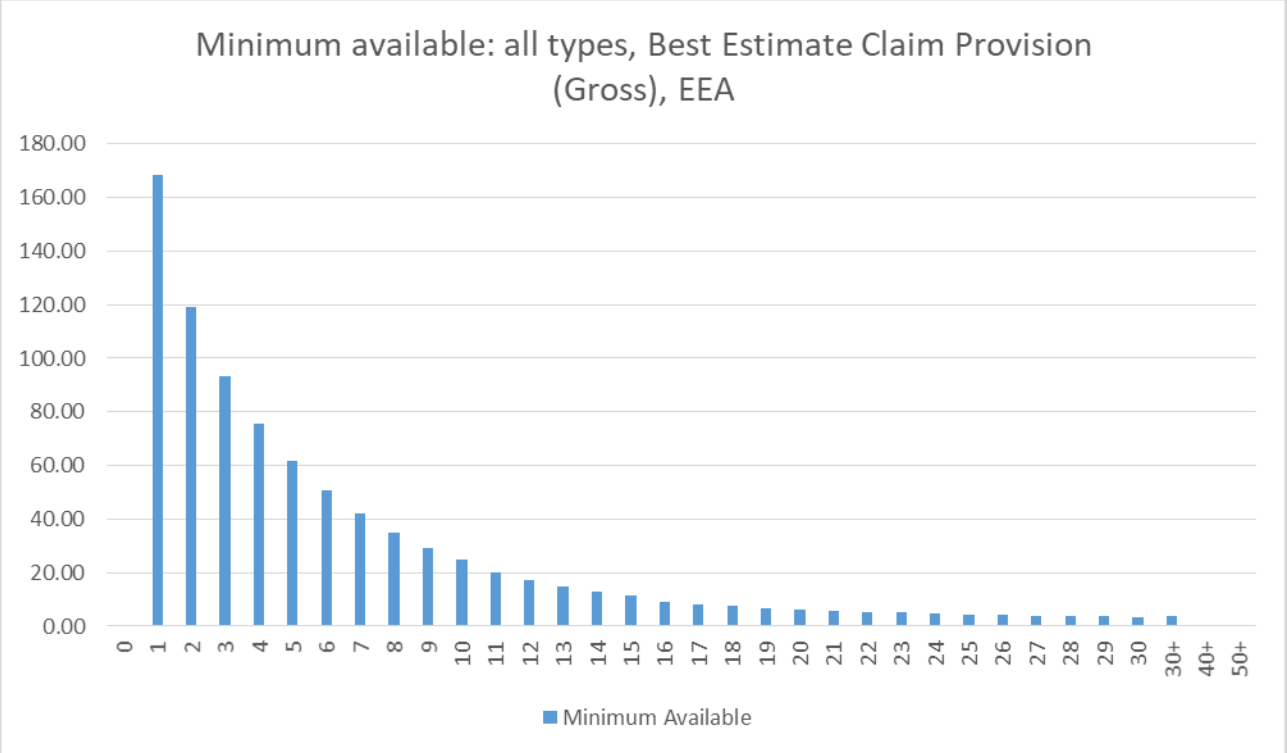

Minimum available: all types, Annuities stemming from non-life contracts, EEA
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

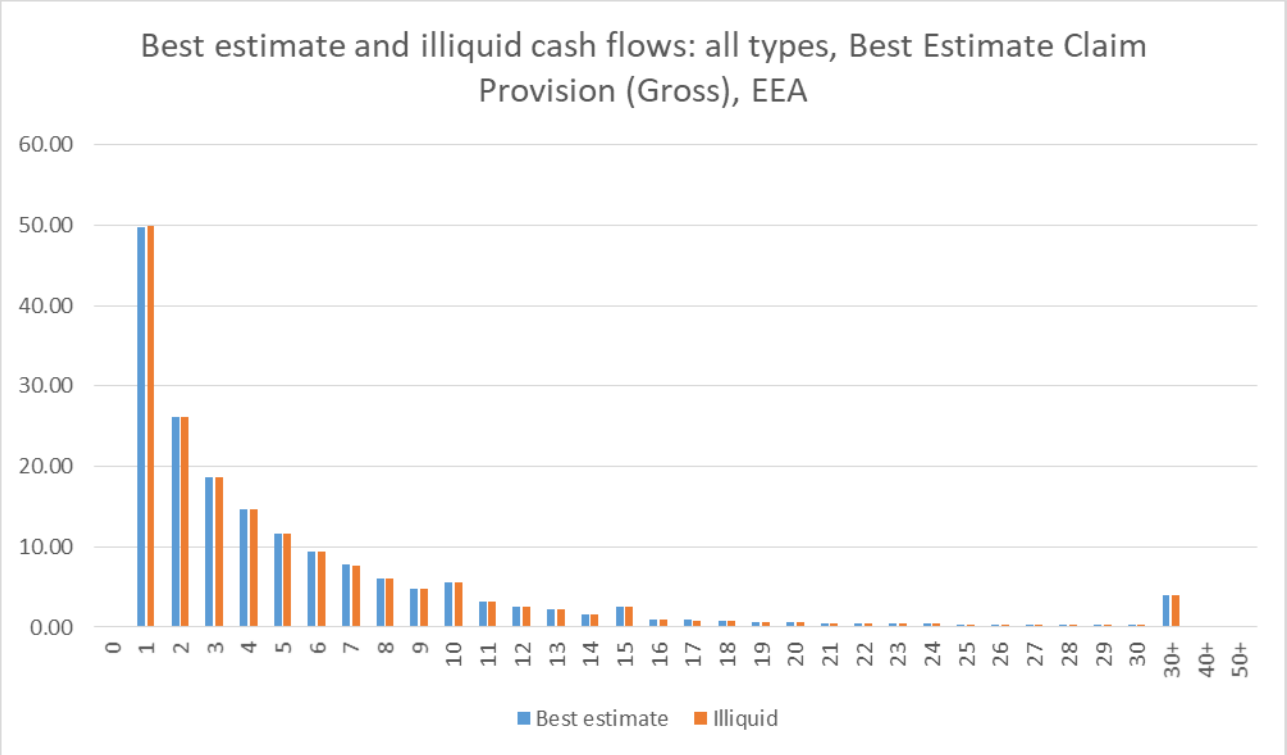


Best-estimate claim provision

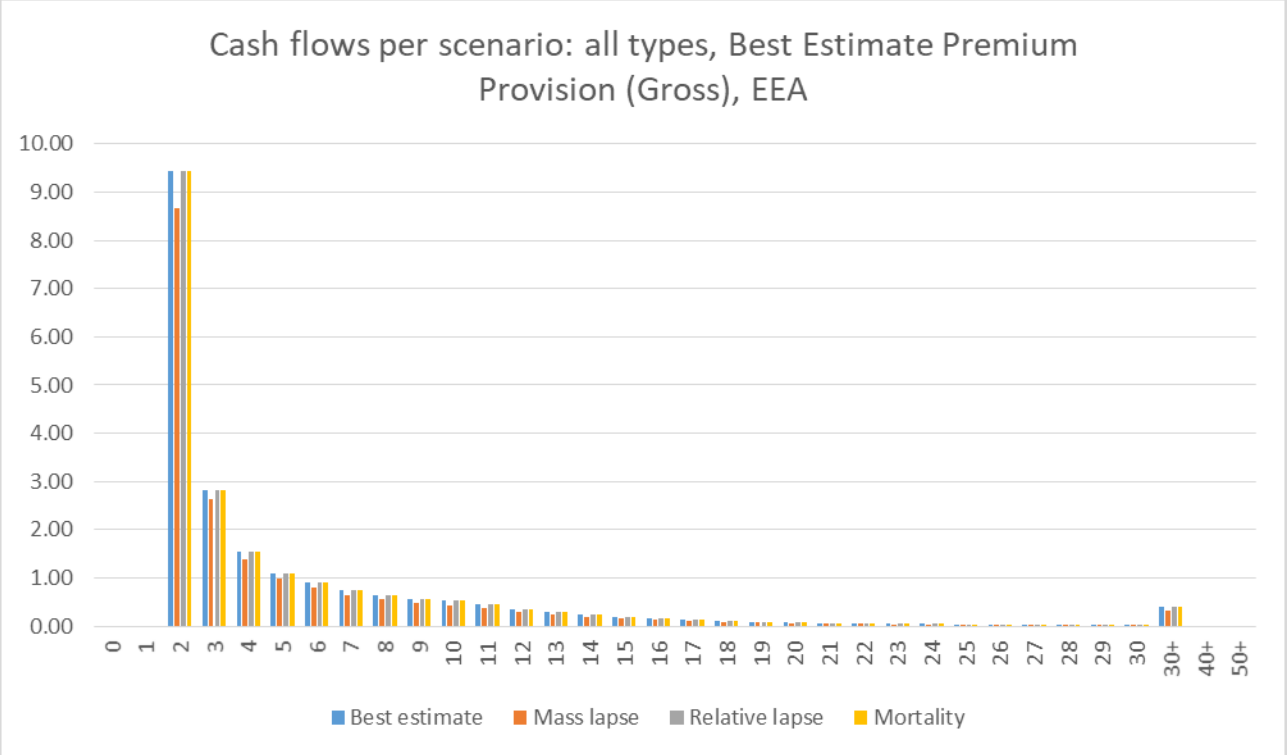


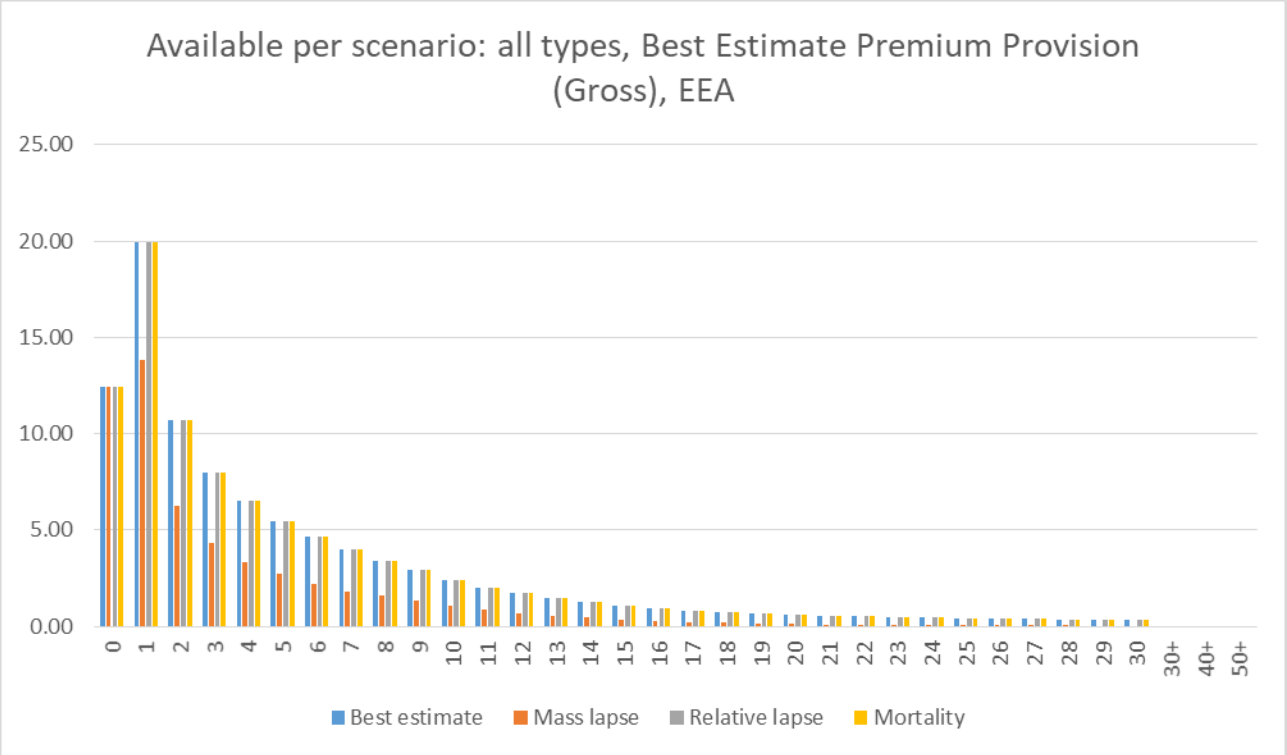

Available per scenario: all types, Best Estimate Claim Provision (Gross), EEA
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

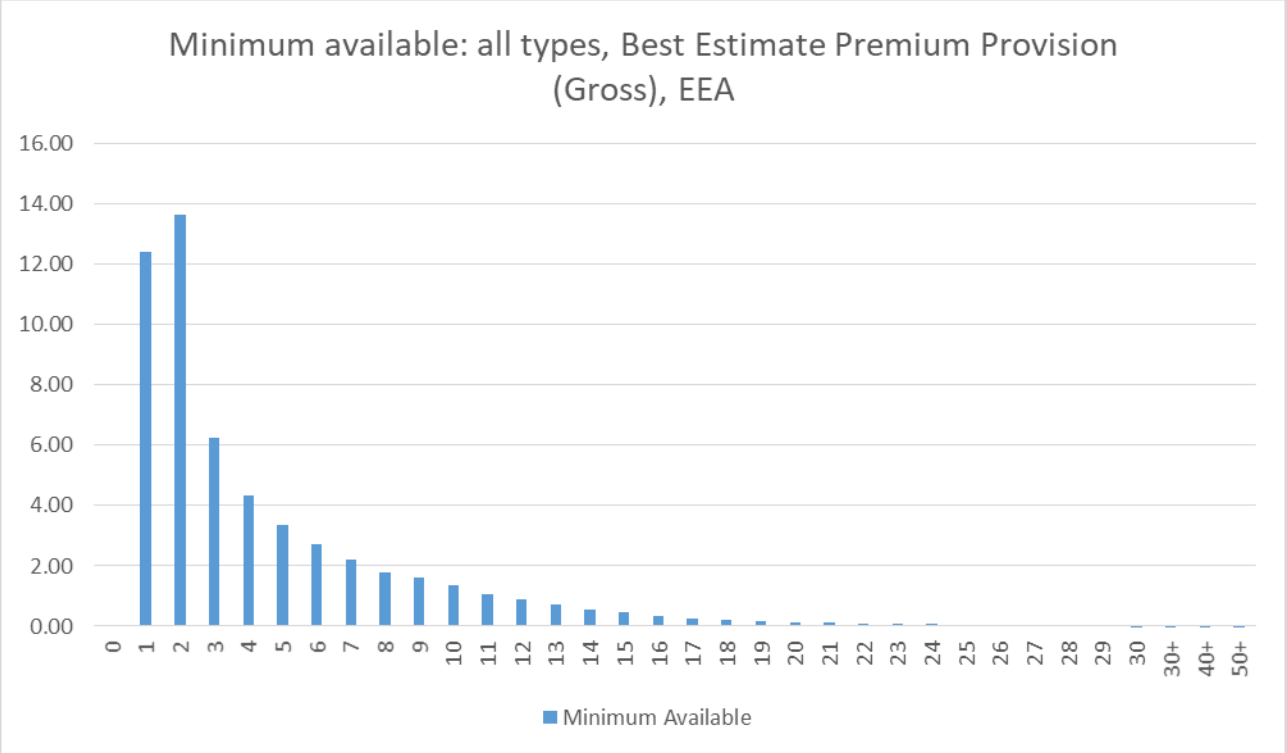

Minimum available: all types, Best Estimate Claim Provision (Gross), EEA
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

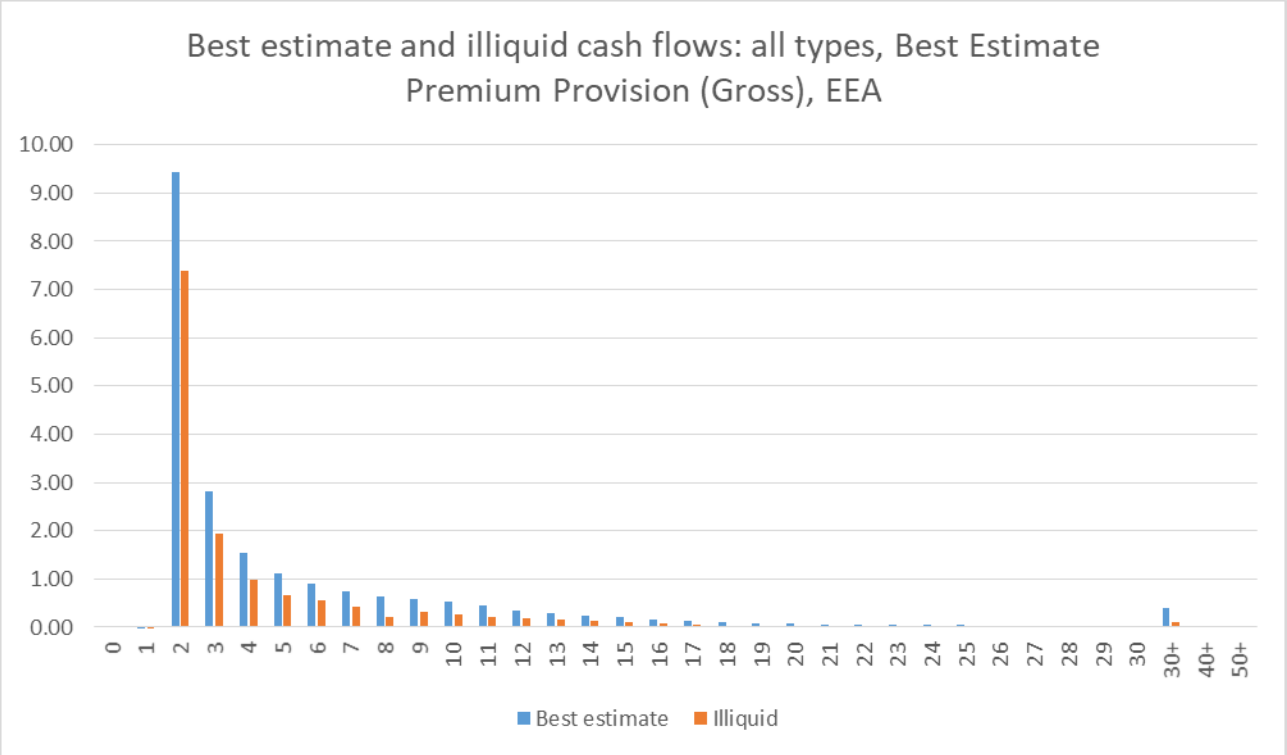


Best-estimate premium provision

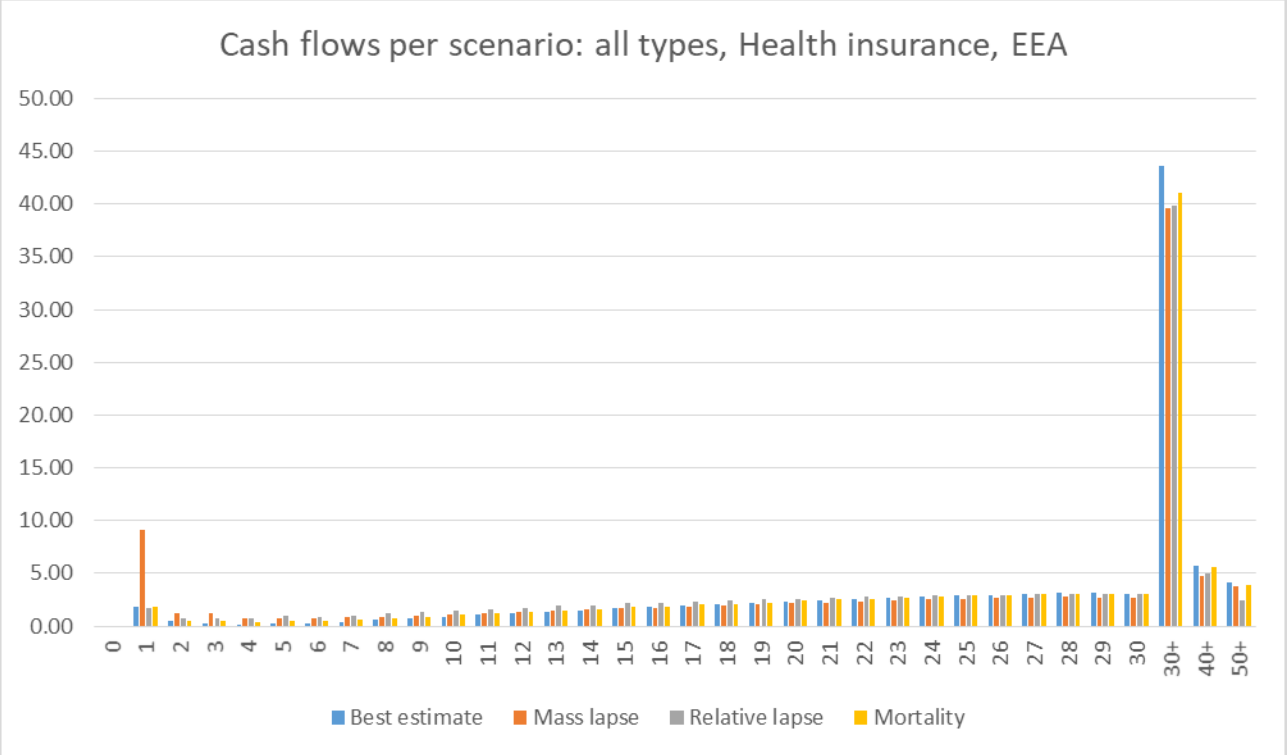


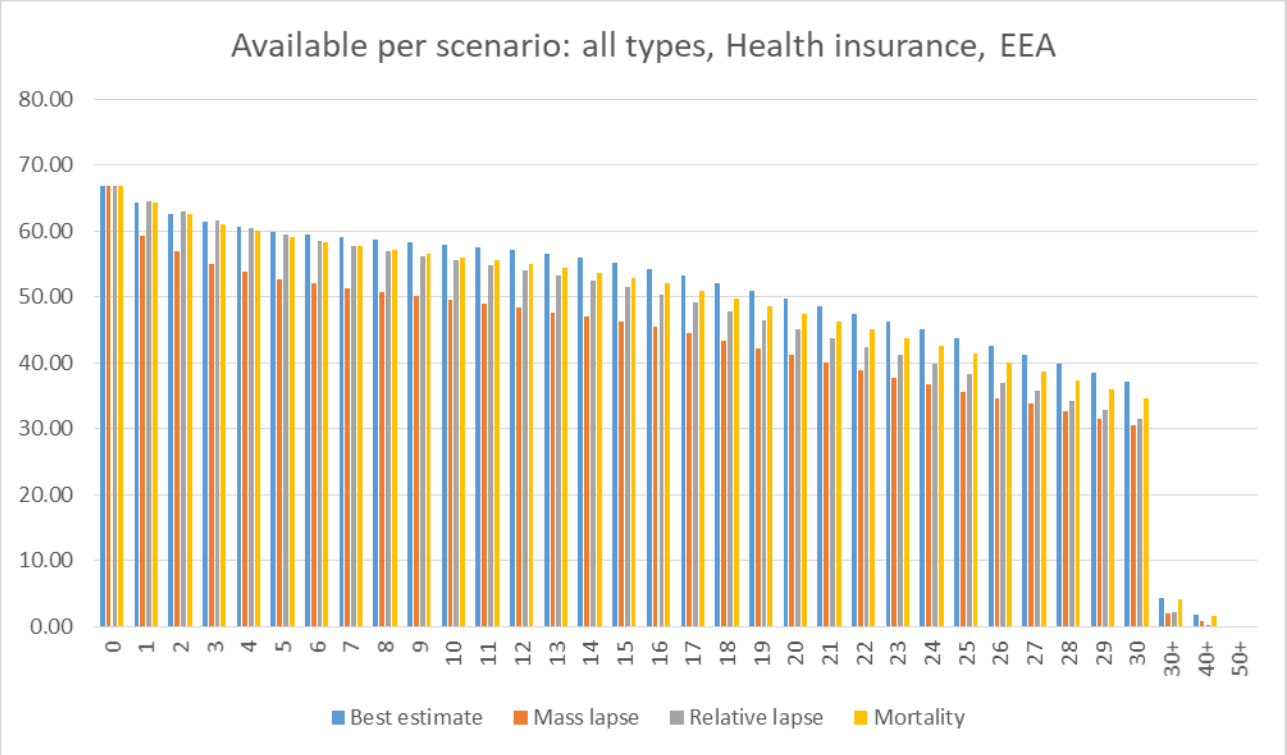

Available per scenario: all types, Best Estimate Premium Provision (Gross), EEA
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

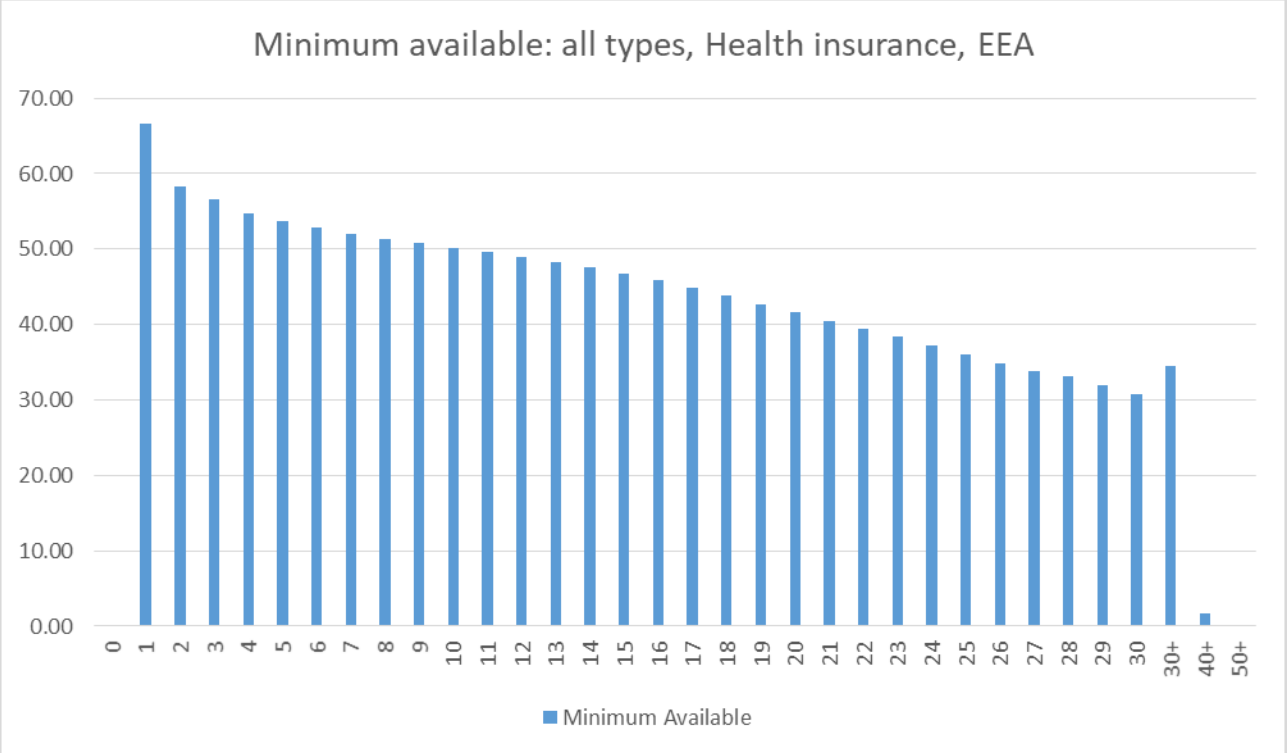

Minimum available: all types, Best Estimate Premium Provision (Gross), EEA
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

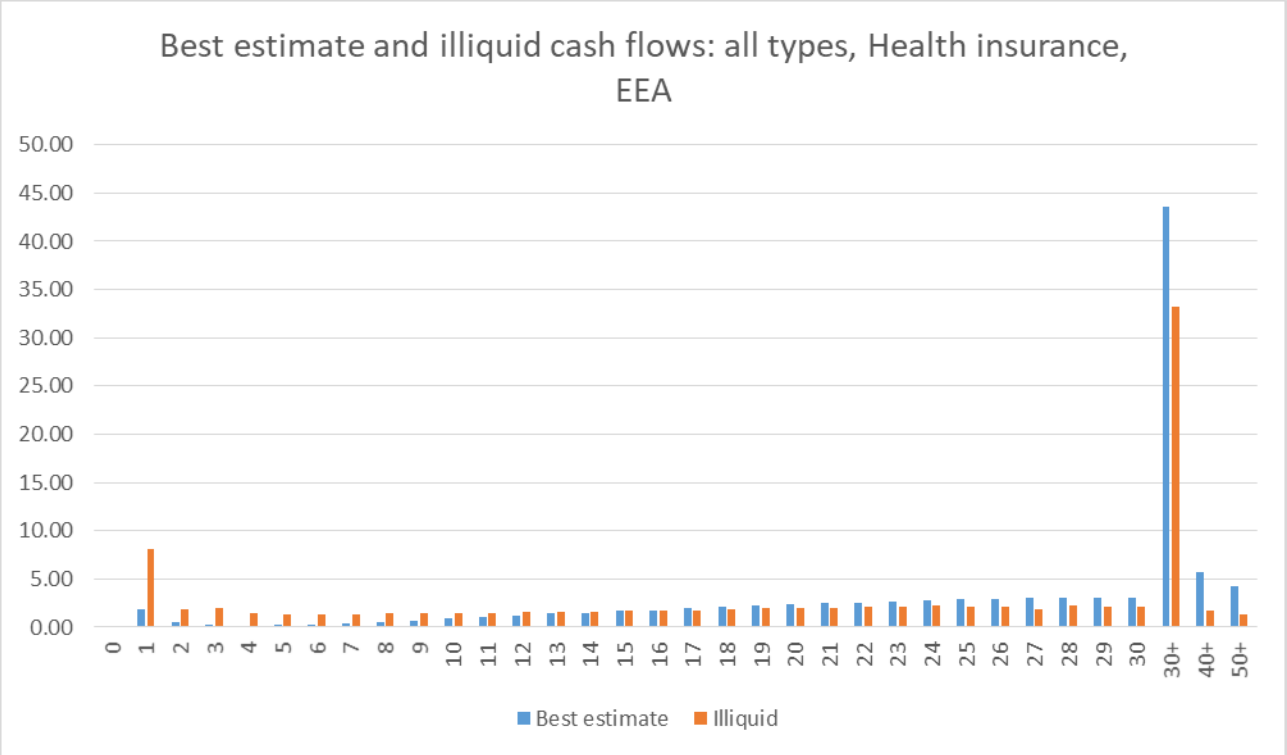


Health insurance

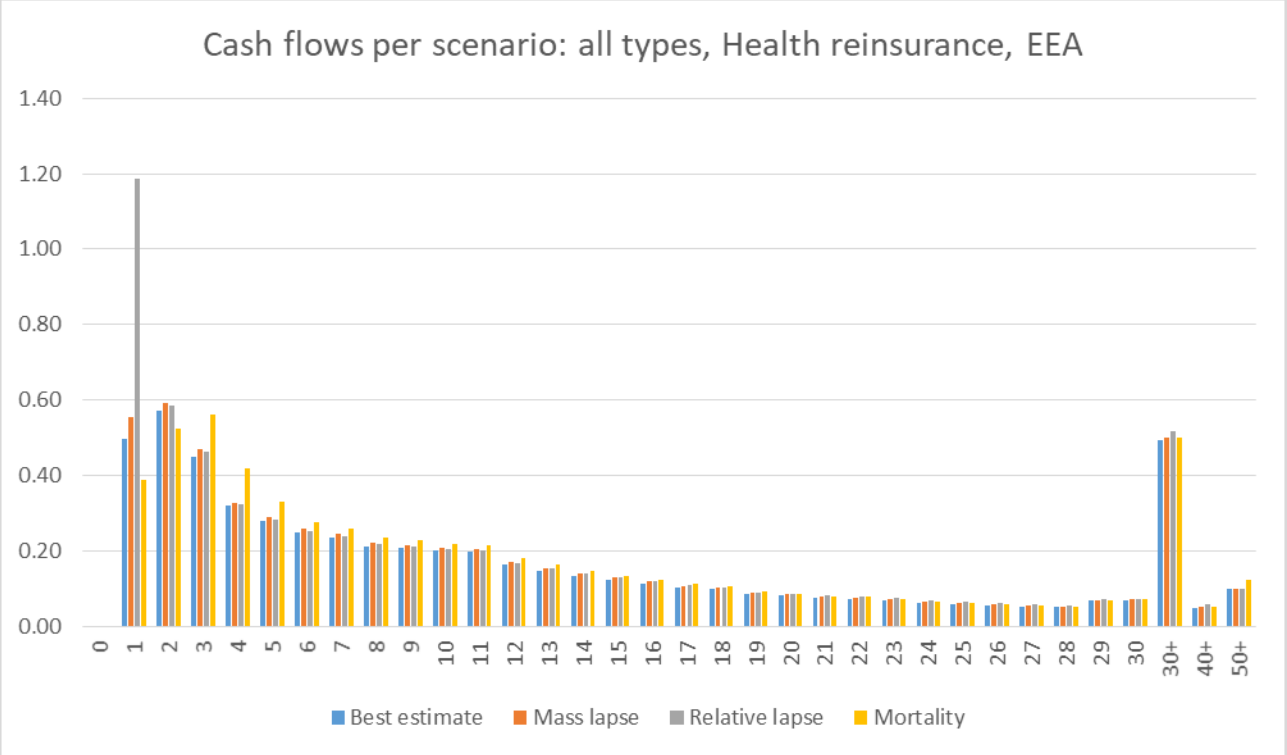


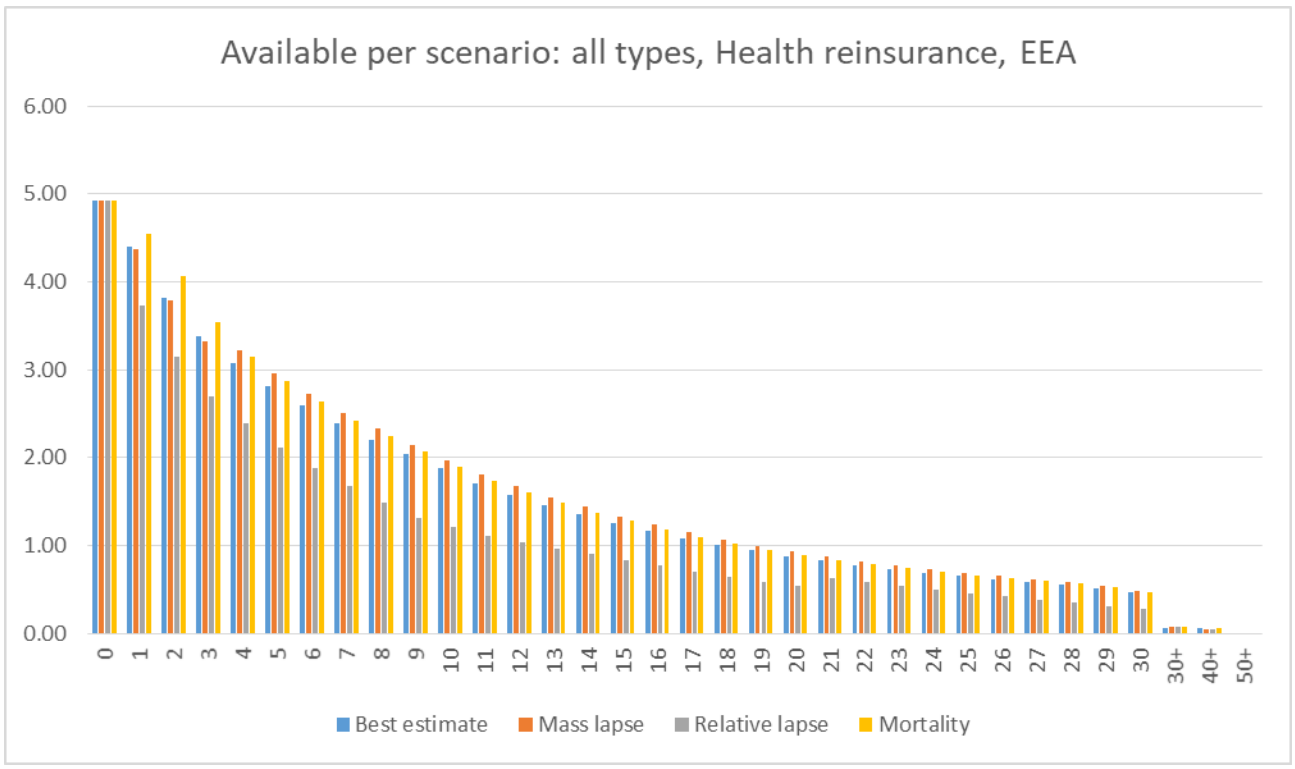

Available per scenario: all types, Health insurance, EEA
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

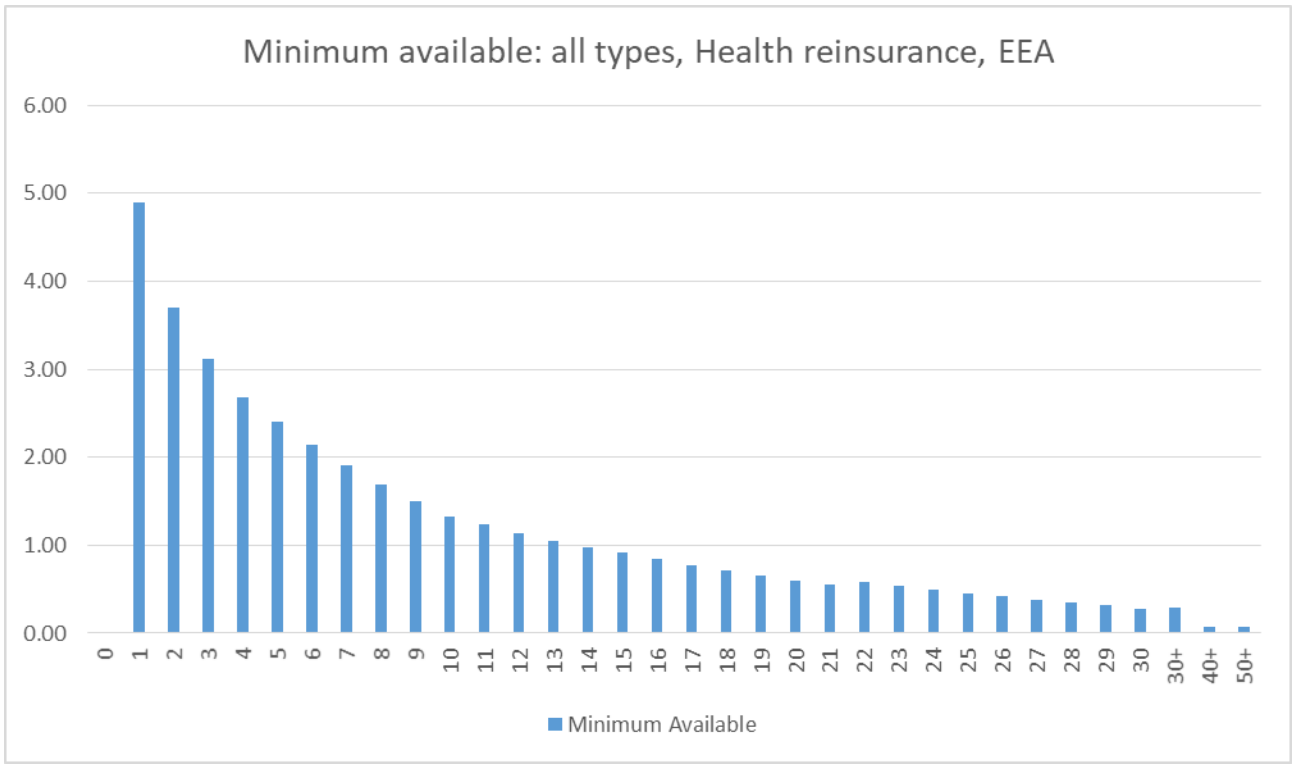

Minimum available: all types, Health insurance, EEA
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

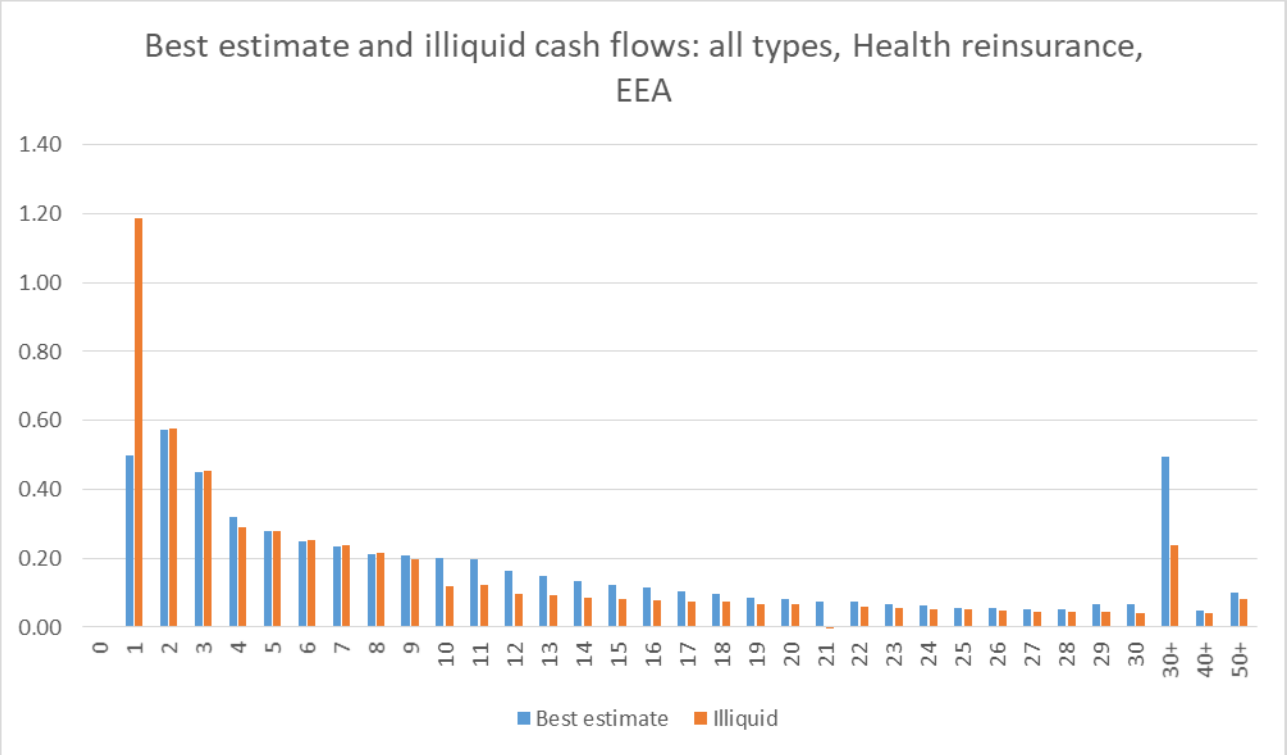


Health reinsurance

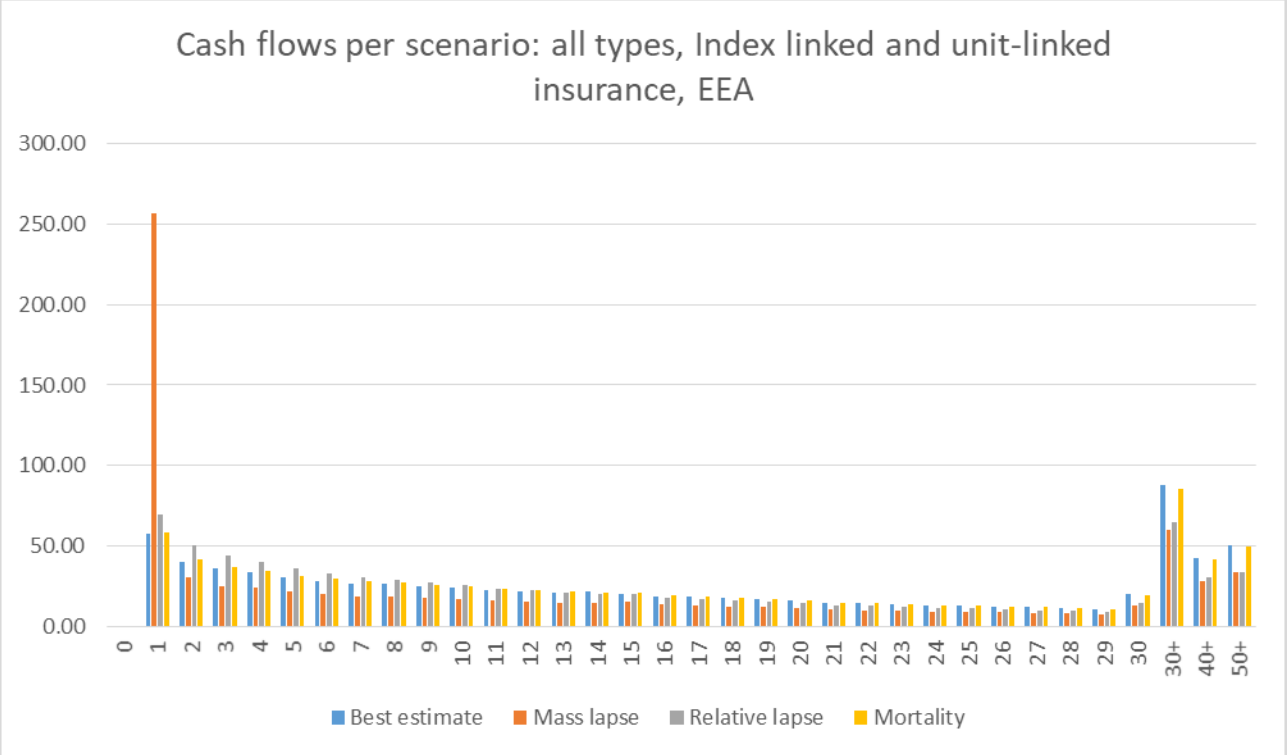


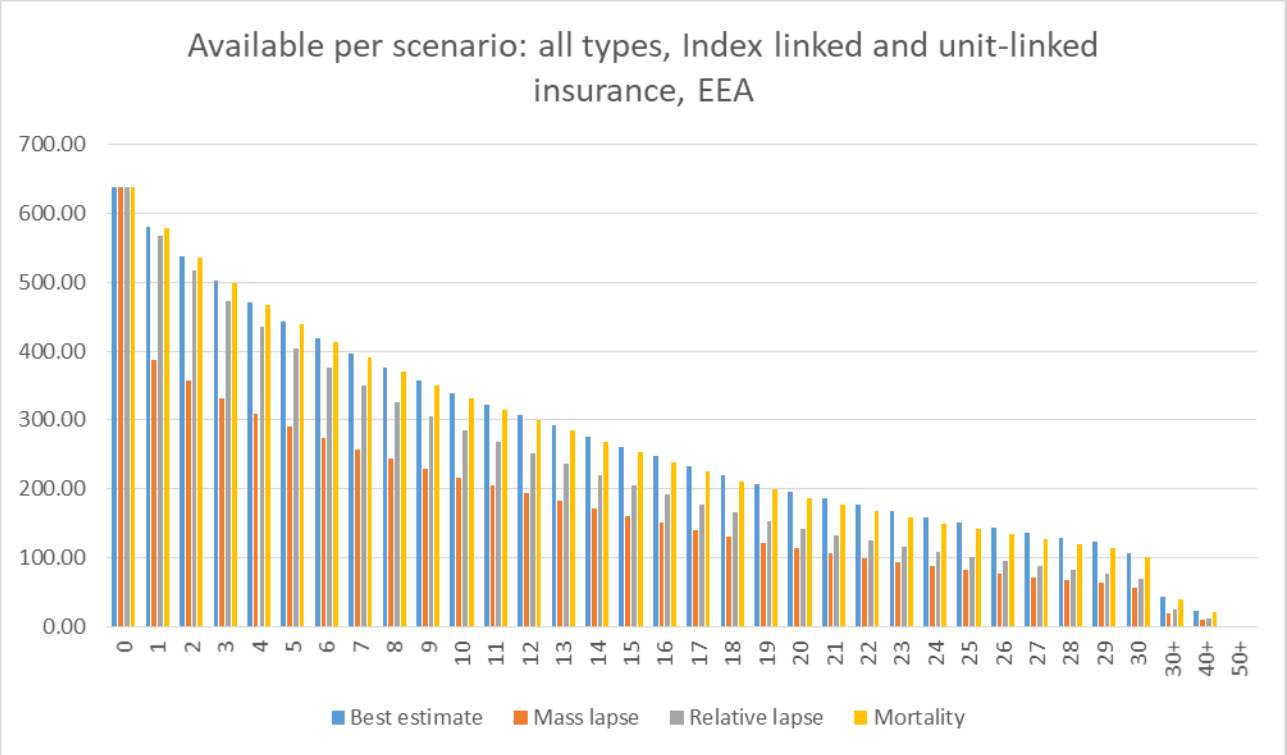

Available per scenario: all types, Health reinsurance, EEA
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

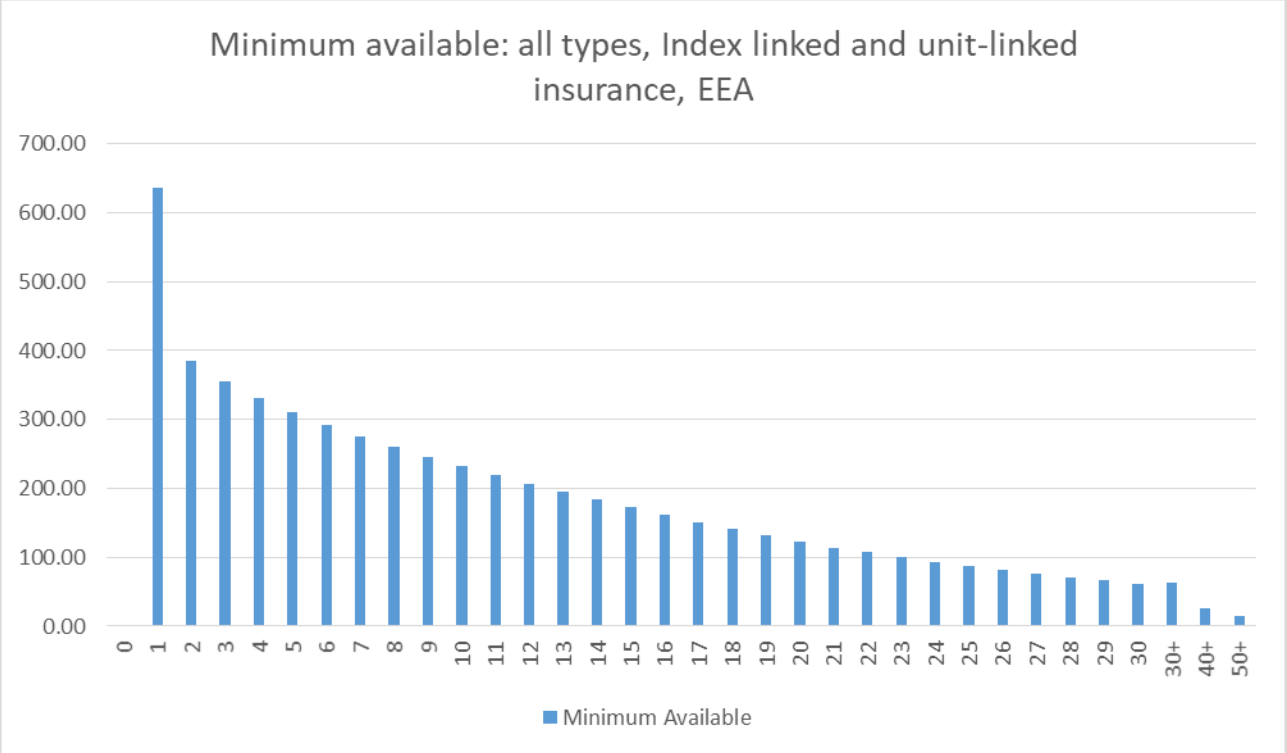

Minimum available: all types, Health reinsurance, EEA
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

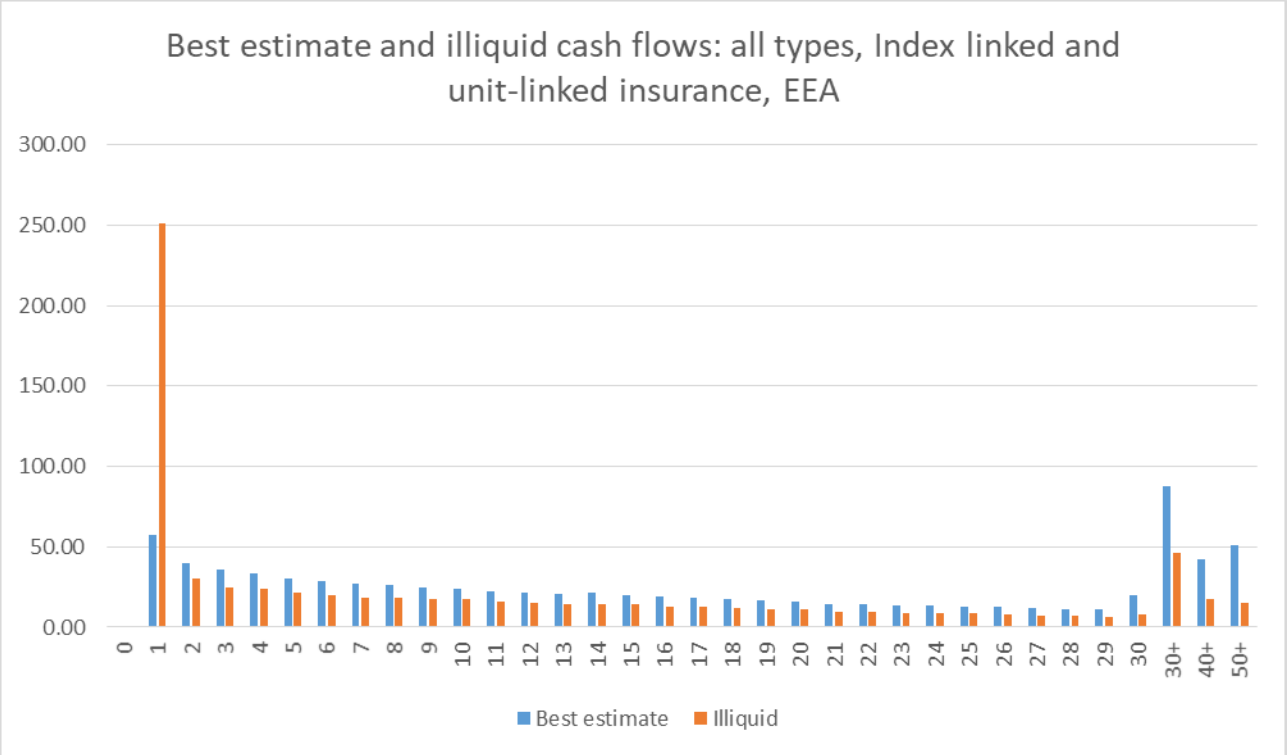


Index-linked and unit-linked insurance

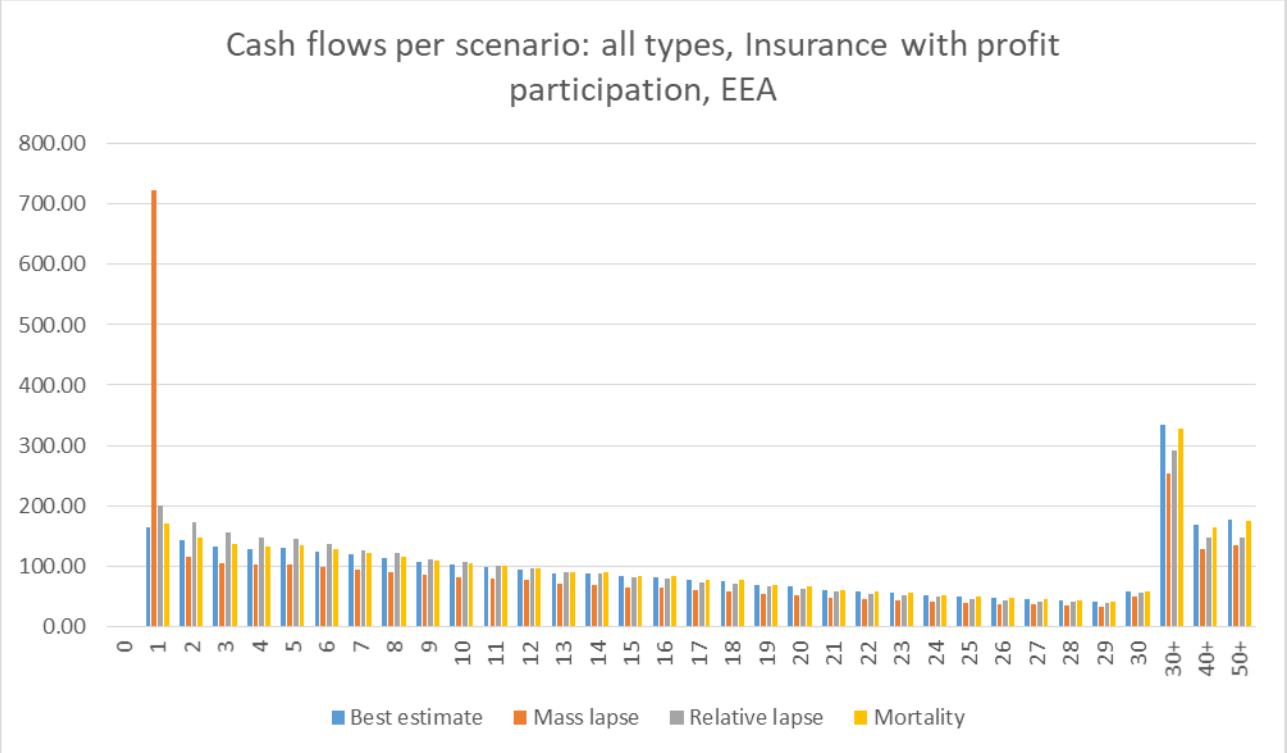


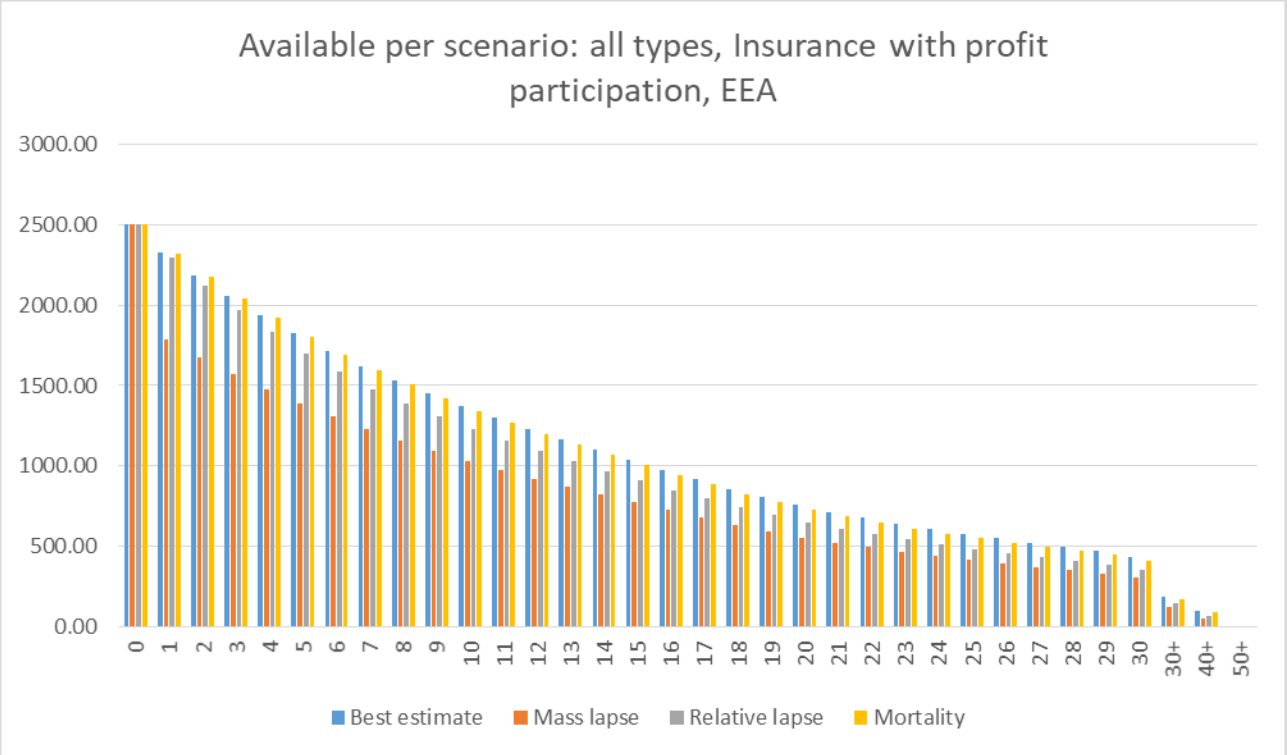

Available per scenario: all types, Index linked and unit-linked insurance, EEA
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

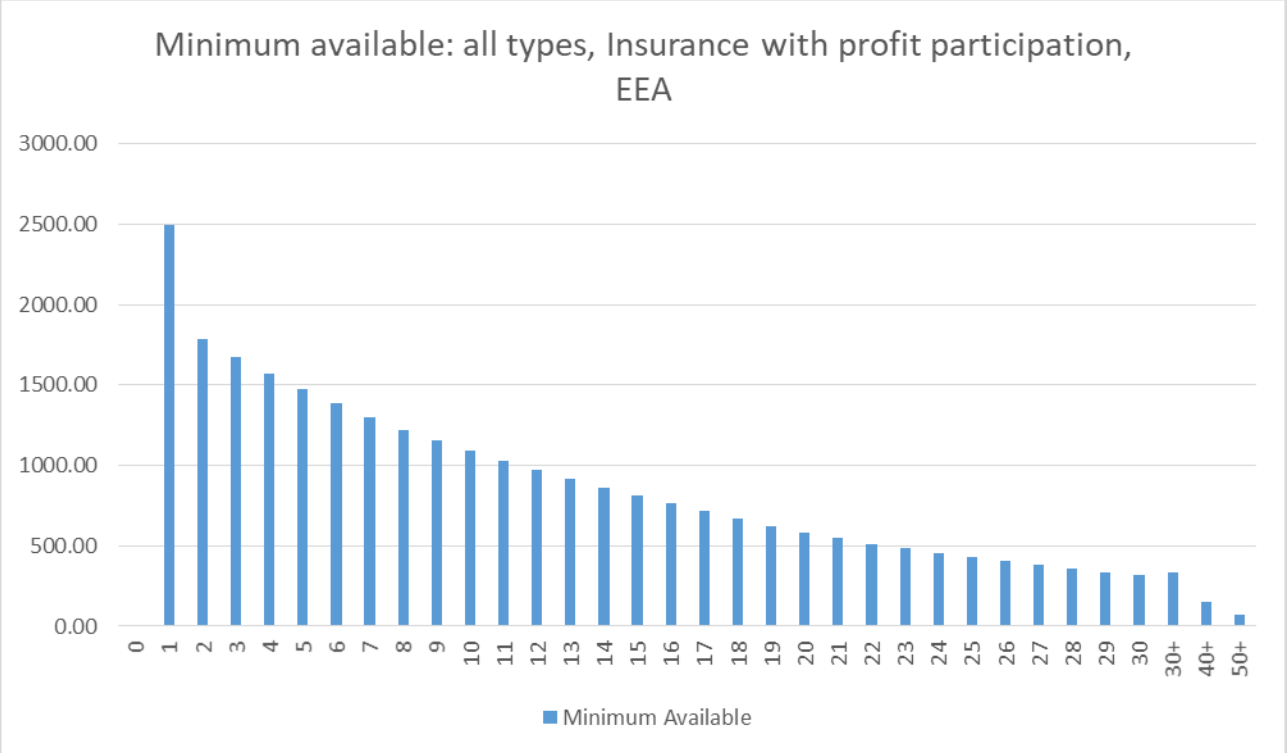

Minimum available: all types, Index linked and unit-linked insurance, EEA
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

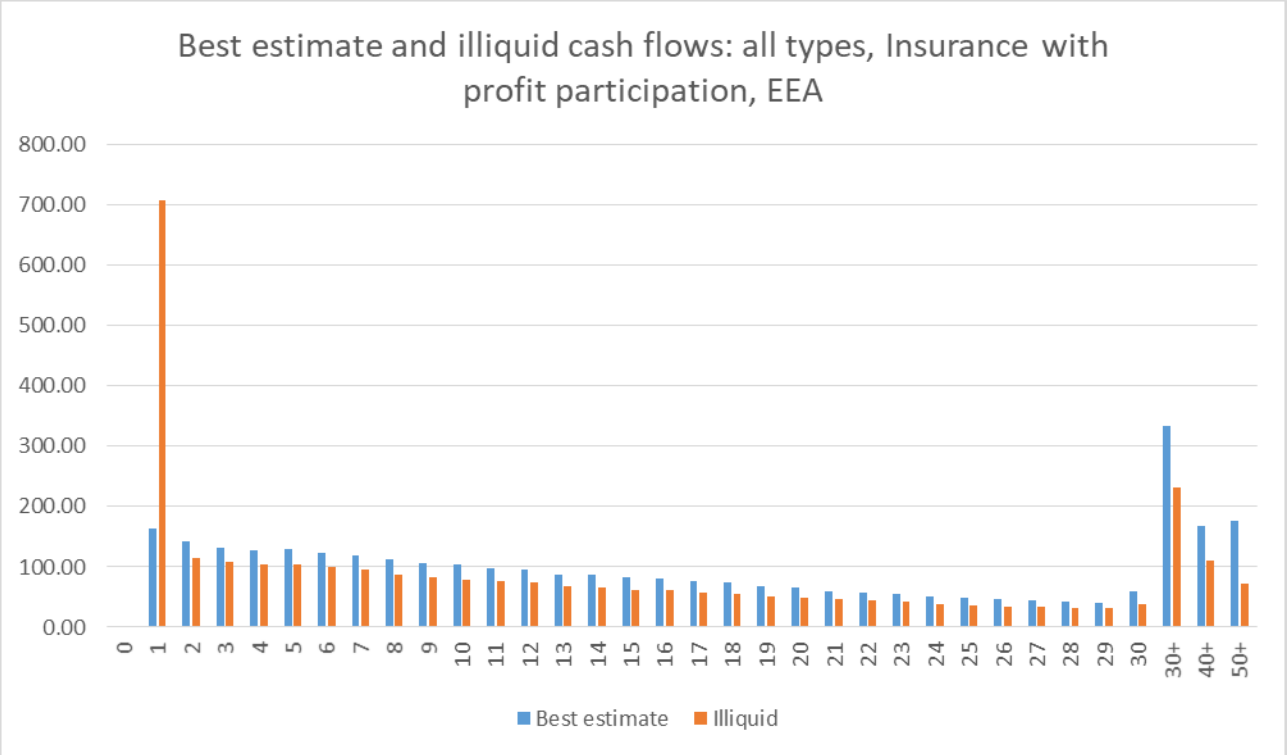


Insurance with profit participation

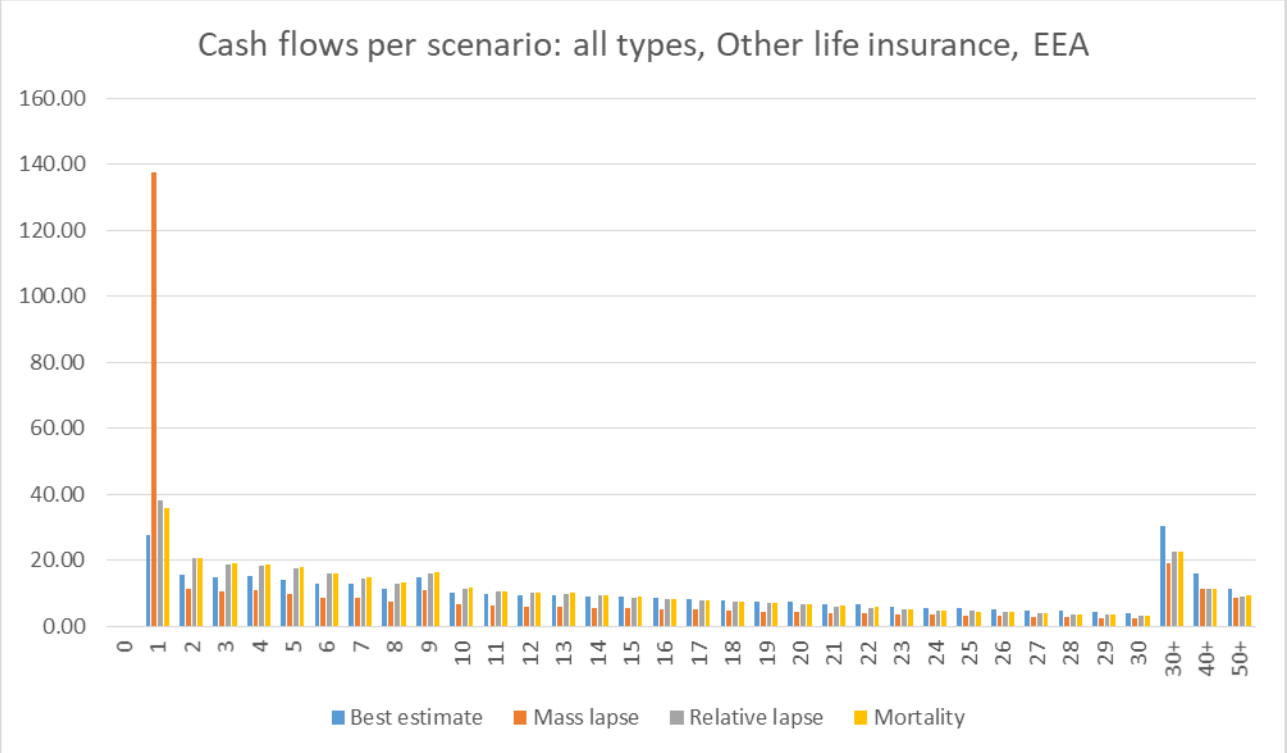


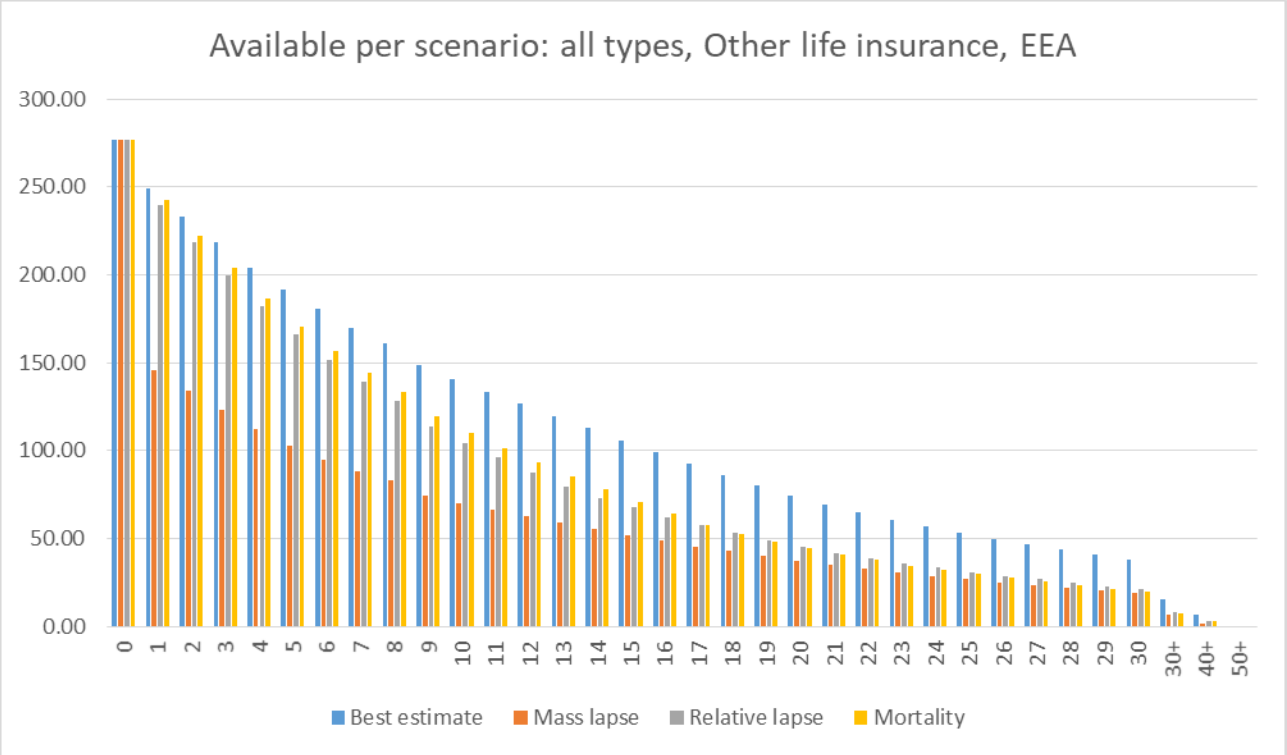

Available per scenario: all types, Insurance with profit participation, EEA
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

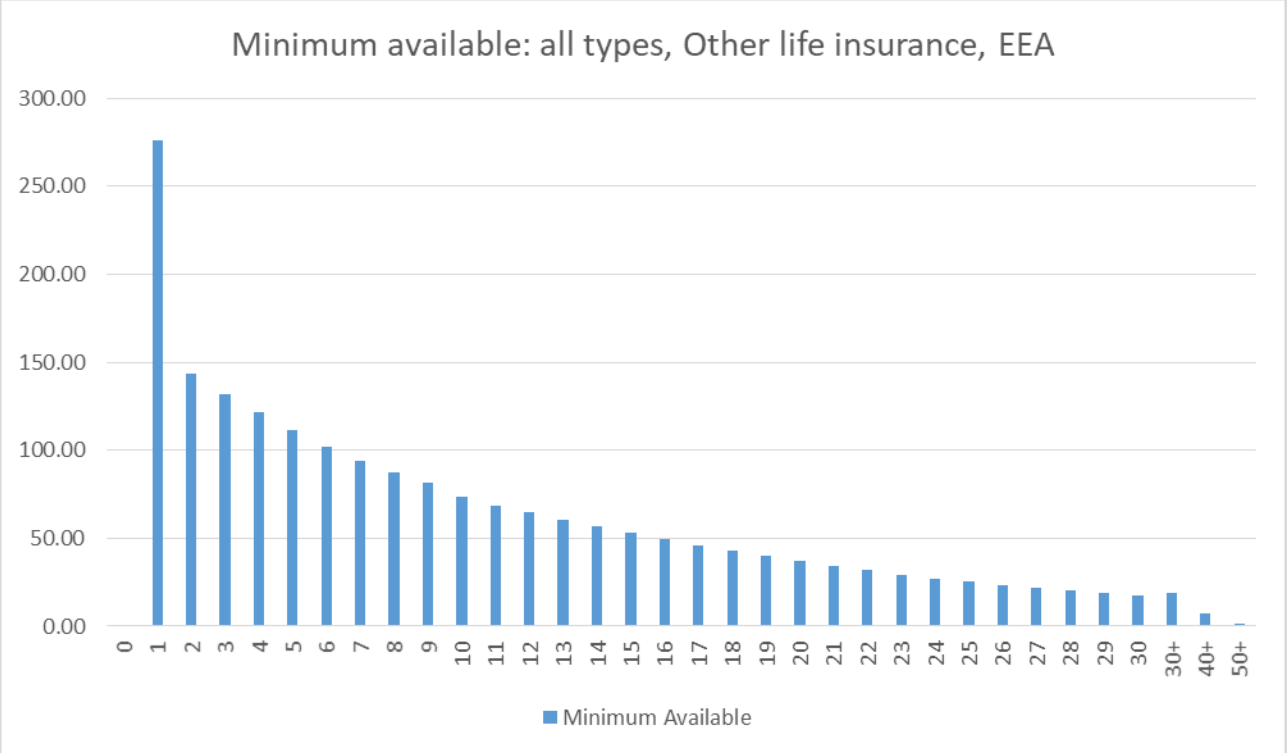

Minimum available: all types, Insurance with profit participation, EEA
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

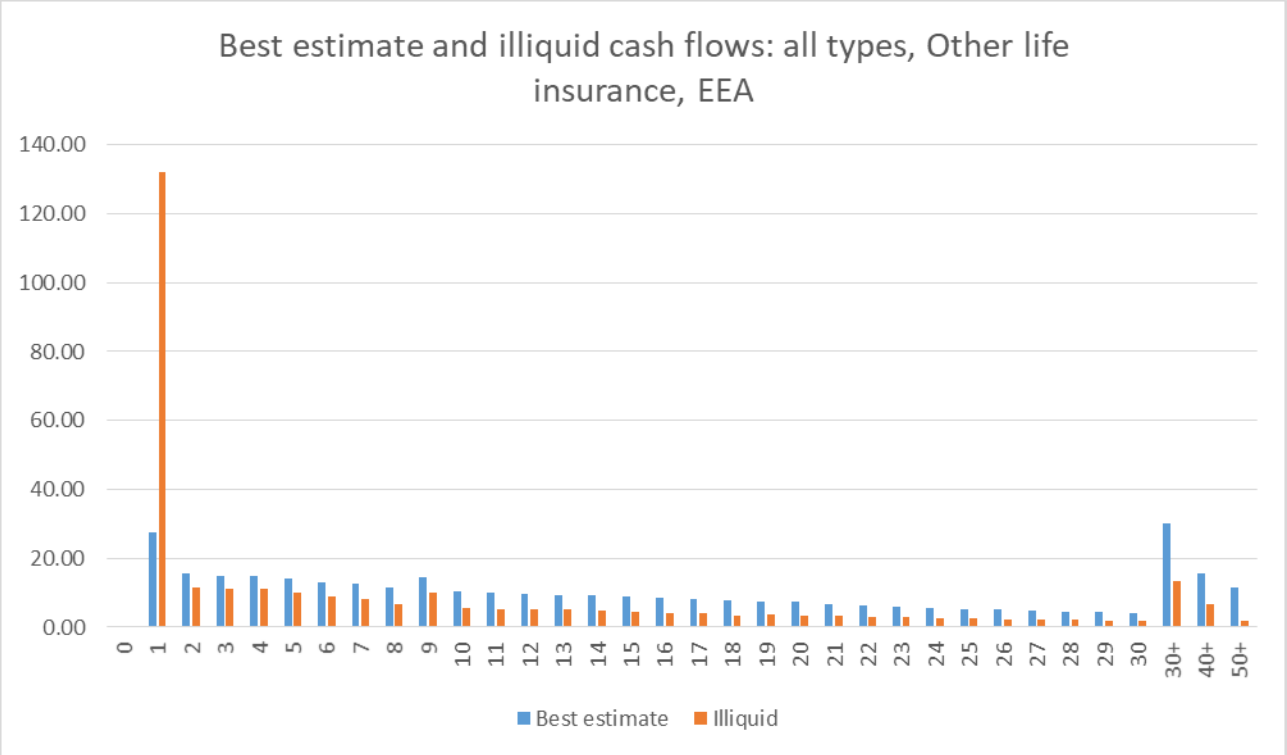


Other life insurance



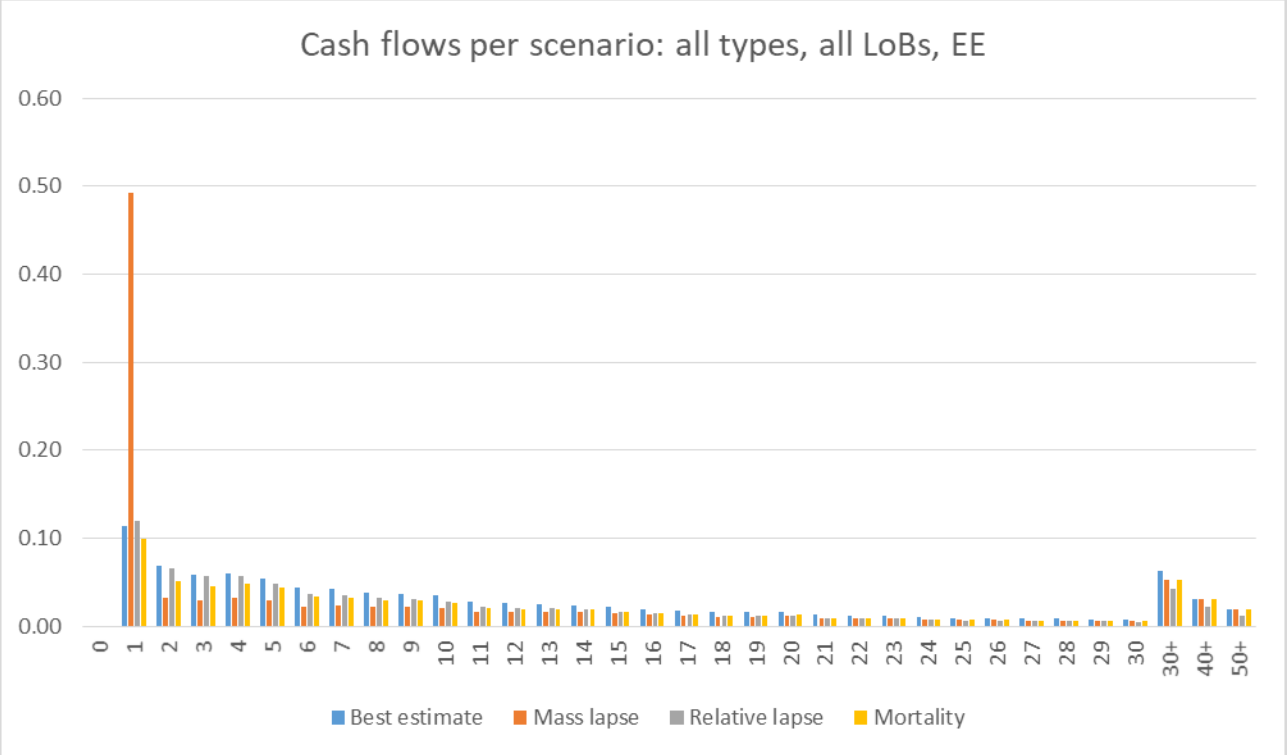

Available per scenario: all types, Other life insurance, EEA
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

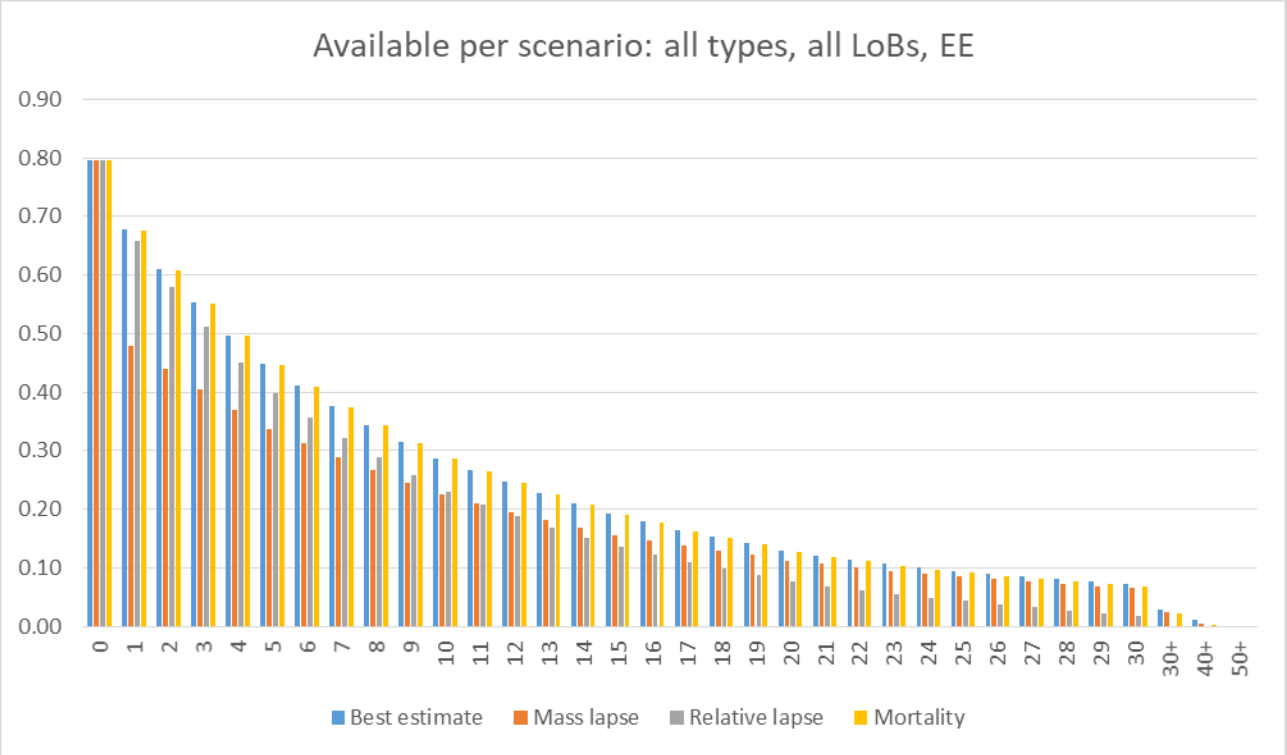

Minimum available: all types, Other life insurance, EEA
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

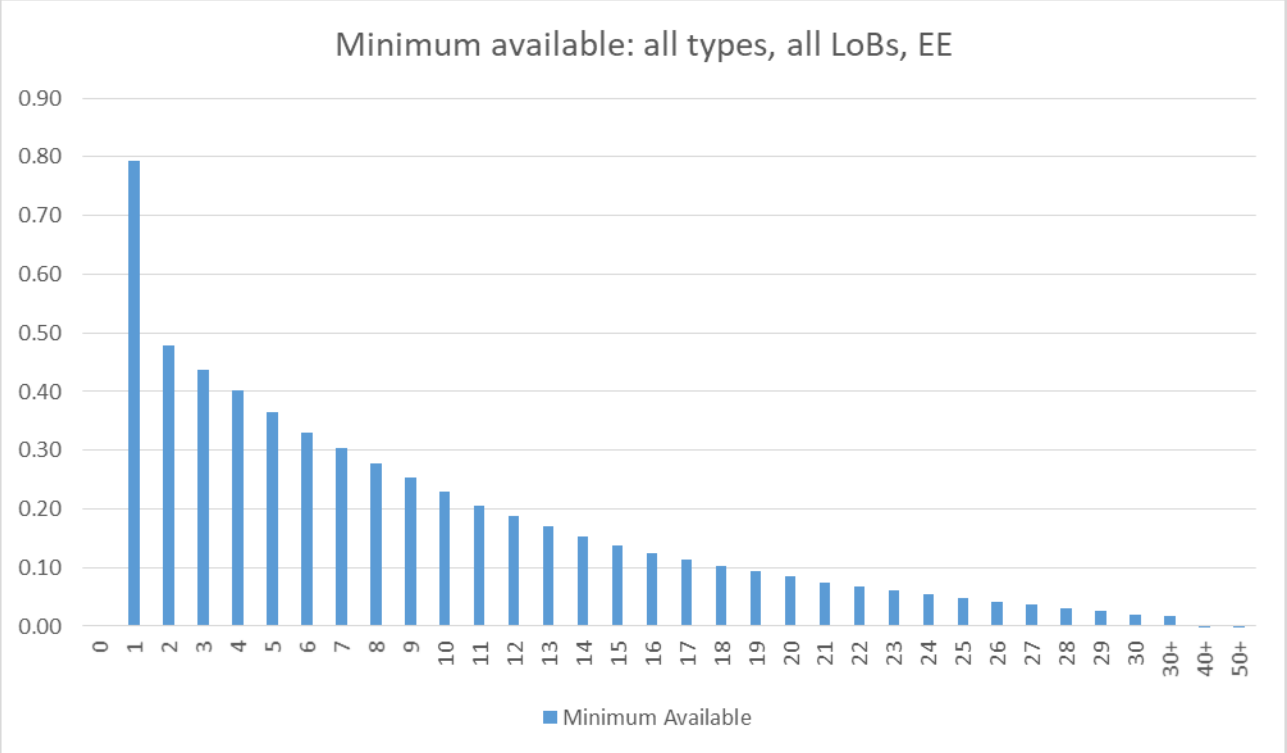


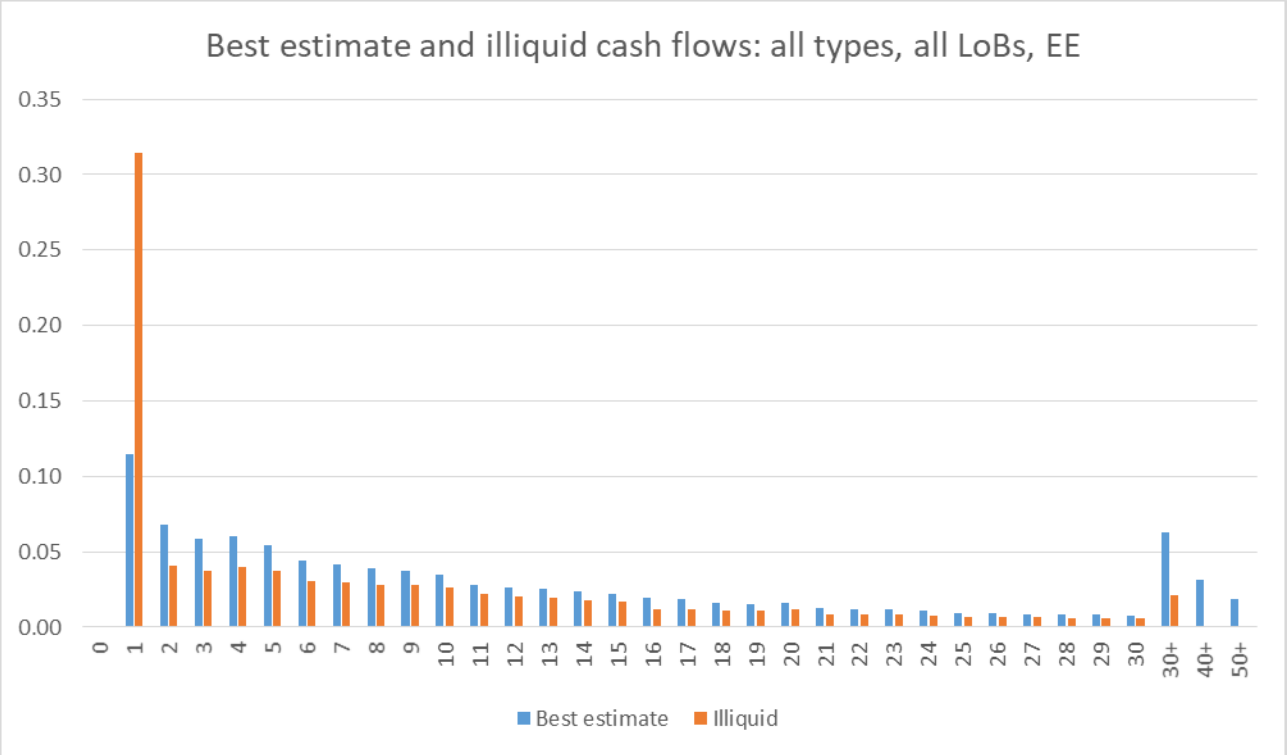
Per jurisdiction

Estonia

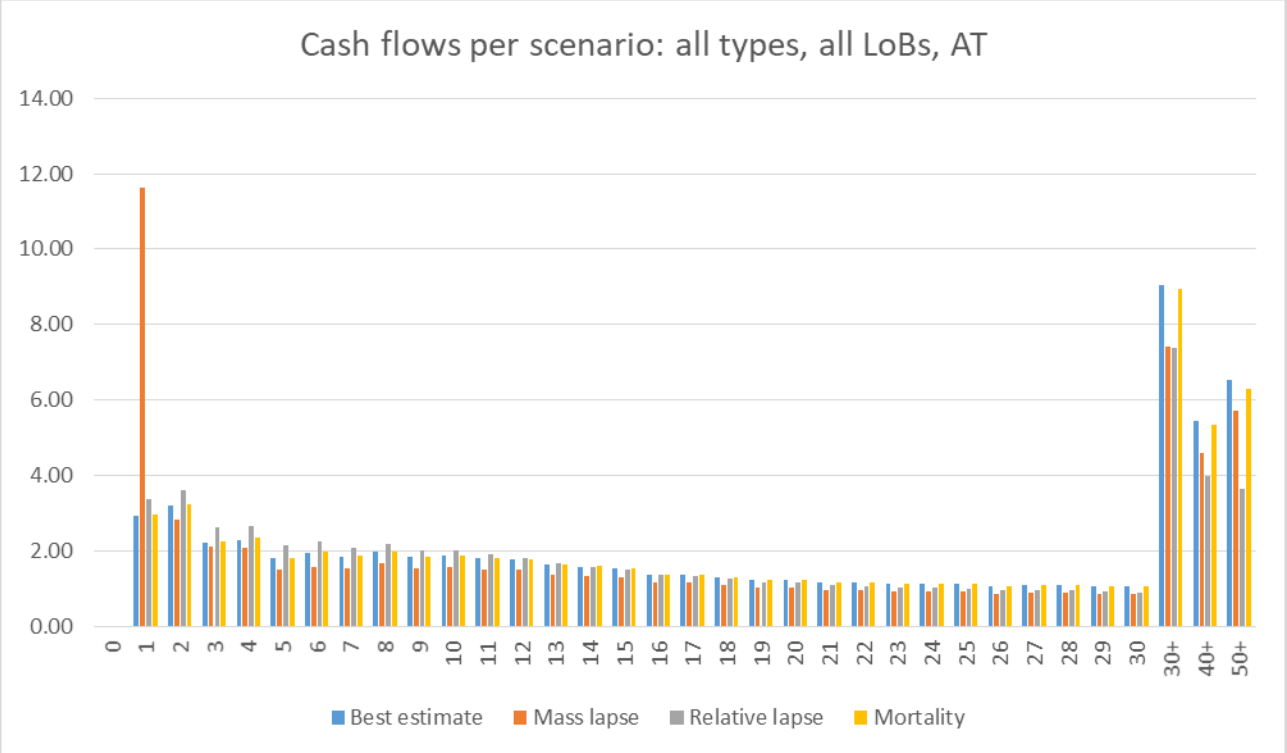


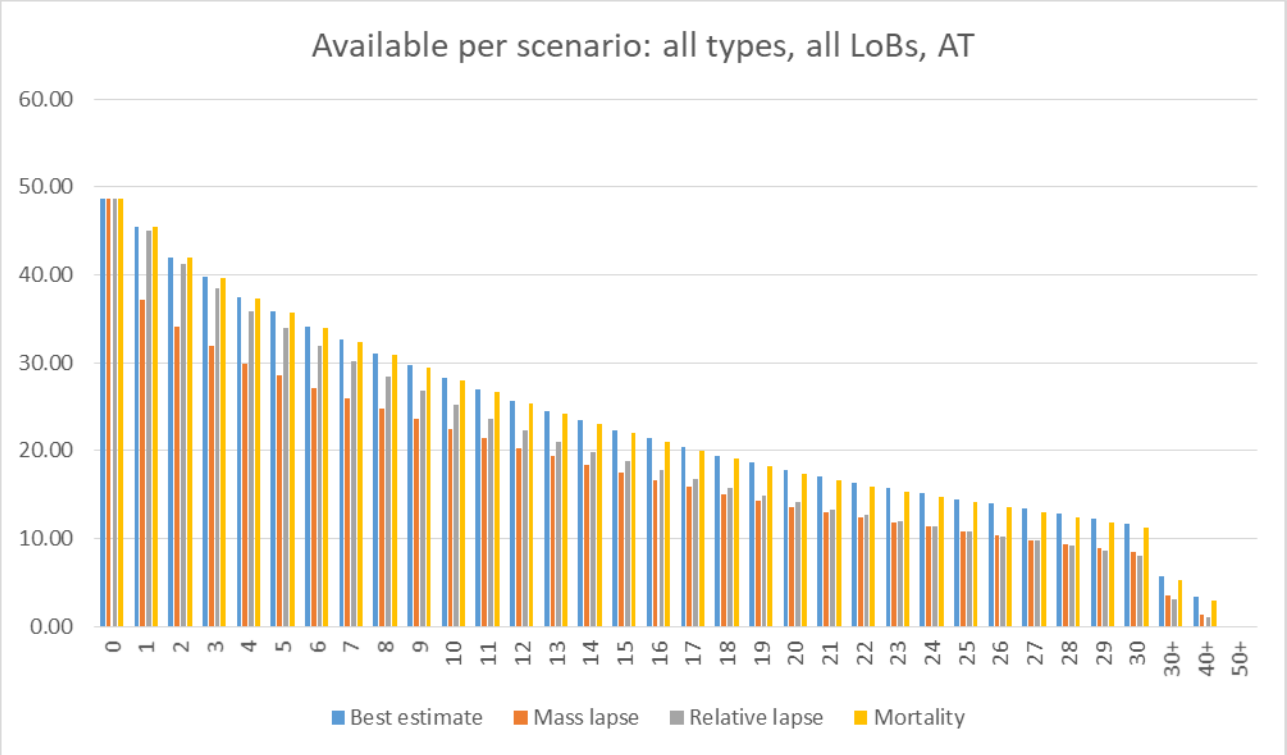

Available per scenario: all types, all LoBs, EE
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

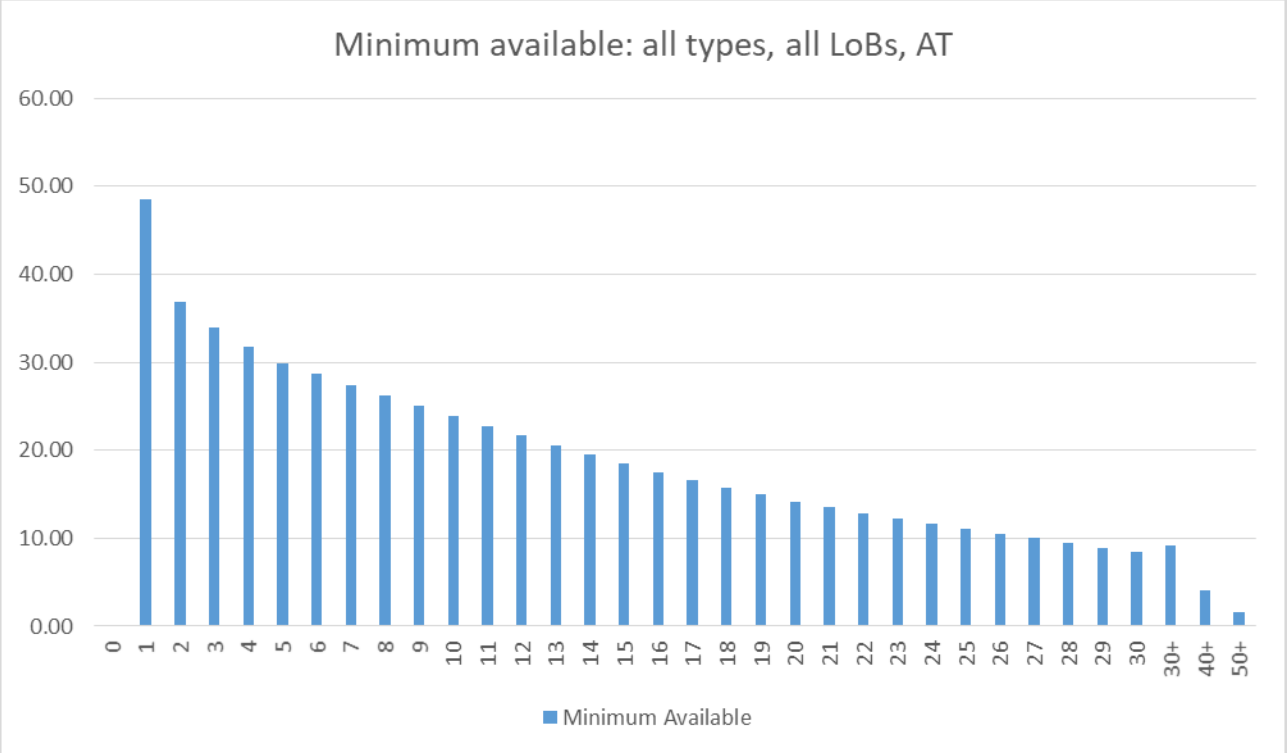

Minimum available: all types, all LoBs, EE
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

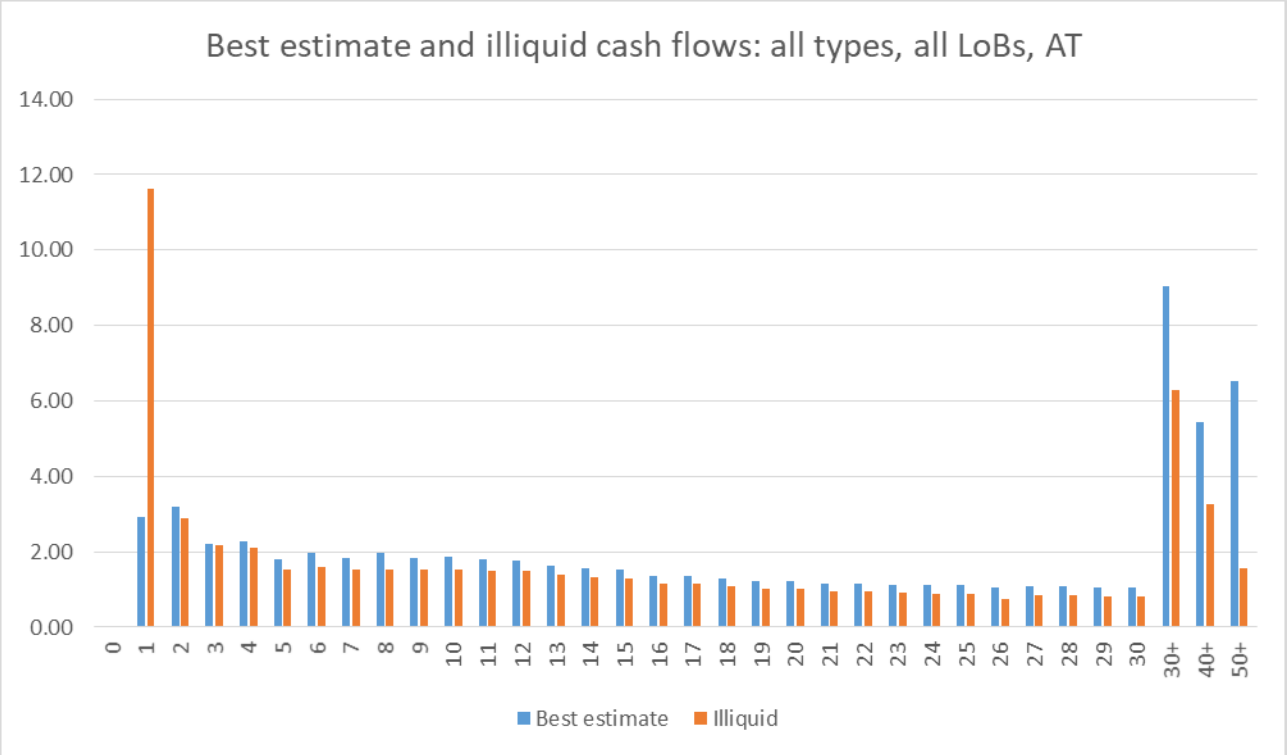

Best estimate and illiquid cash flows: all types, all LoBs, EE
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Austria

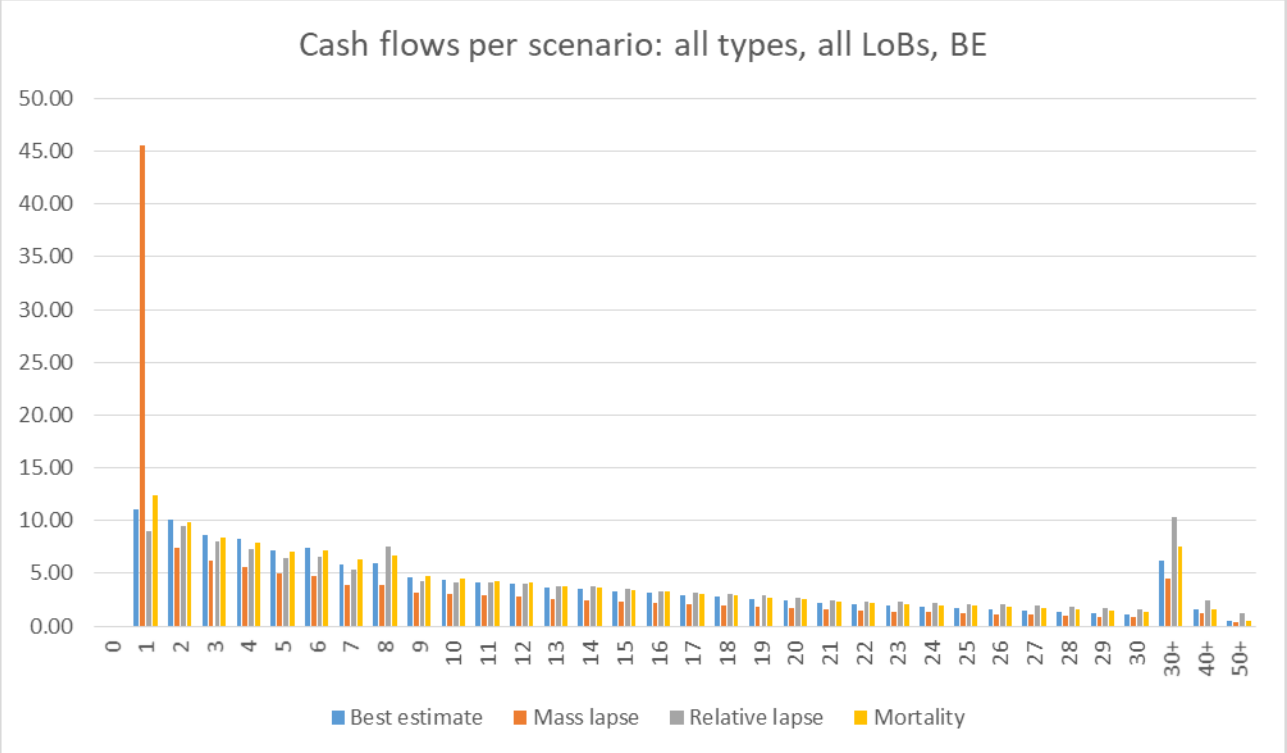

Cash flows per scenario: all types, all LoBs, AT
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

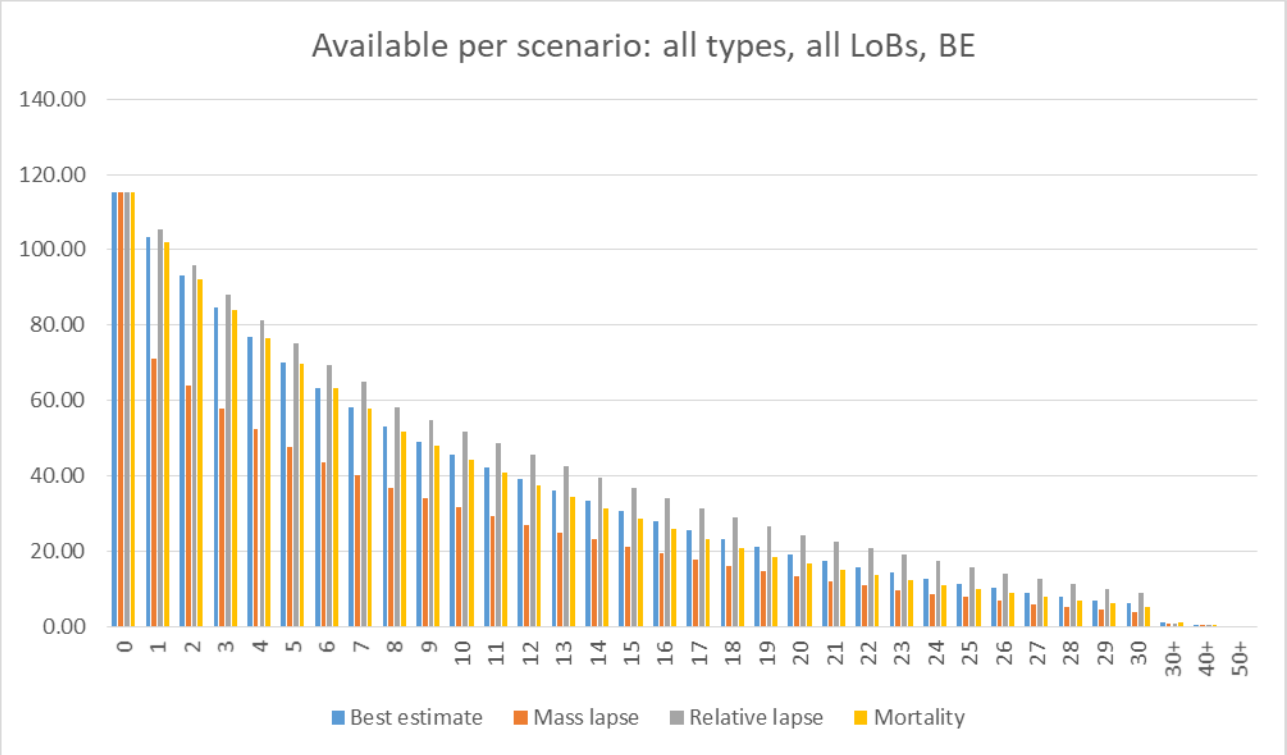

Available per scenario: all types, all LoBs, AT
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

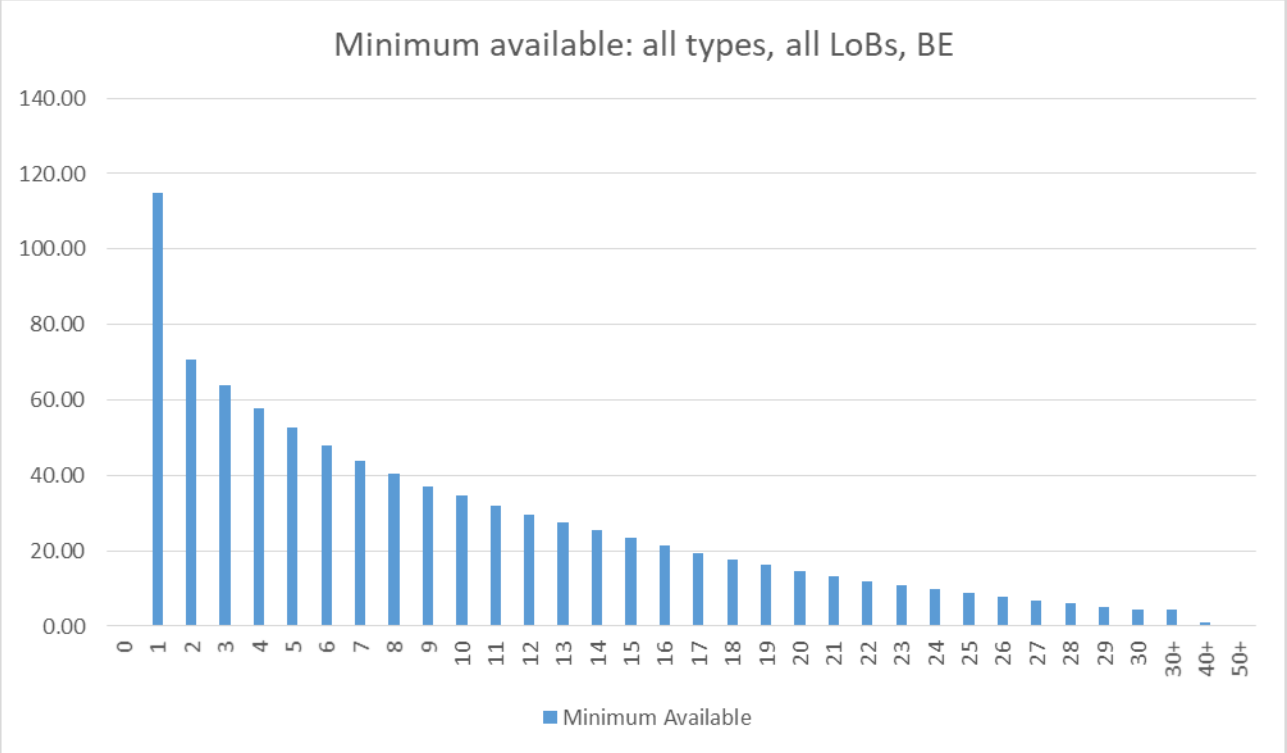

Minimum available: all types, all LoBs, AT
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

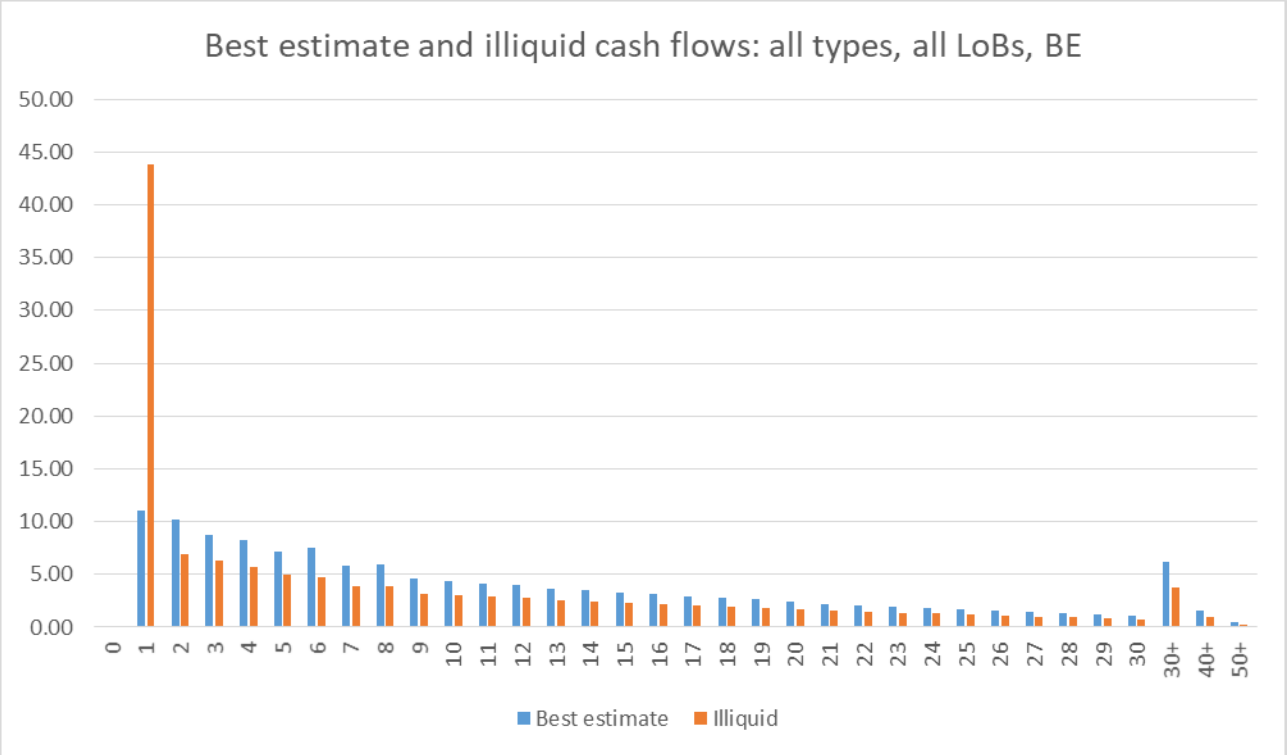

Best estimate and illiquid cash flows: all types, all LoBs, AT
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Belgium

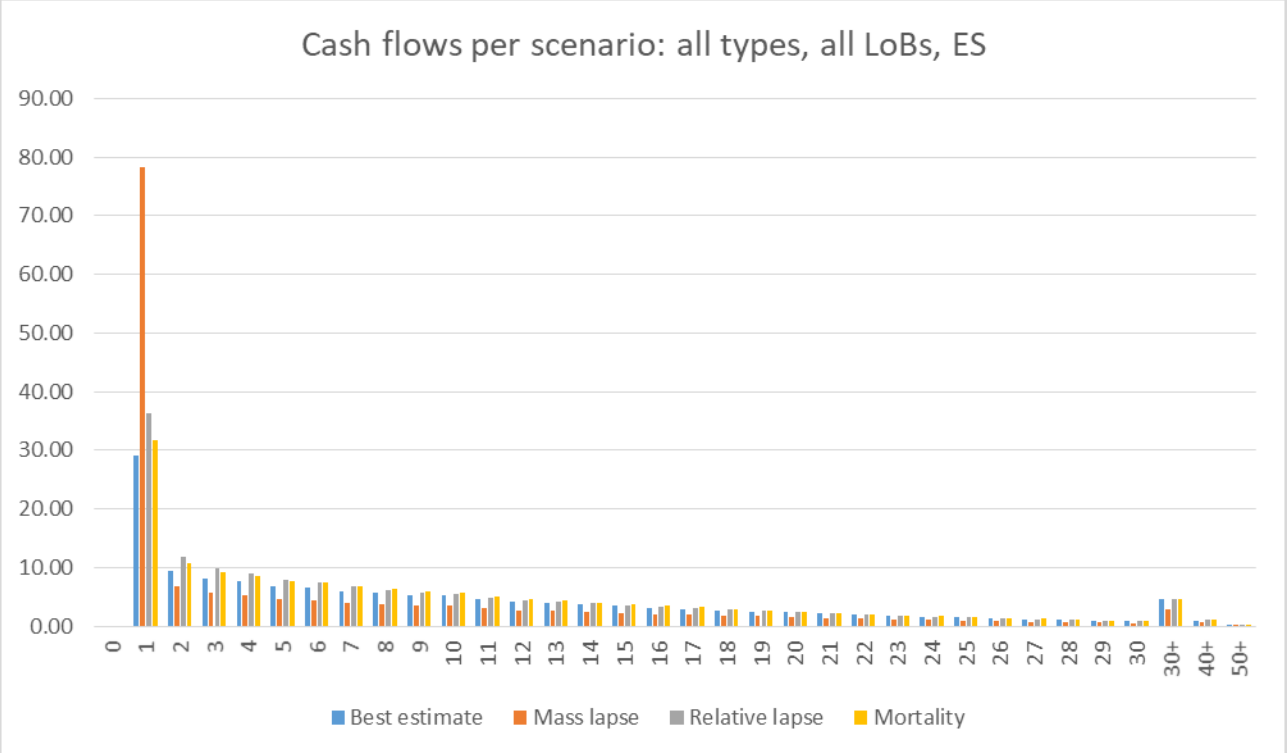

Cash flows per scenario: all types, all LoBs, BE
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

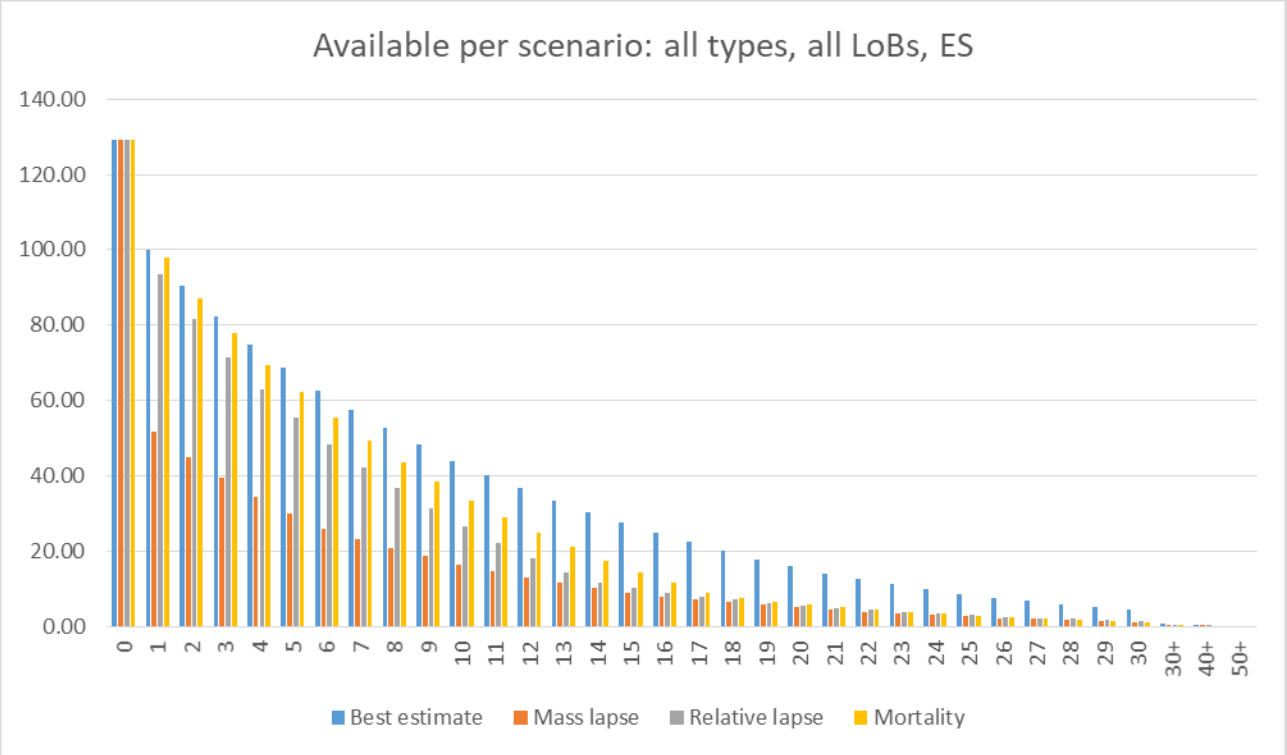

Available per scenario: all types, all LoBs, BE
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

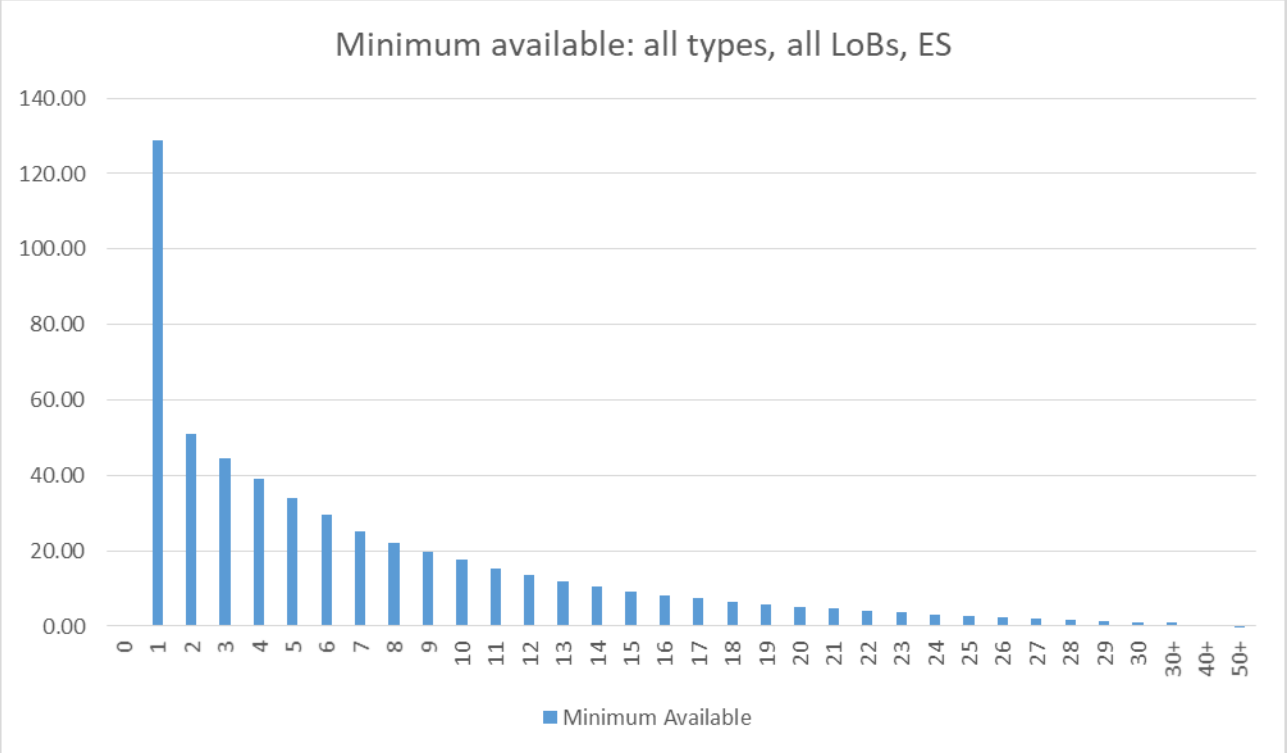

Minimum available: all types, all LoBs, BE
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

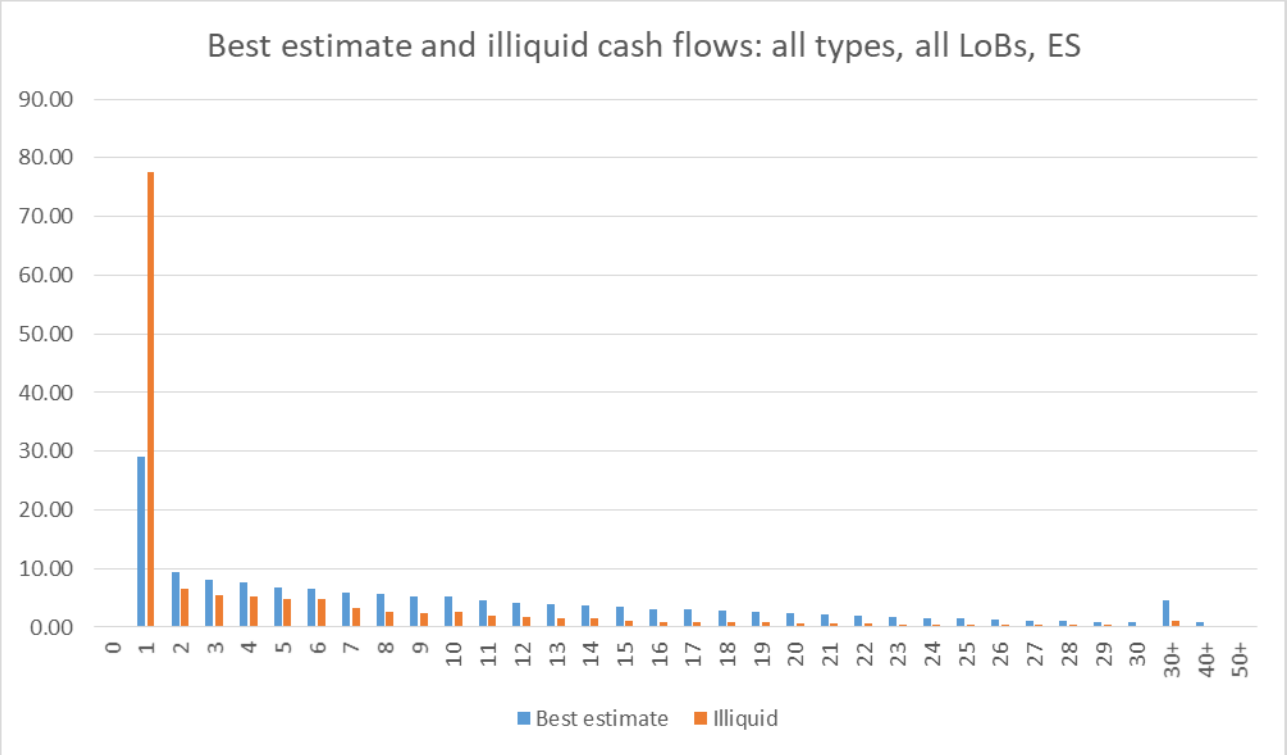

Best estimate and illiquid cash flows: all types, all LoBs, BE
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Spain

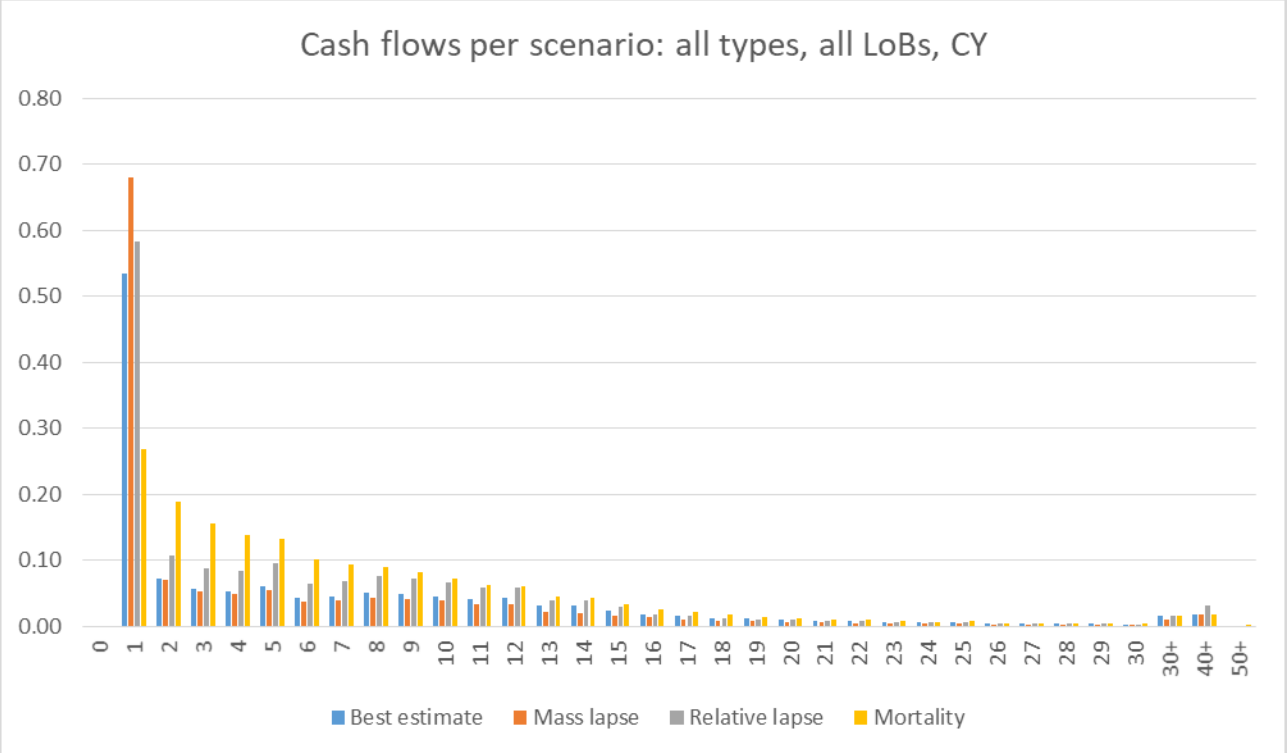

Cash flows per scenario: all types, all LoBs, ES
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

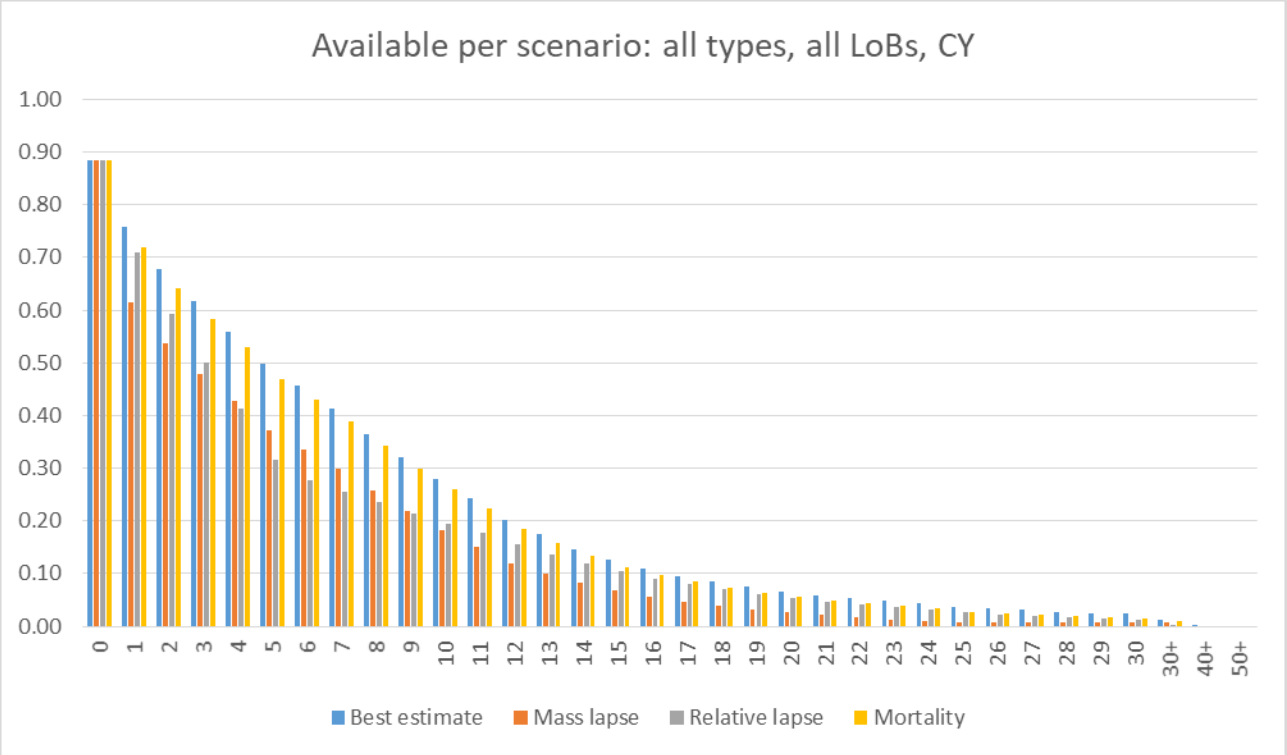

Available per scenario: all types, all LoBs, ES
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

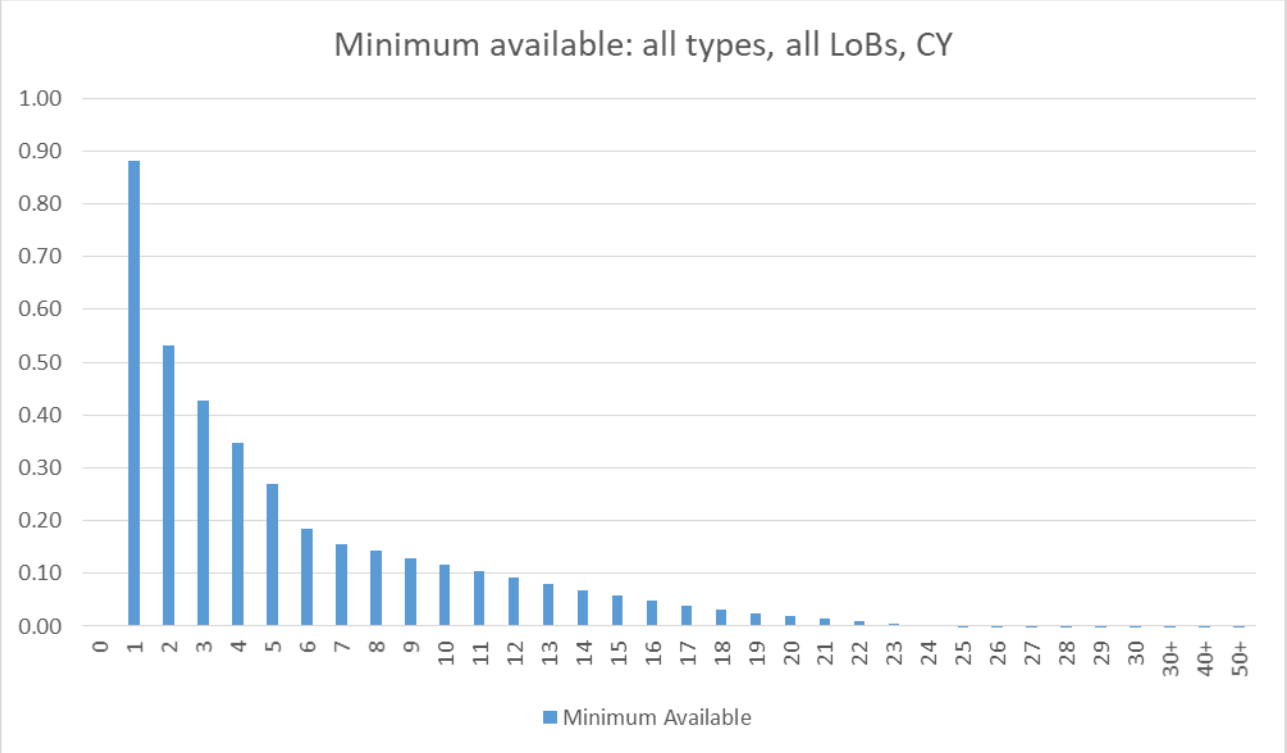

Minimum available: all types, all LoBs, ES
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

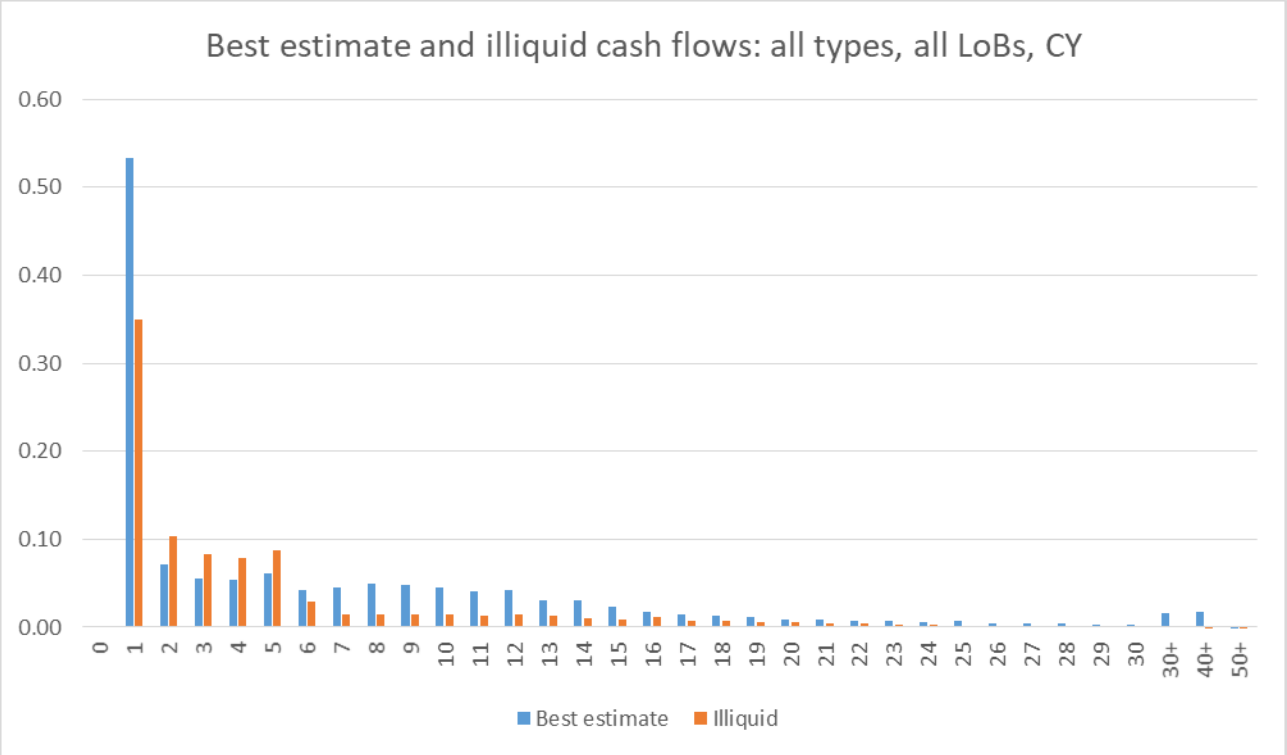

Best estimate and illiquid cash flows: all types, all LoBs, ES
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Cyprus

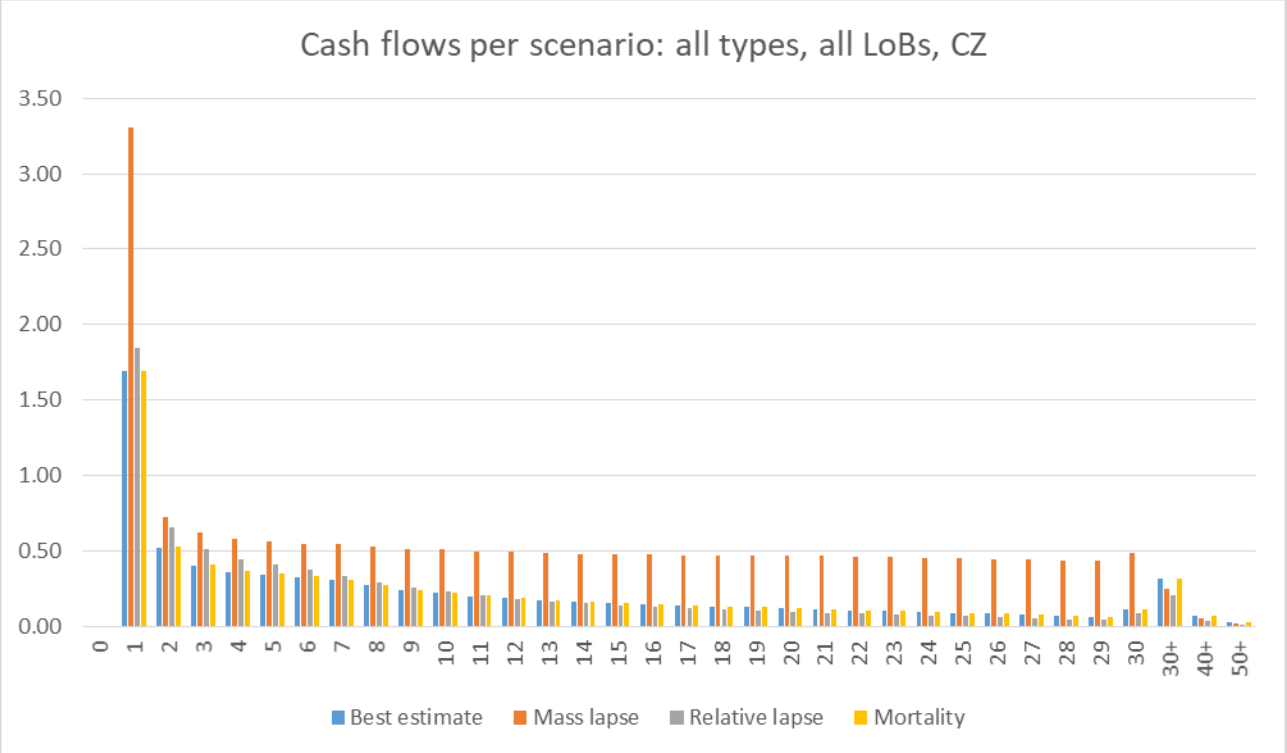

Cash flows per scenario: all types, all LoBs, CY
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

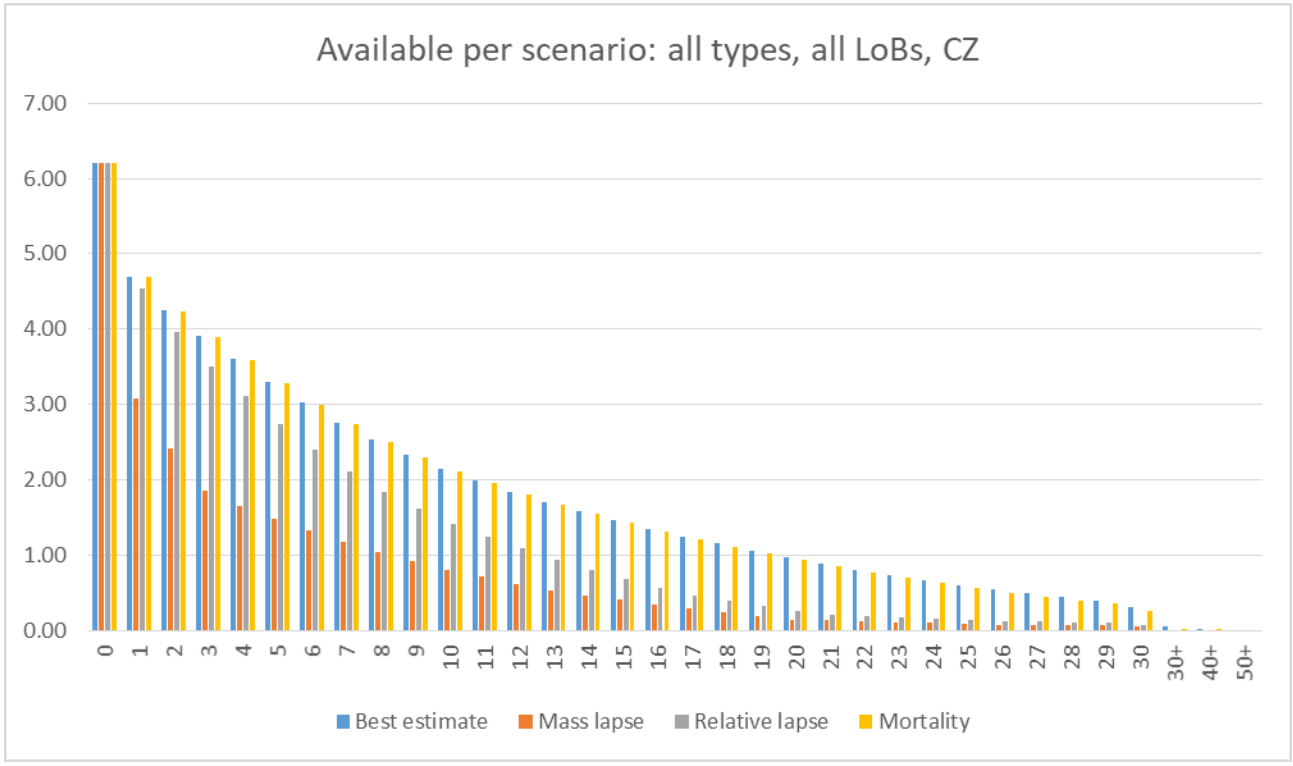

Available per scenario: all types, all LoBs, CY
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

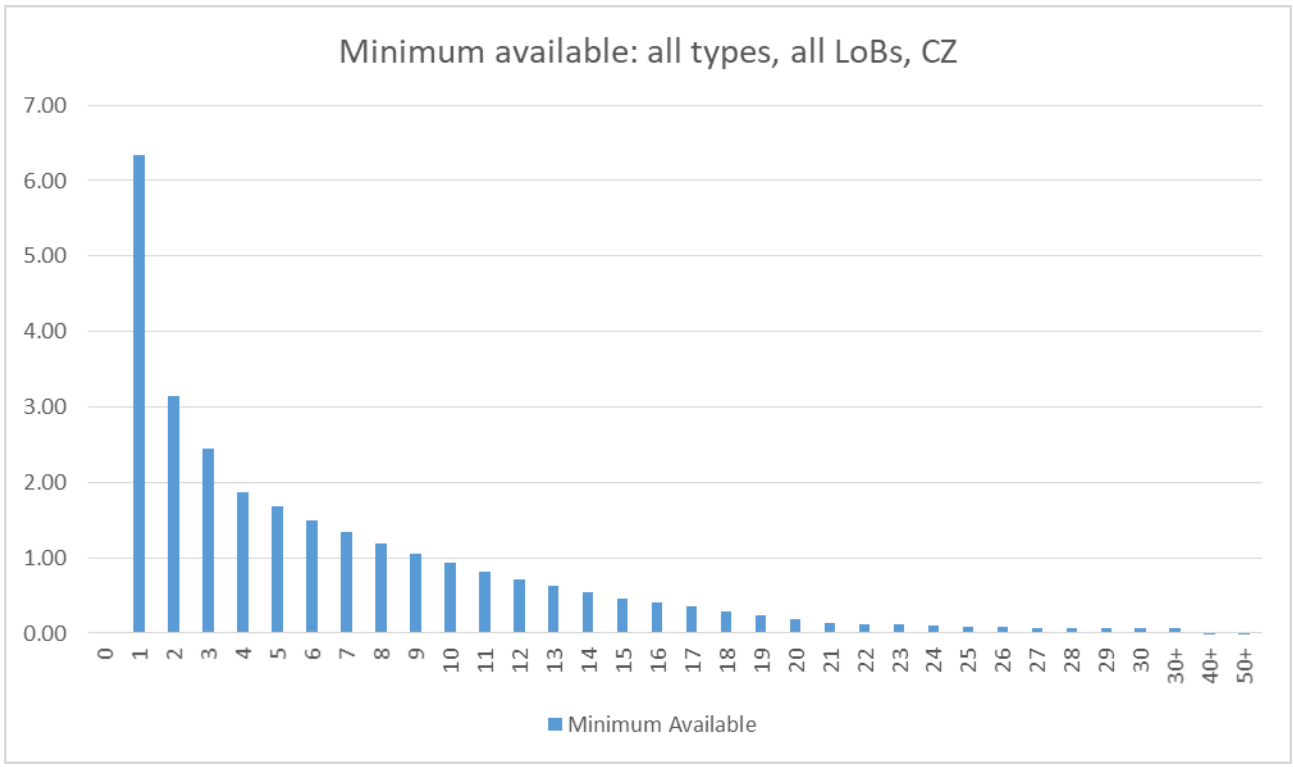

Minimum available: all types, all LoBs, CY
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

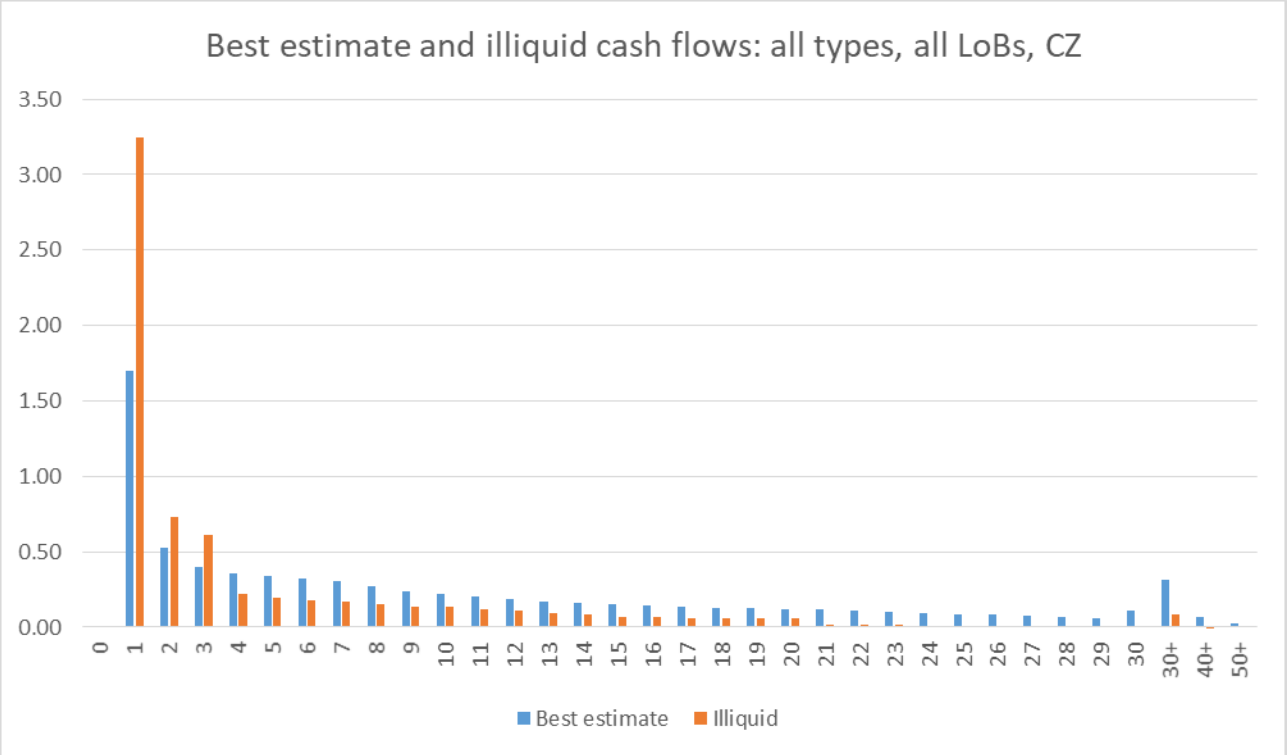

Best estimate and illiquid cash flows: all types, all LoBs, CY
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Czechia

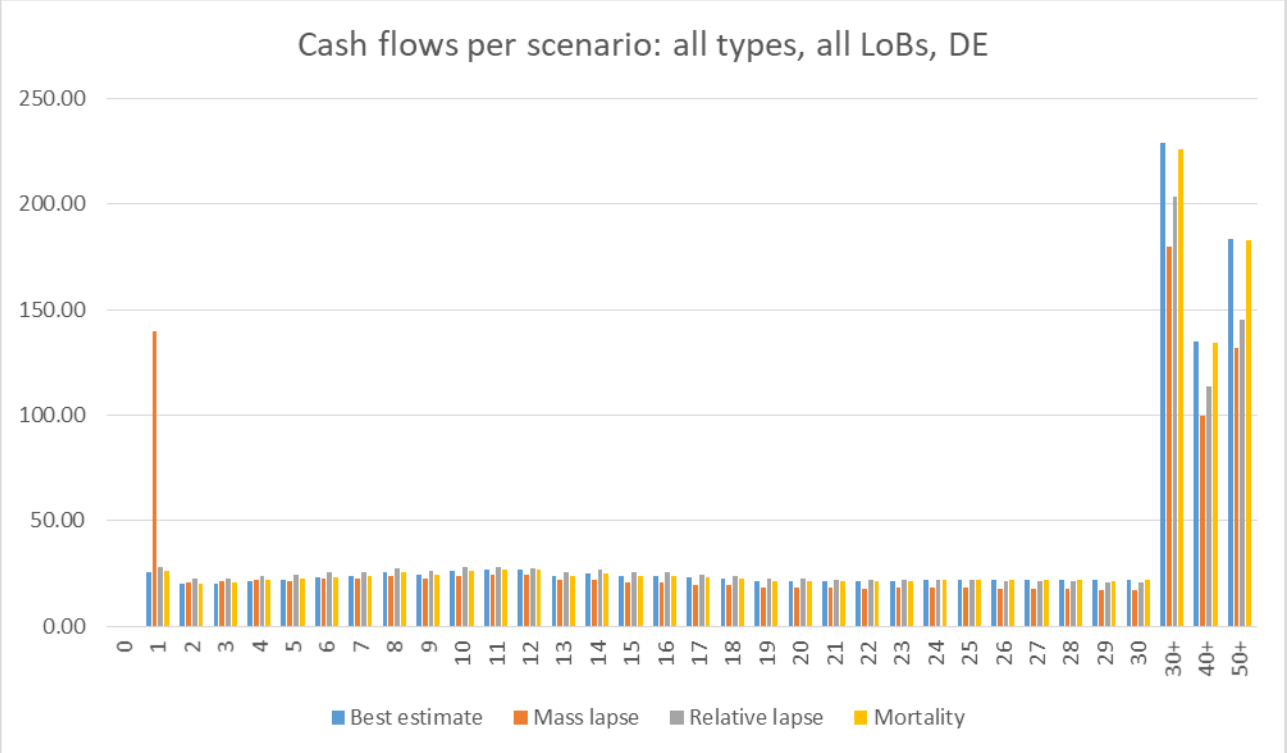

Cash flows per scenario: all types, all LoBs, CZ
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

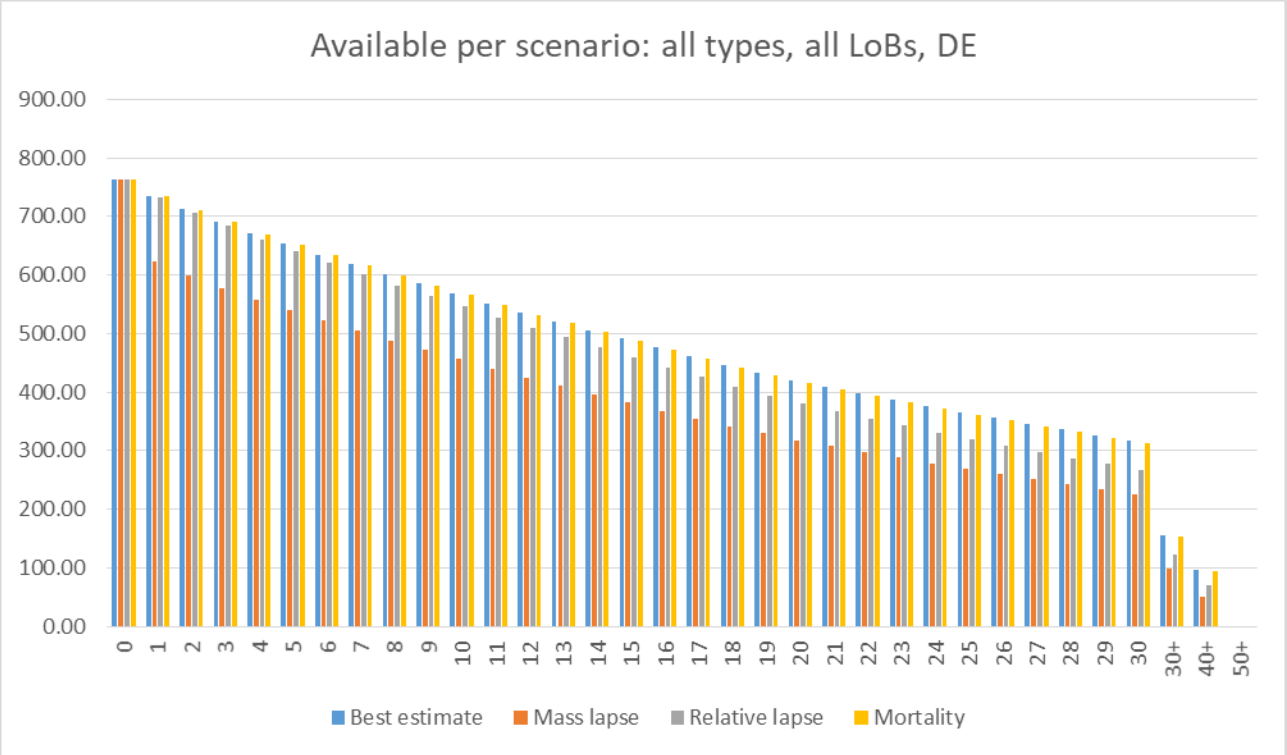

Available per scenario: all types, all LoBs, CZ
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

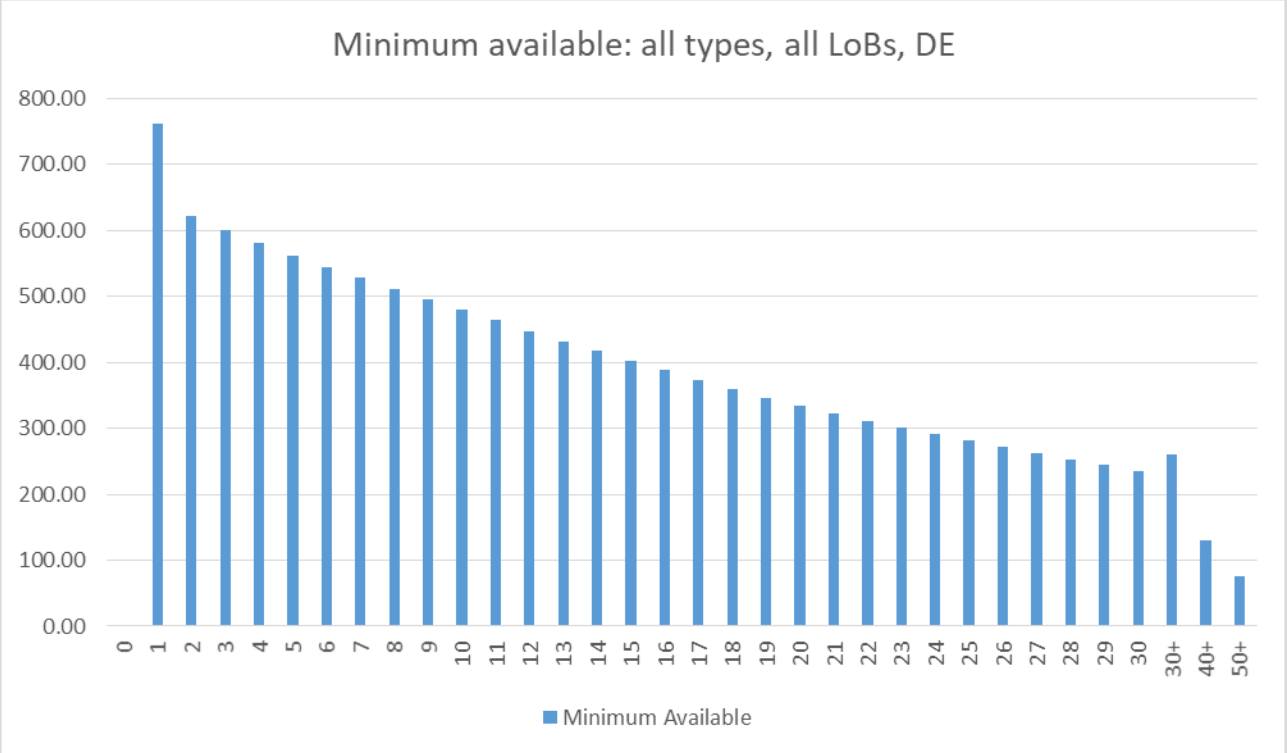

Minimum available: all types, all LoBs, CZ
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

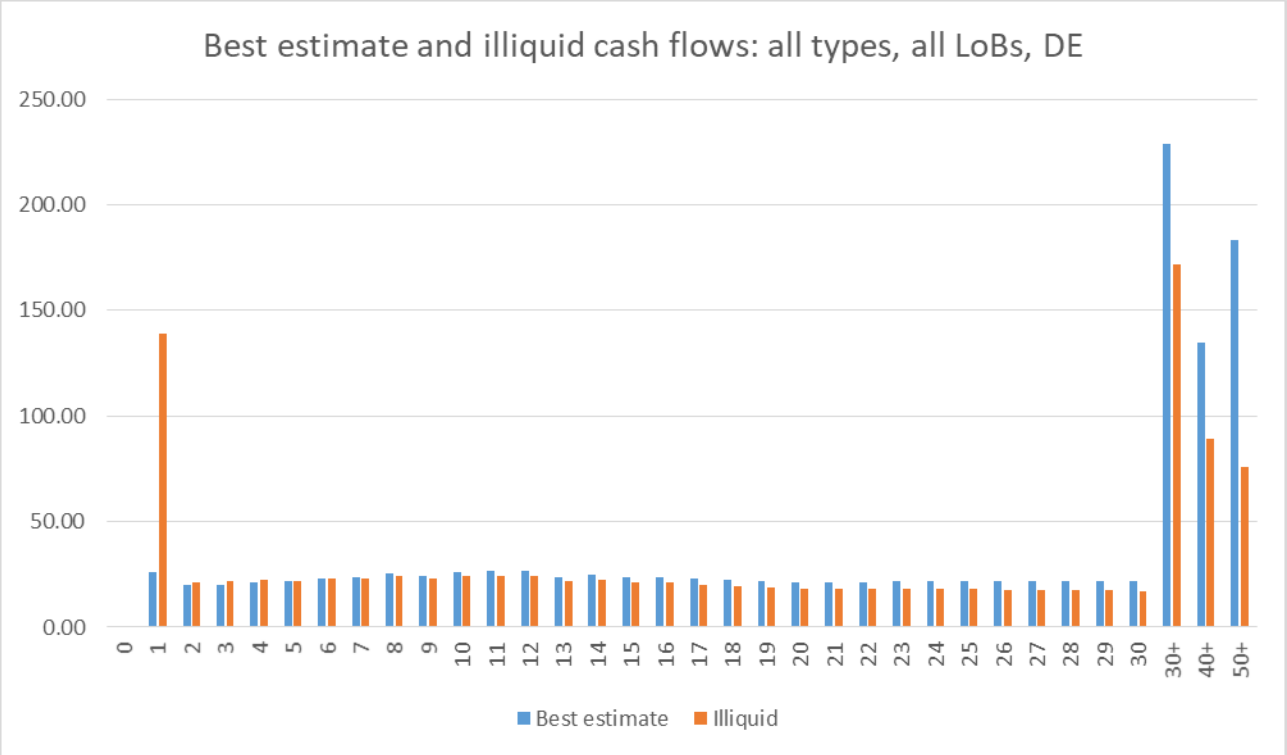

Best estimate and illiquid cash flows: all types, all LoBs, CZ
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Germany

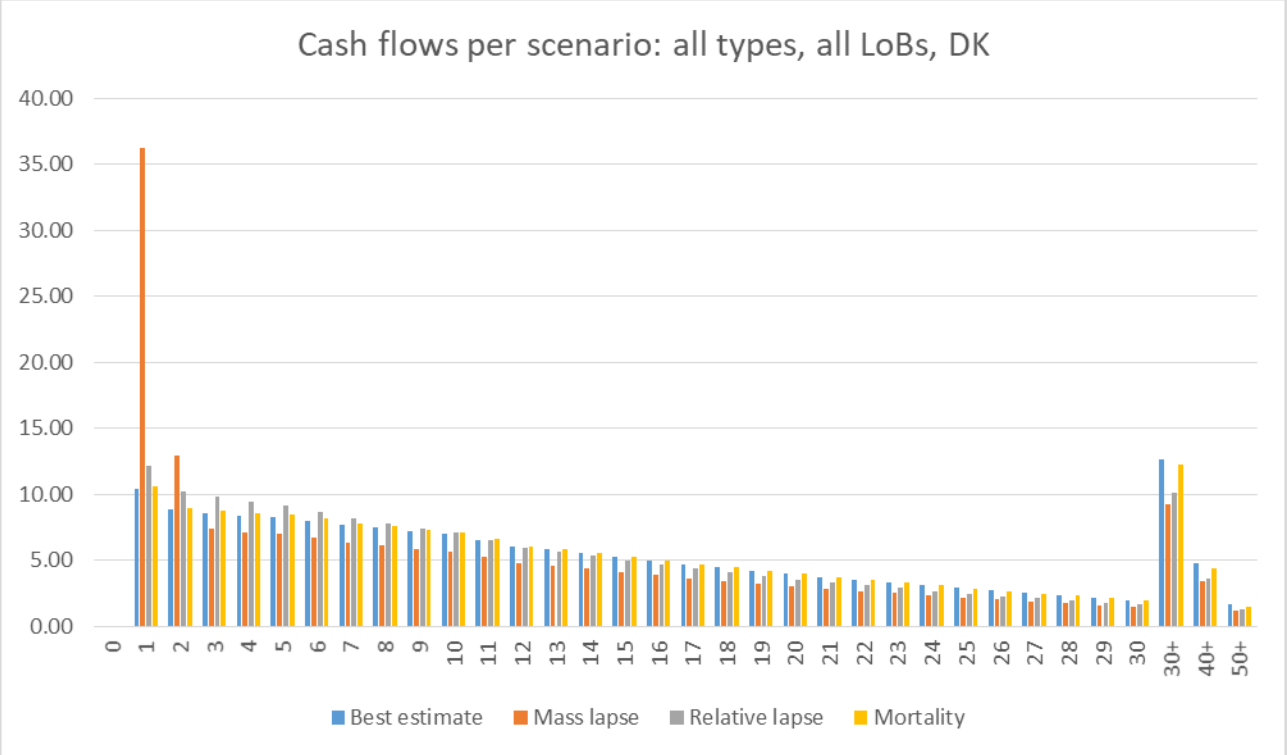

Cash flows per scenario: all types, all LoBs, DE
250.00
200.00
150.00
100.00
50.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

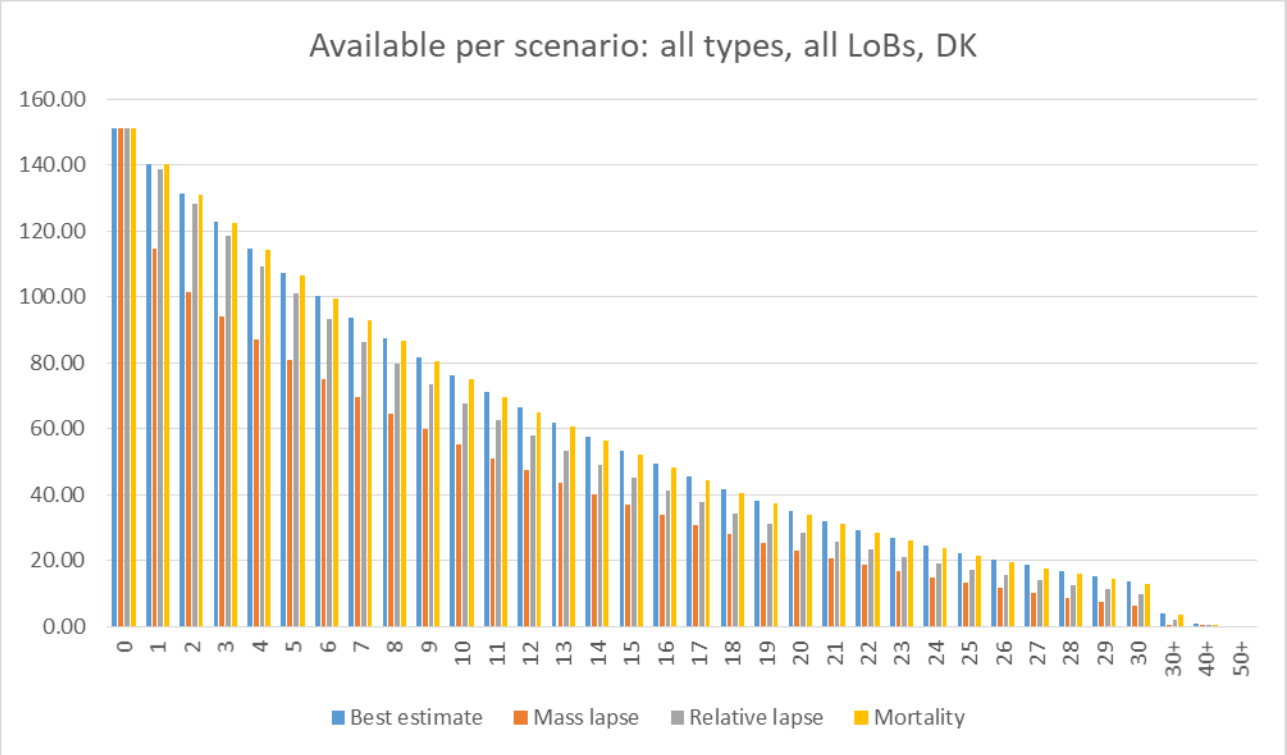

Available per scenario: all types, all LoBs, DE
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

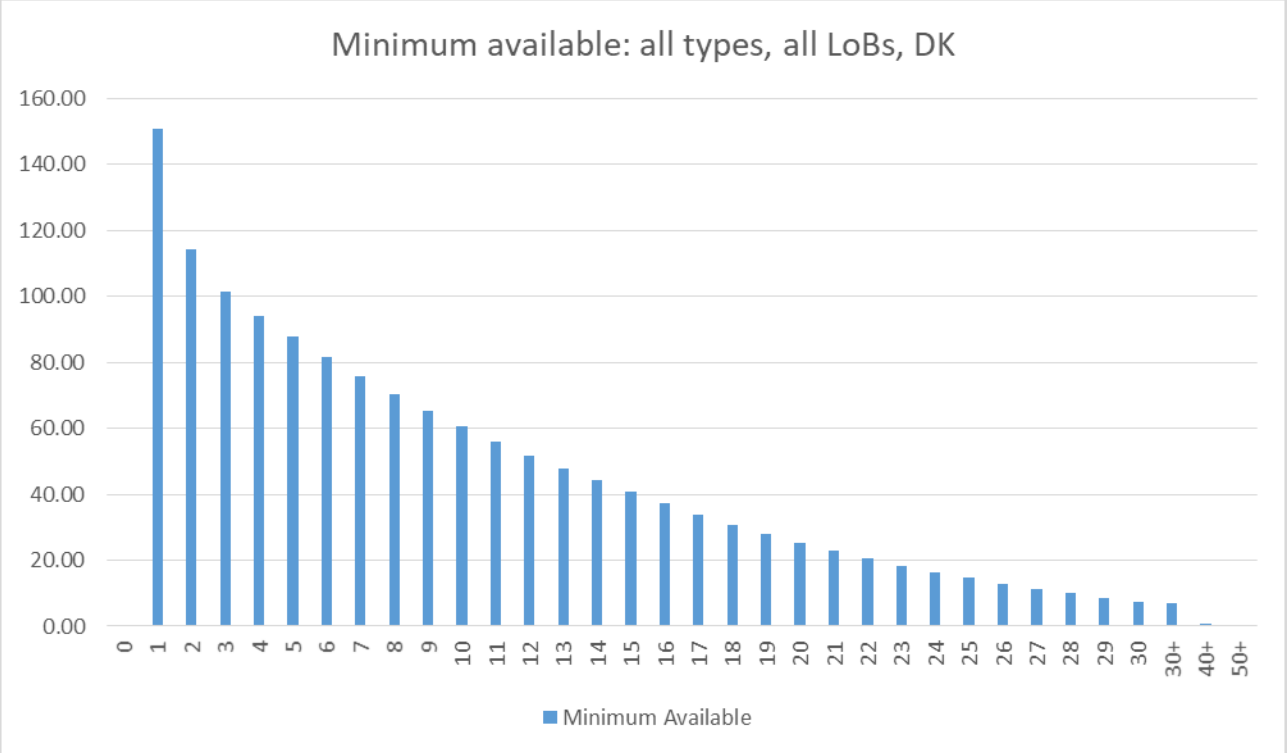

Minimum available: all types, all LoBs, DE
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

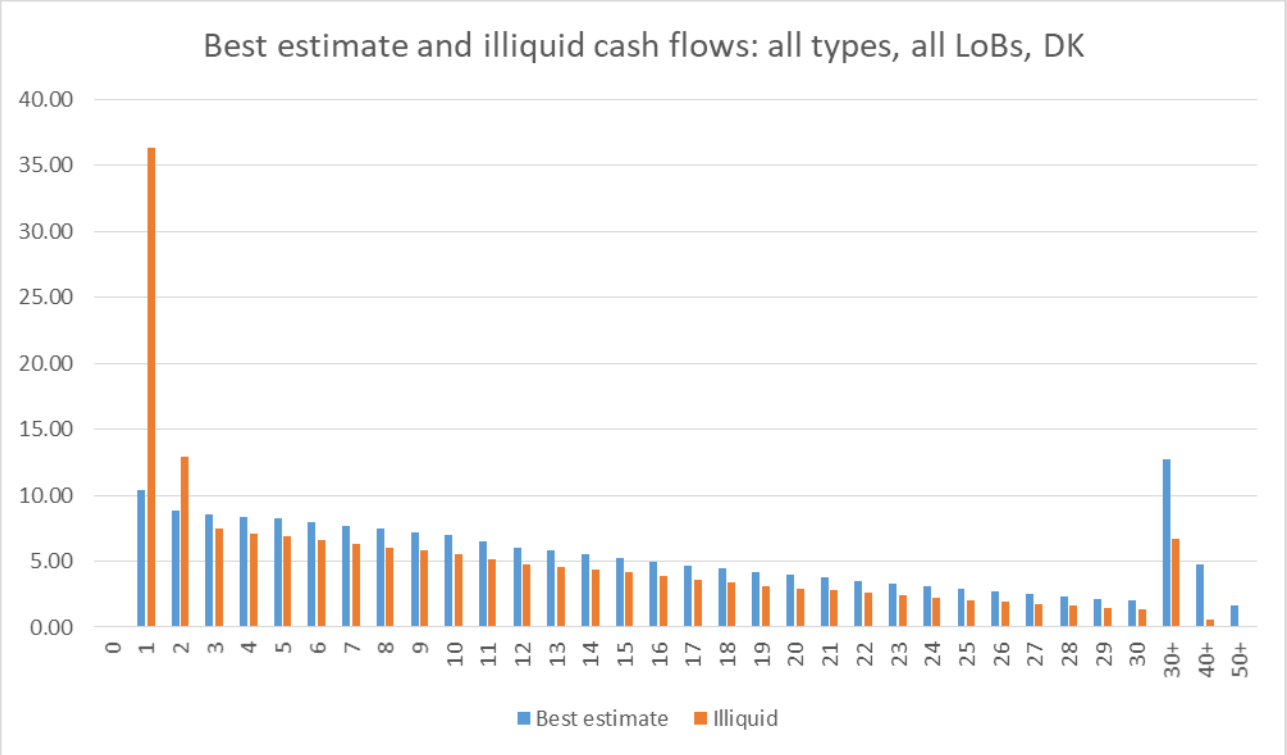

Best estimate and illiquid cash flows: all types, all LoBs, DE
250.00
200.00
150.00
100.00
50.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Denmark

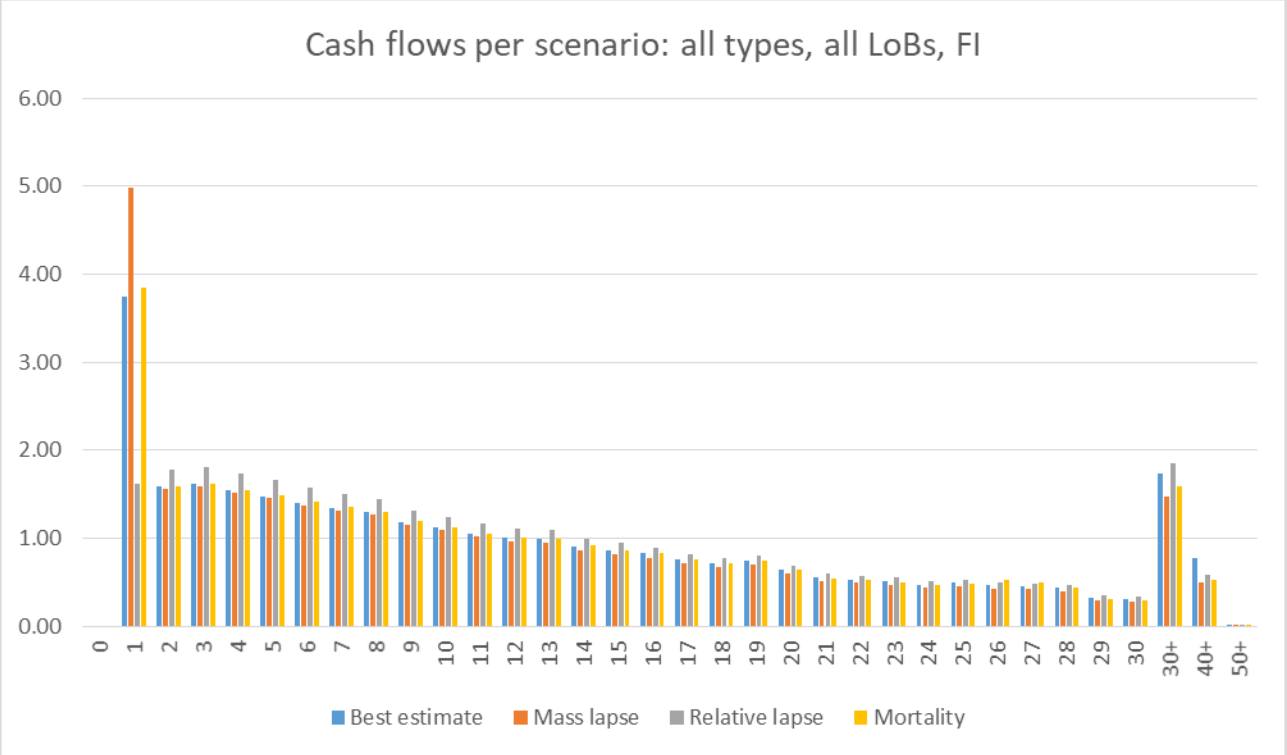

Cash flows per scenario: all types, all LoBs, DK
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

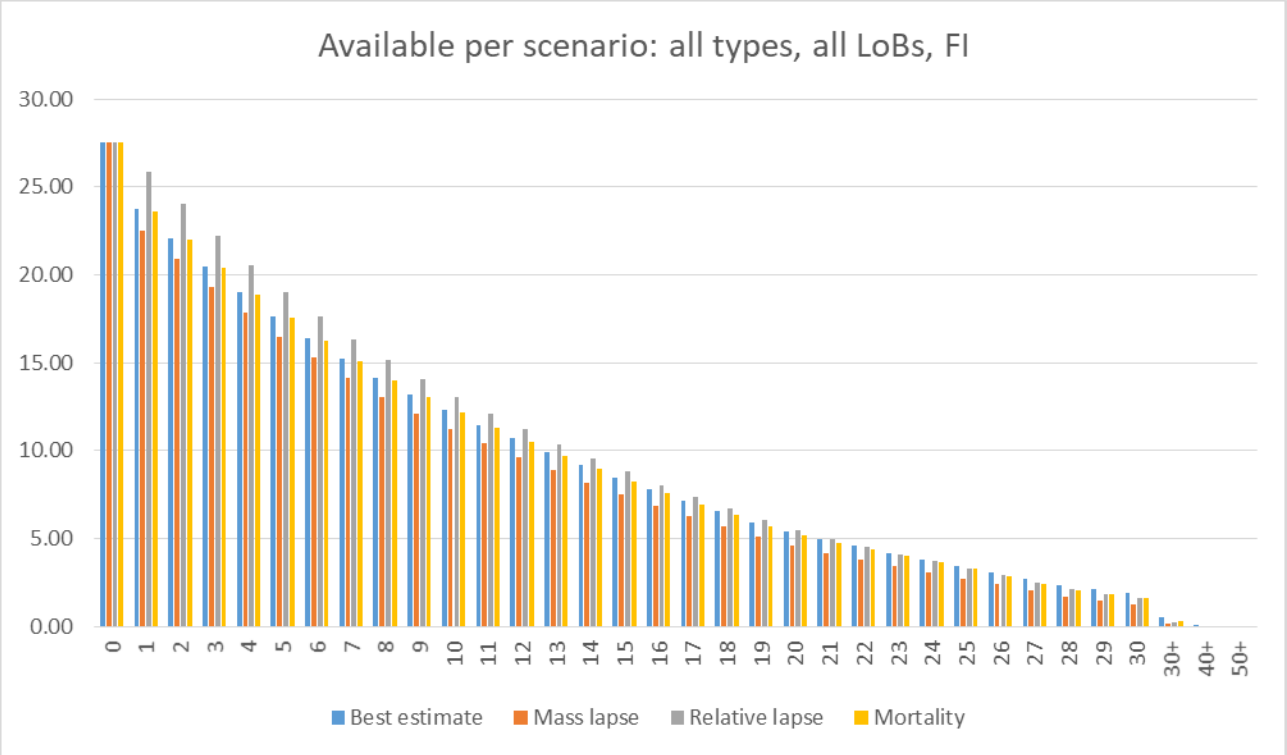

Available per scenario: all types, all LoBs, DK
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

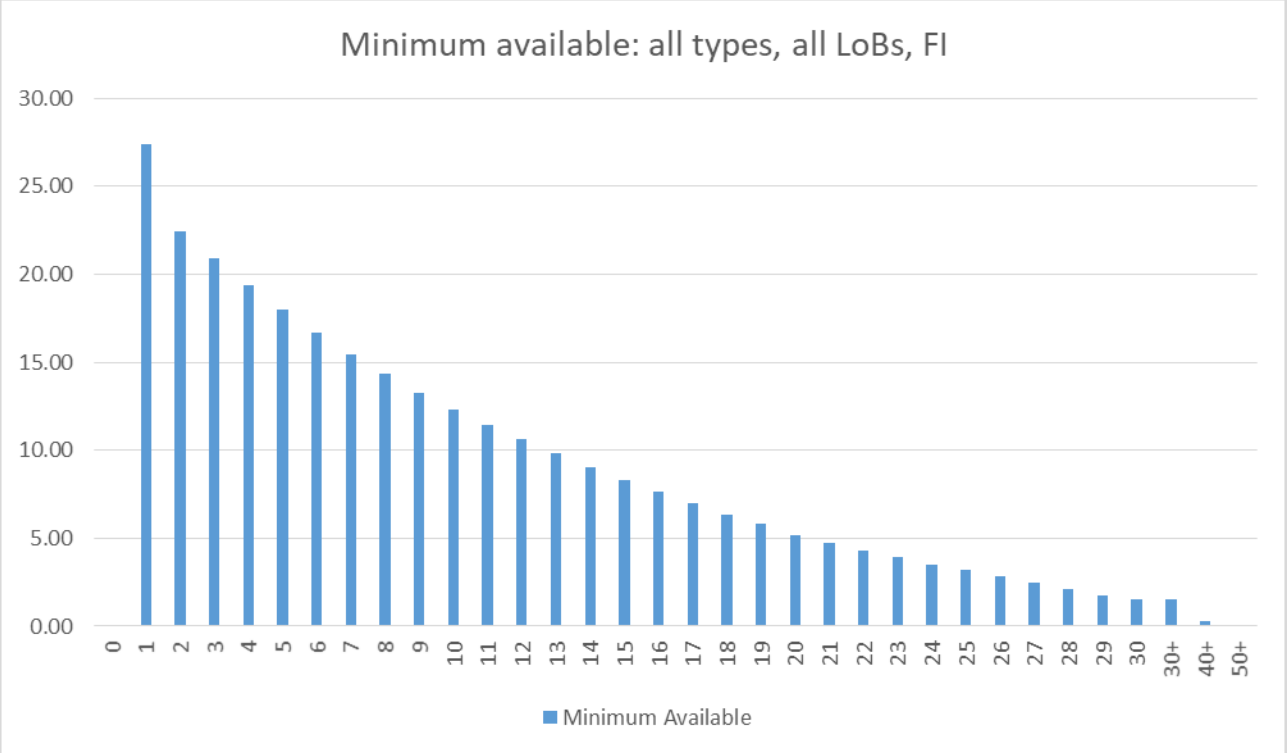

Minimum available: all types, all LoBs, DK
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

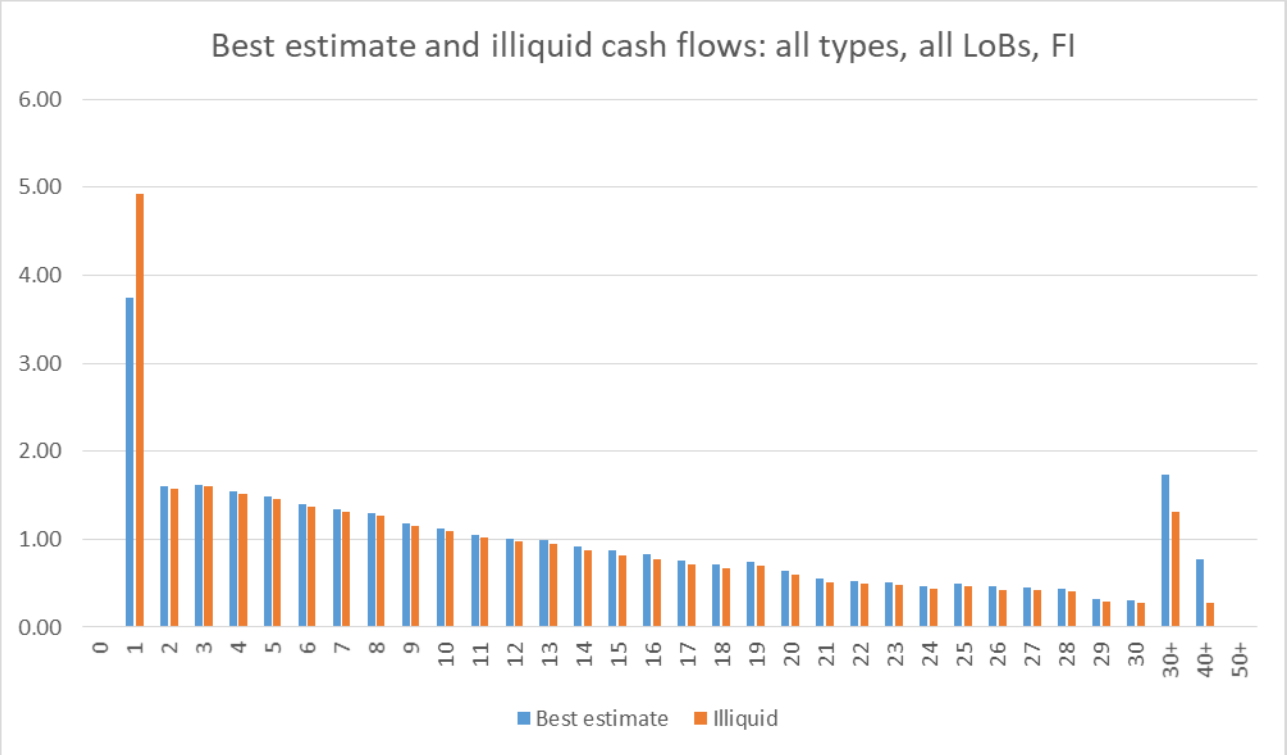

Best estimate and illiquid cash flows: all types, all LoBs, DK
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Finland

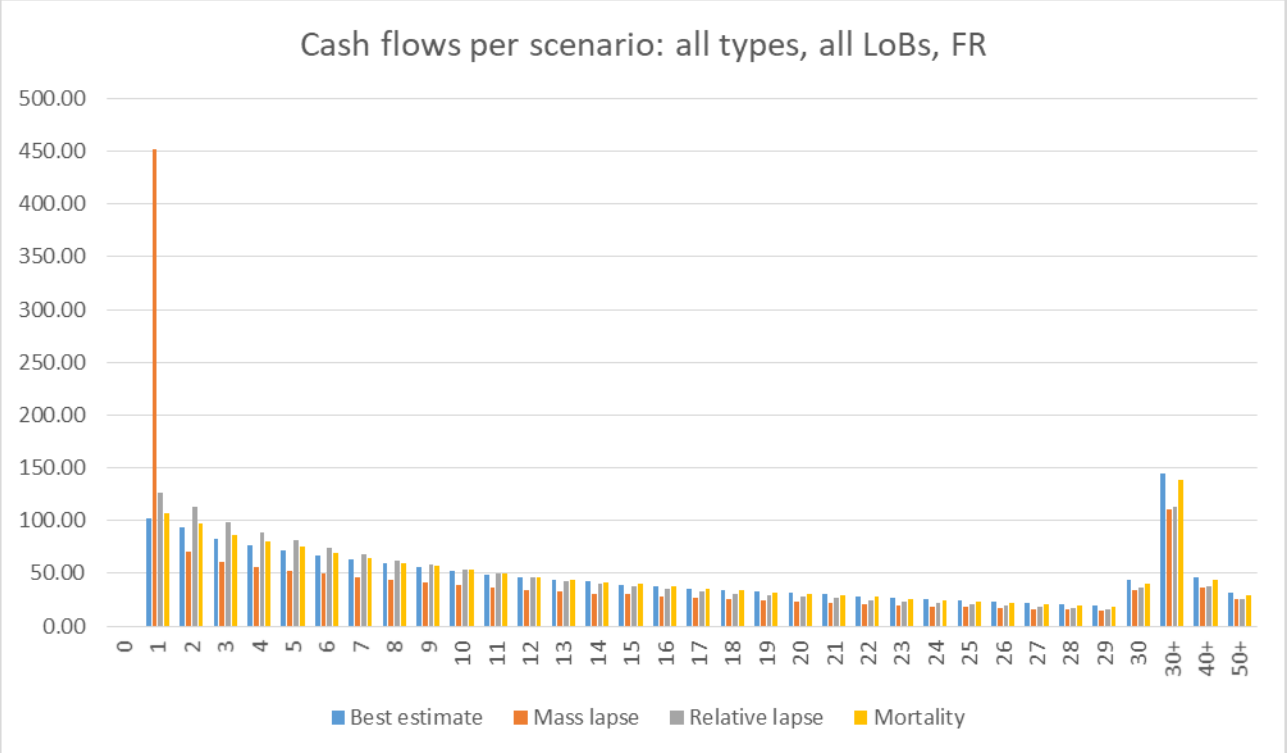

Cash flows per scenario: all types, all LoBs, FI
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

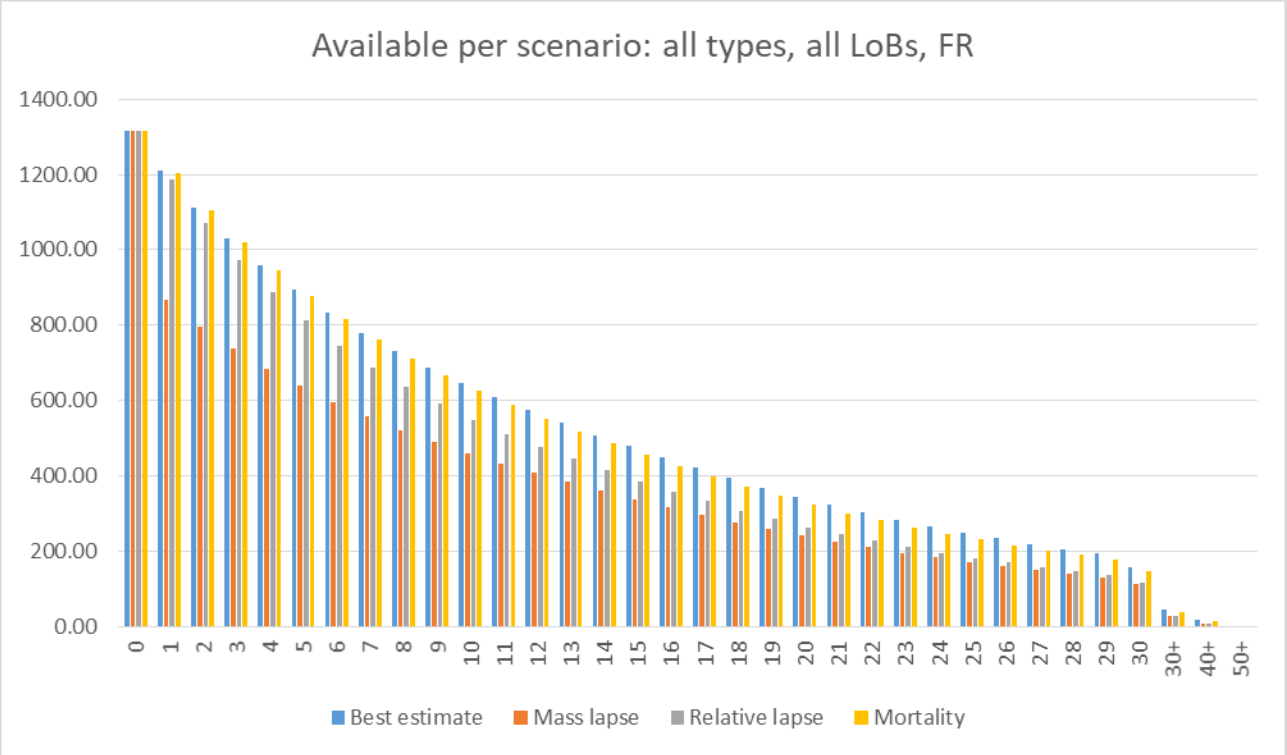

Available per scenario: all types, all LoBs, FI
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

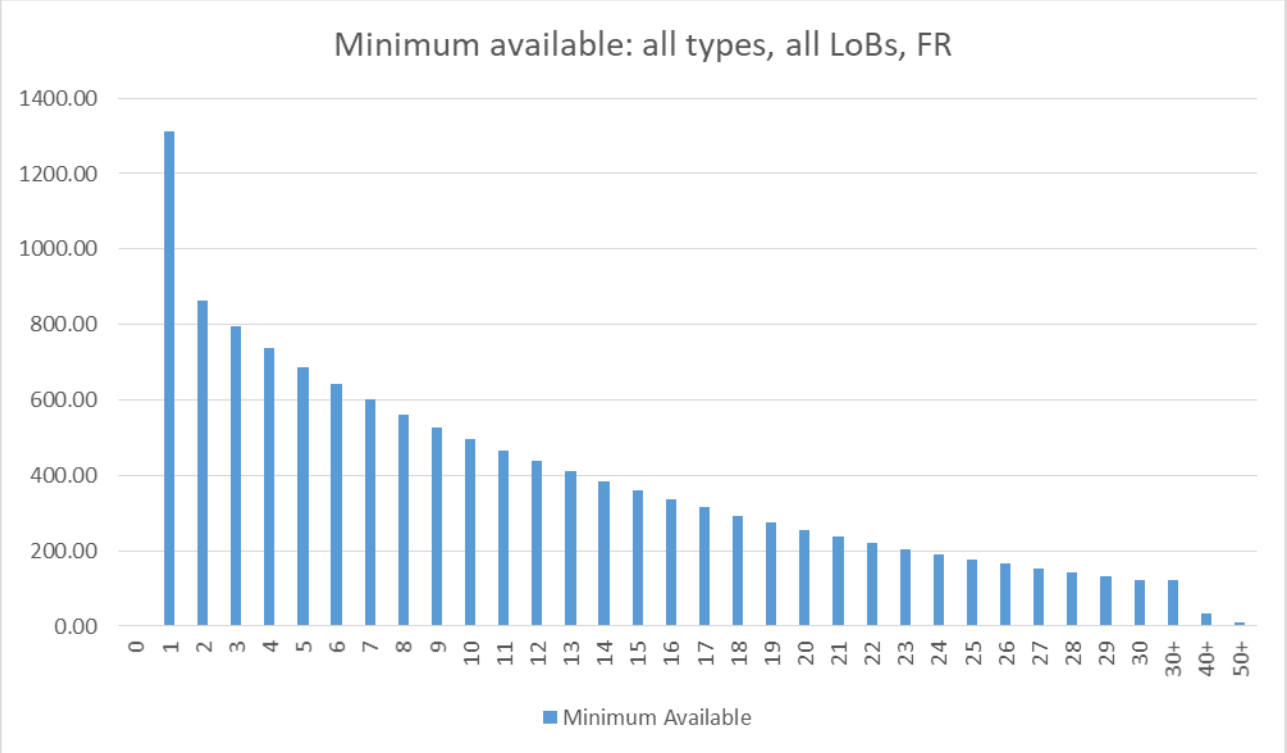

Minimum available: all types, all LoBs, FI
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

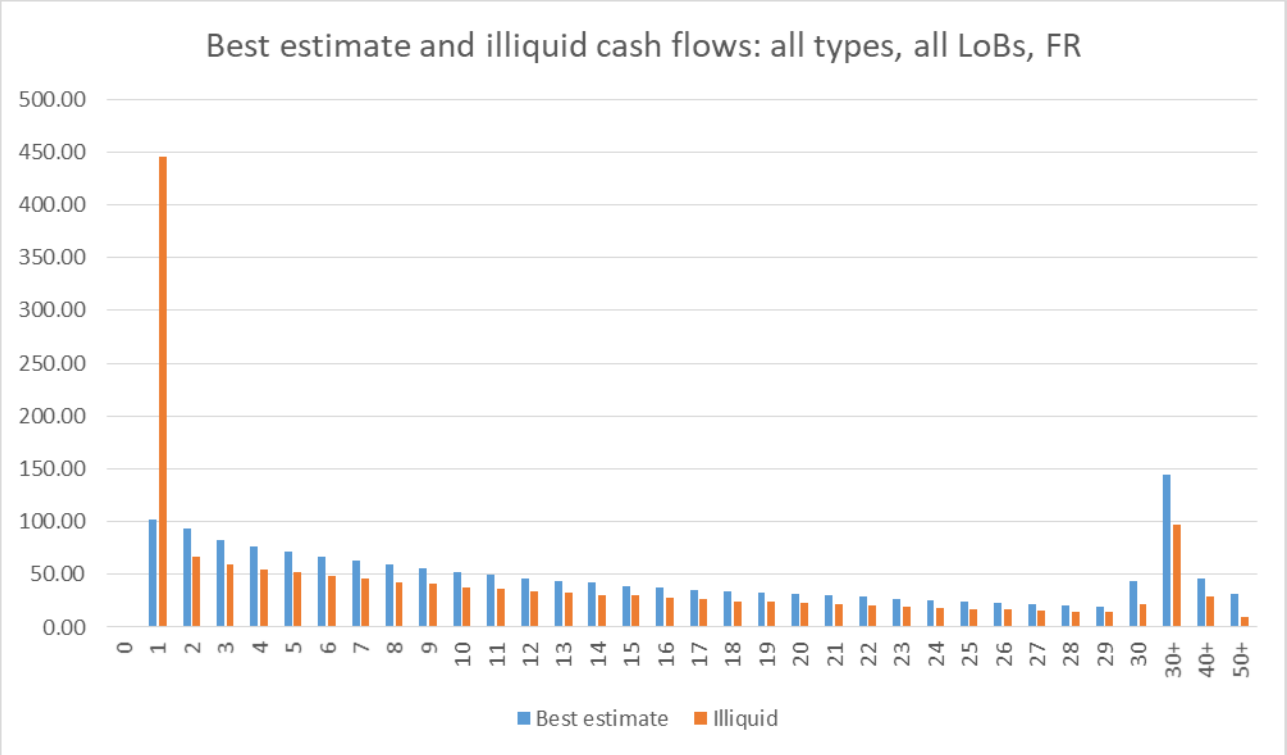

Best estimate and illiquid cash flows: all types, all LoBs, FI
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

France

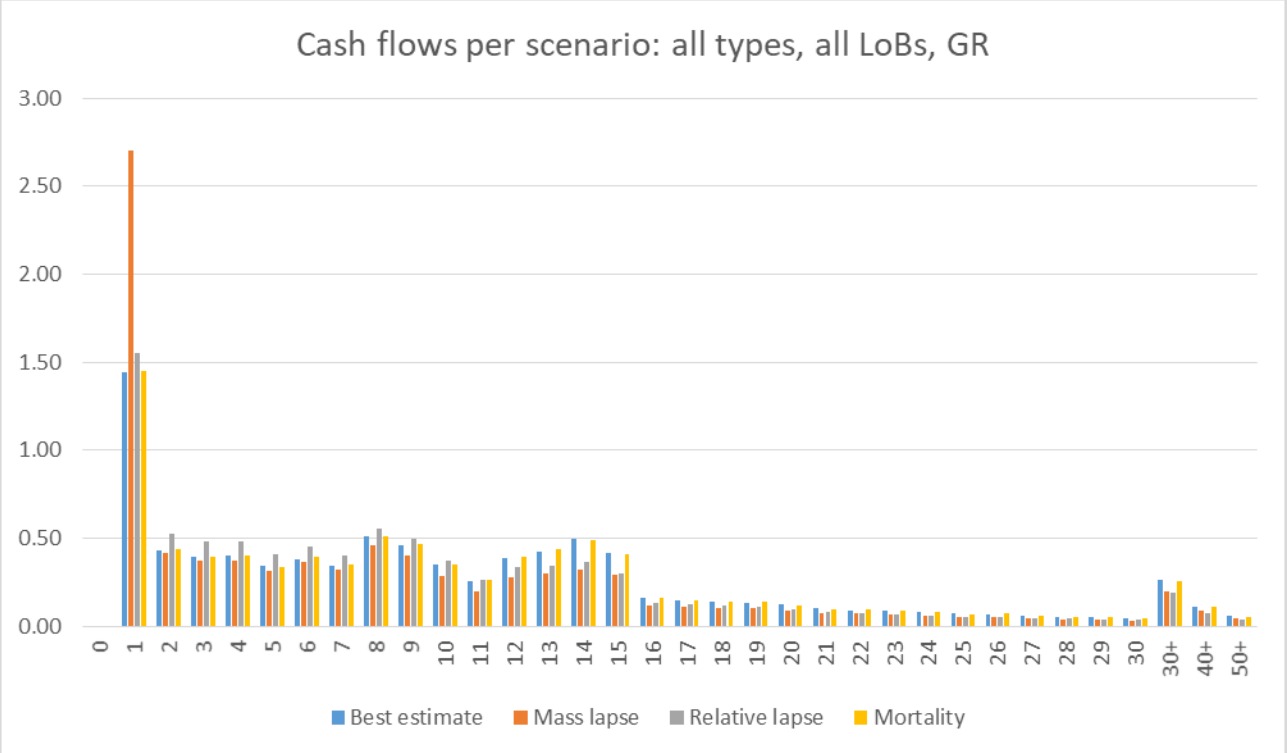

Cash flows per scenario: all types, all LoBs, FR
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

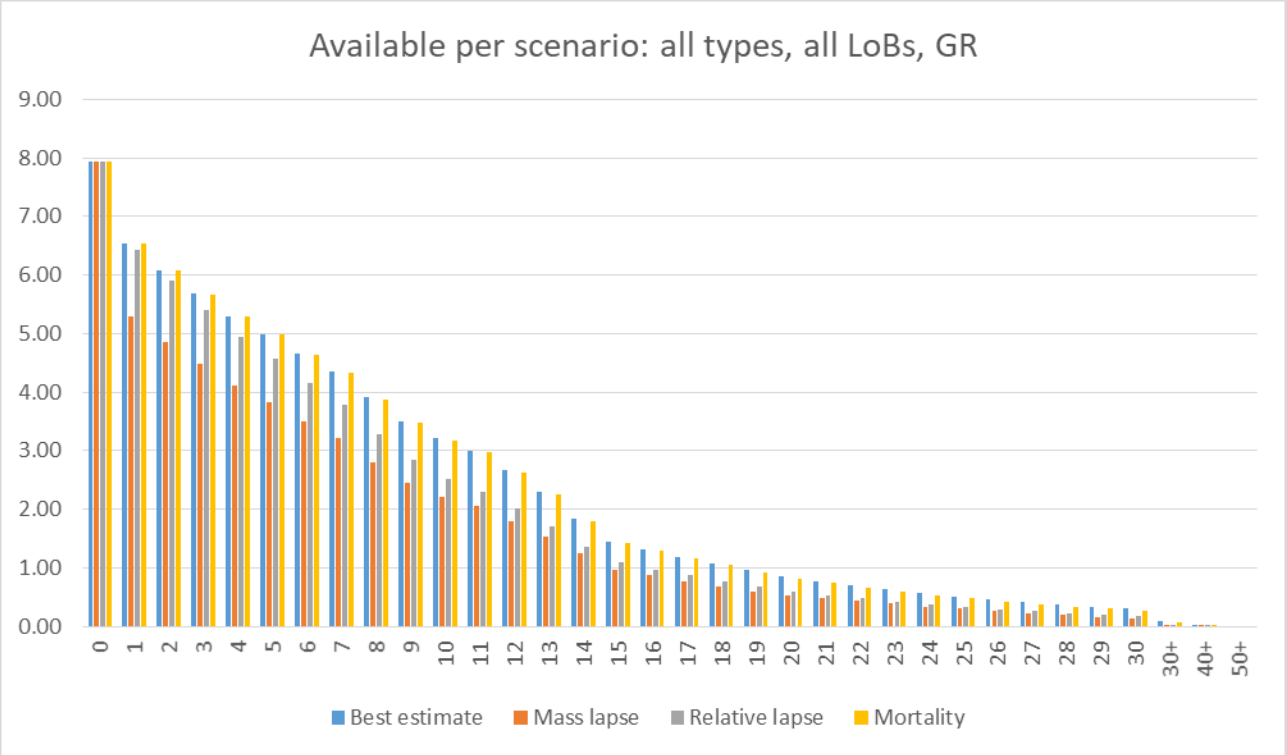

Available per scenario: all types, all LoBs, FR
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality


Minimum available: all types, all LoBs, FR
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

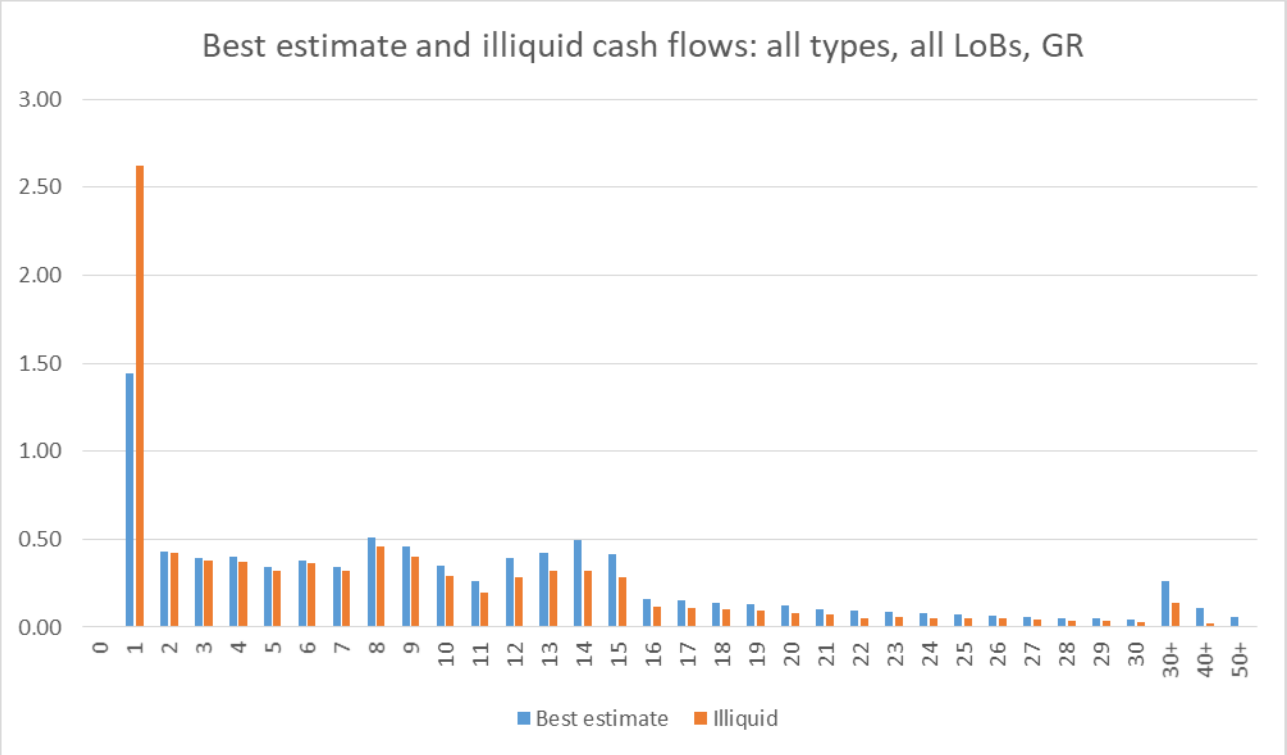

Best estimate and illiquid cash flows: all types, all LoBs, FR
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Greece

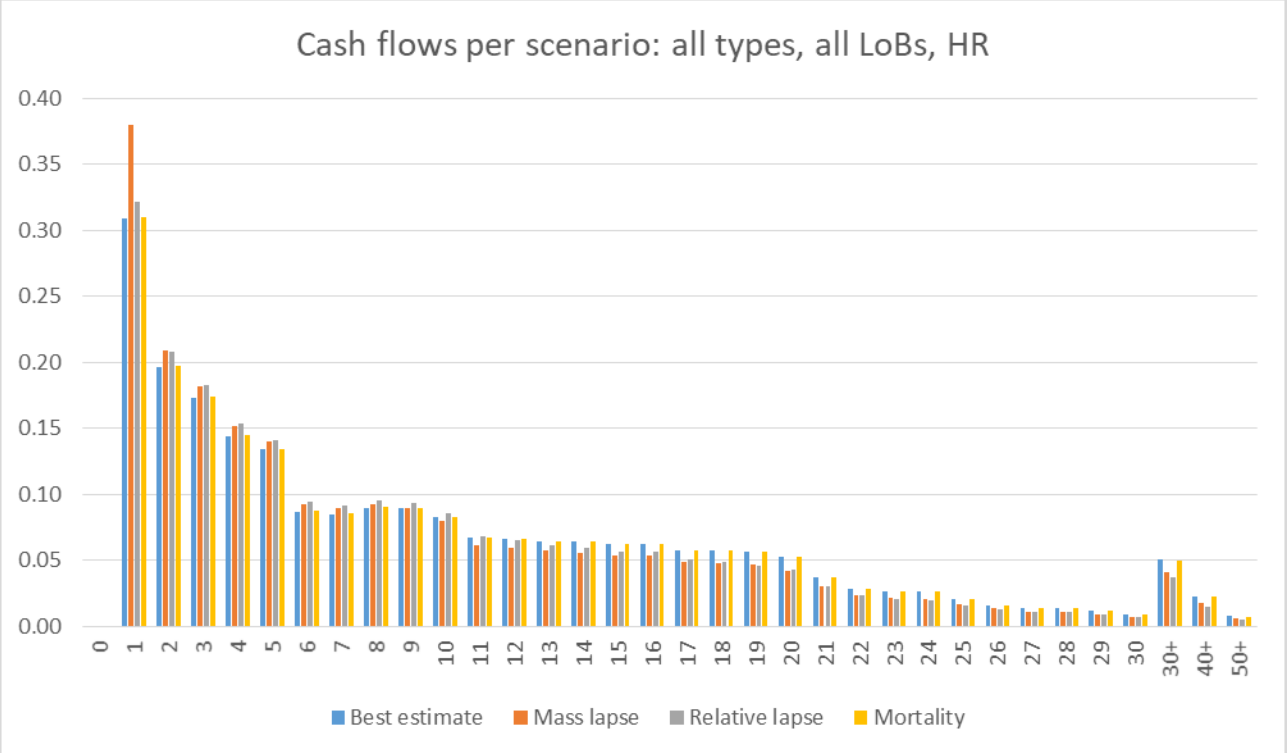

Cash flows per scenario: all types, all LoBs, GR
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

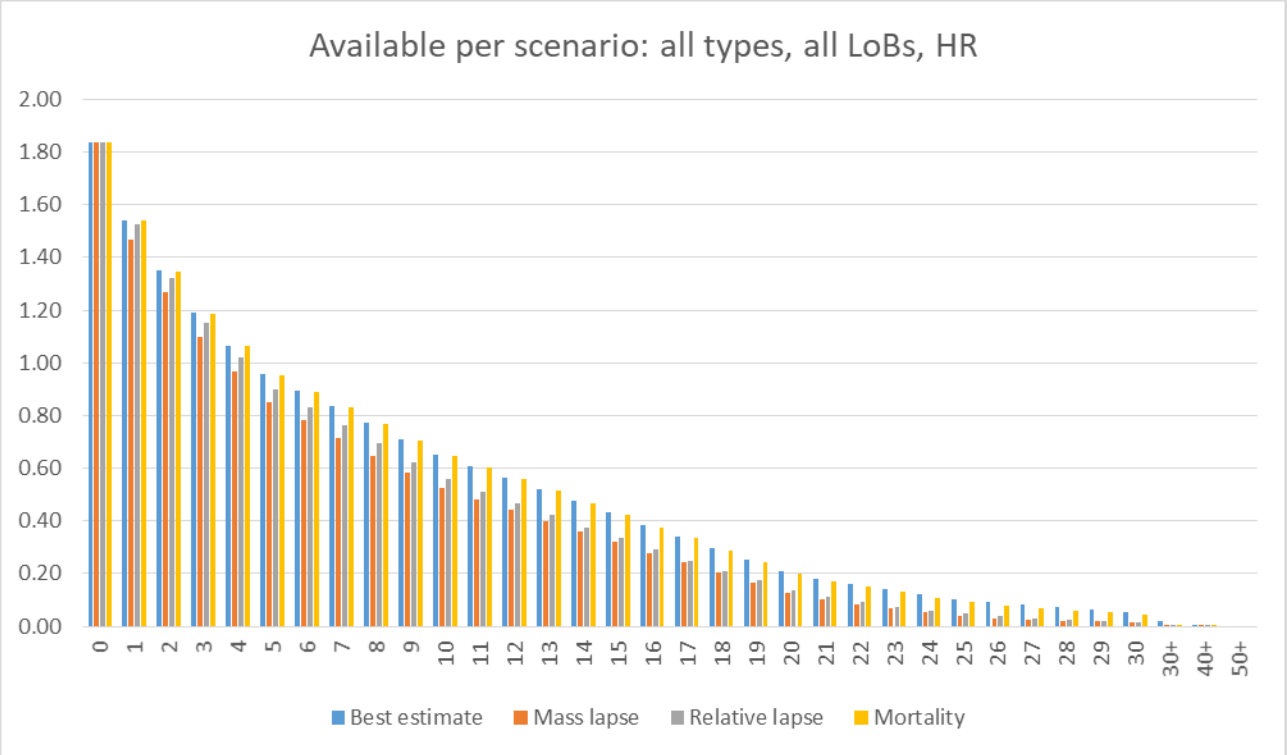

Available per scenario: all types, all LoBs, GR
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

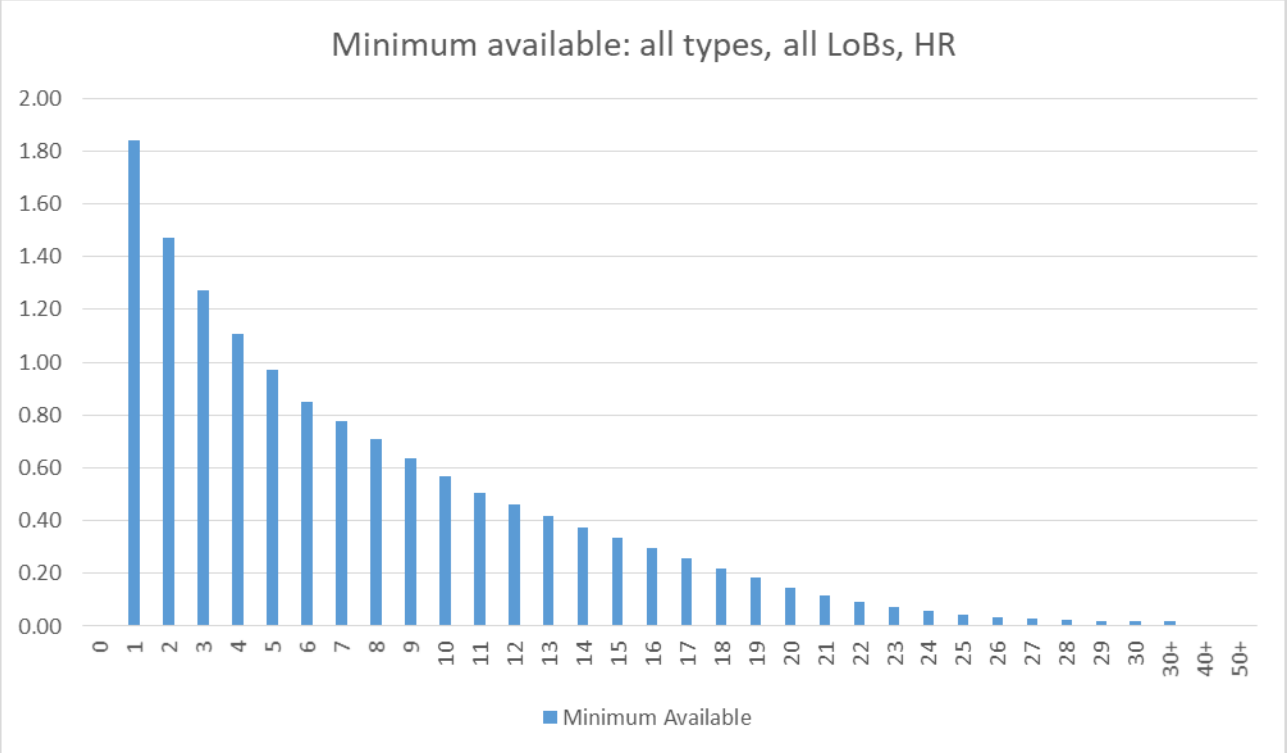

Minimum available: all types, all LoBs, GR
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

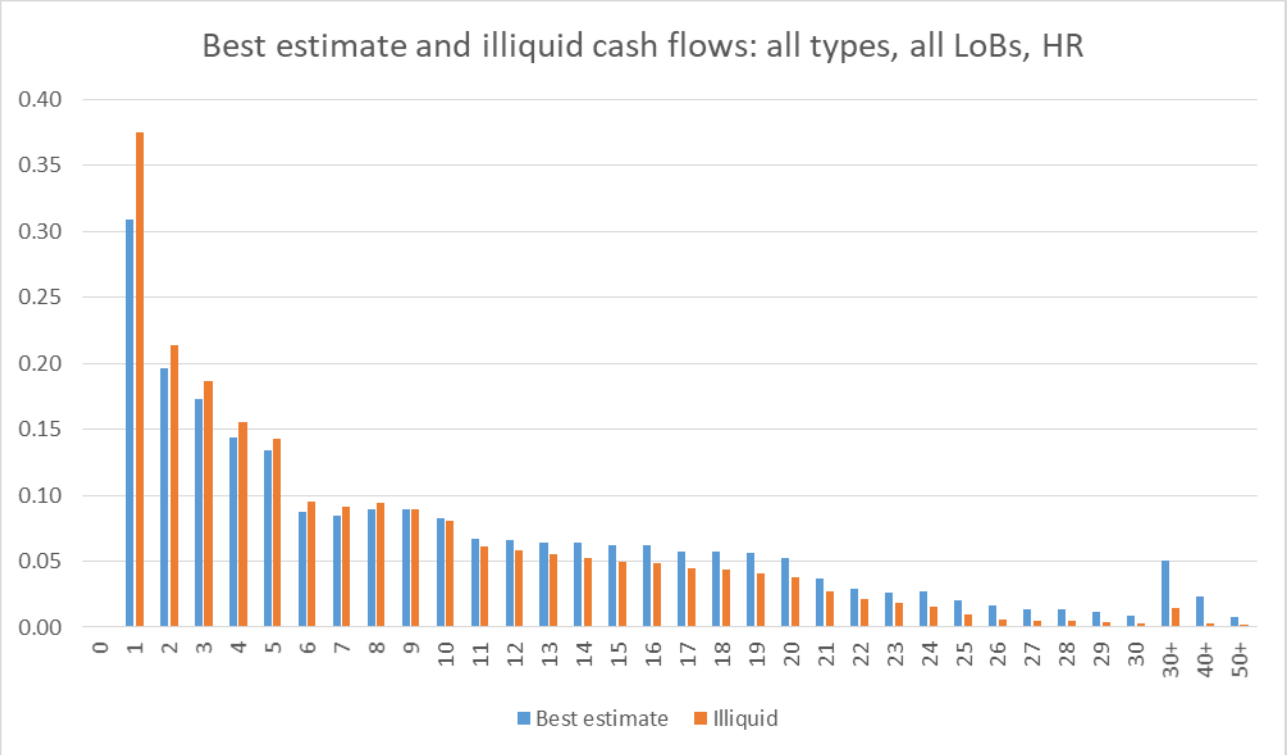

Best estimate and illiquid cash flows: all types, all LoBs, GR
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Croatia

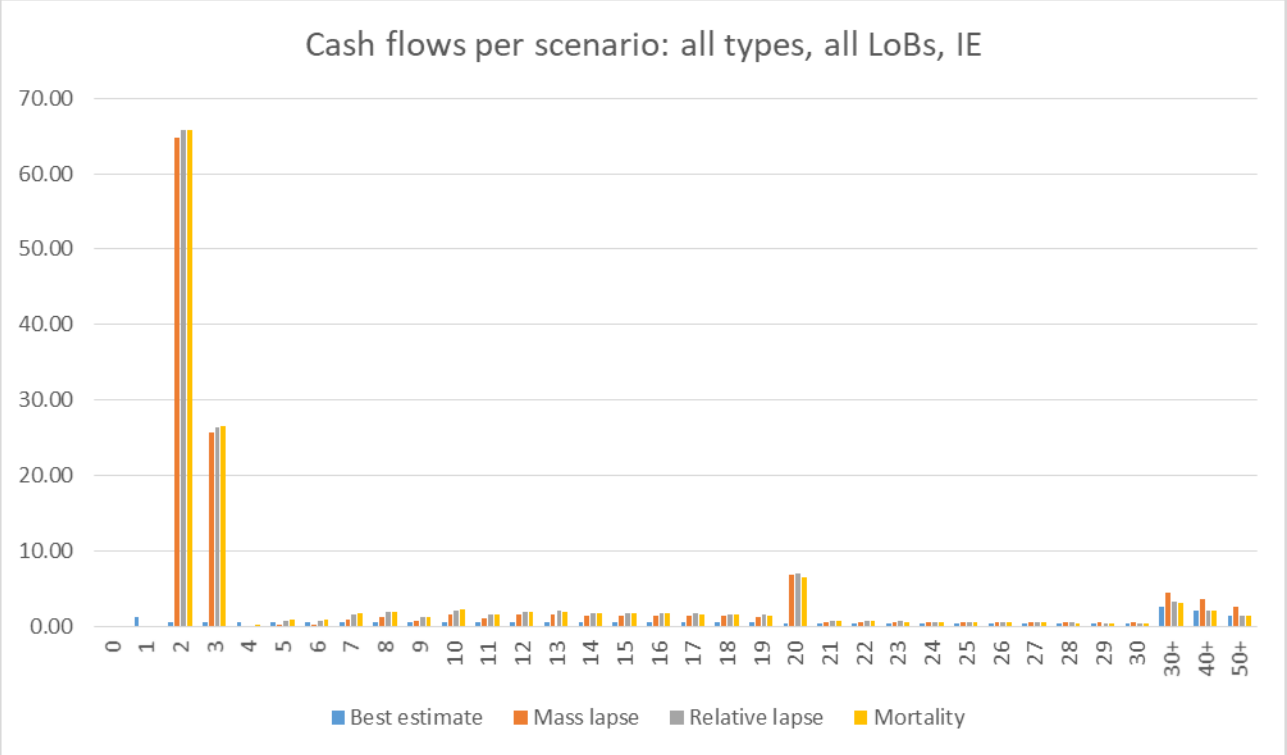

Cash flows per scenario: all types, all LoBs, HR
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

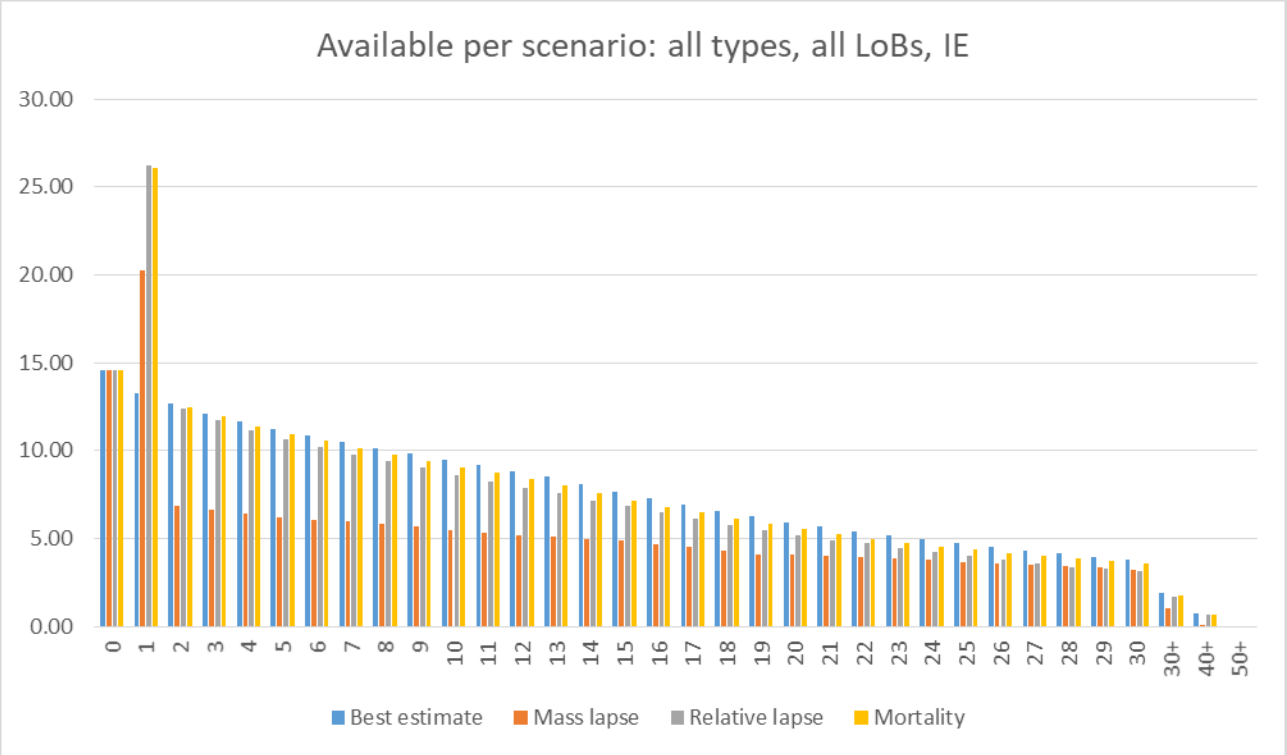

Available per scenario: all types, all LoBs, HR
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

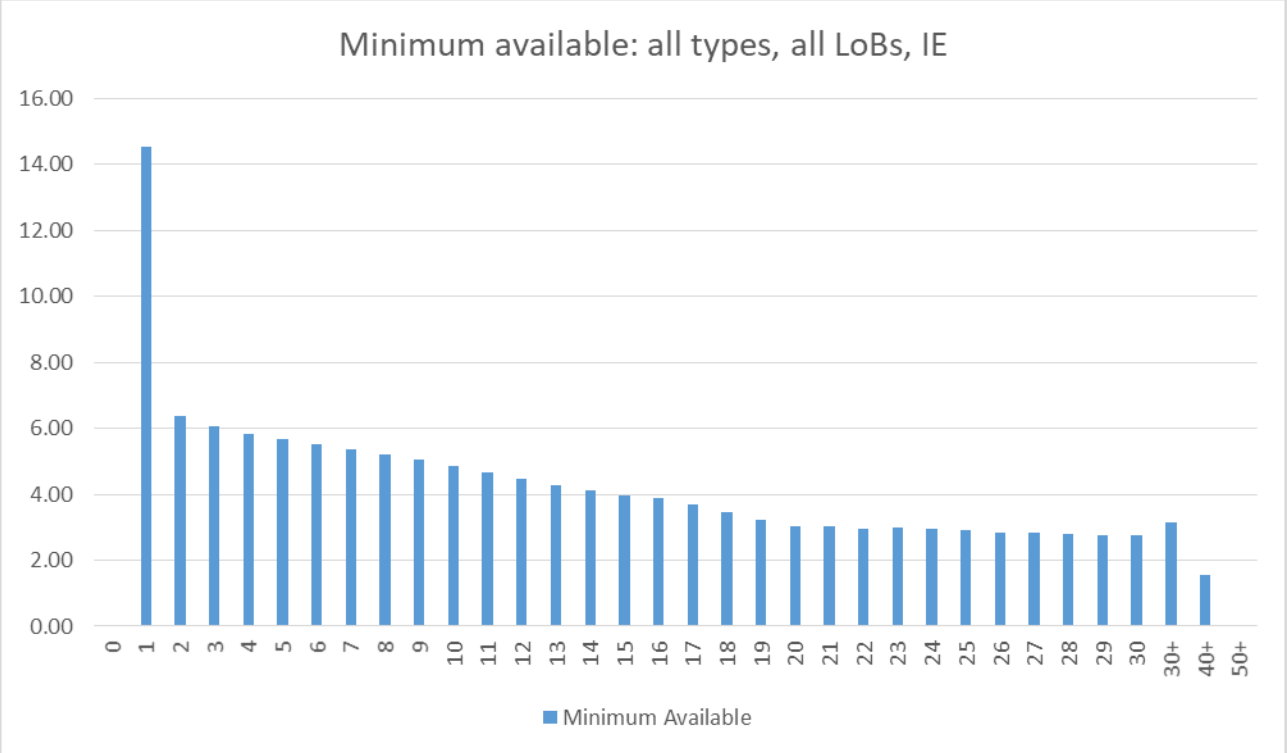

Minimum available: all types, all LoBs, HR
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

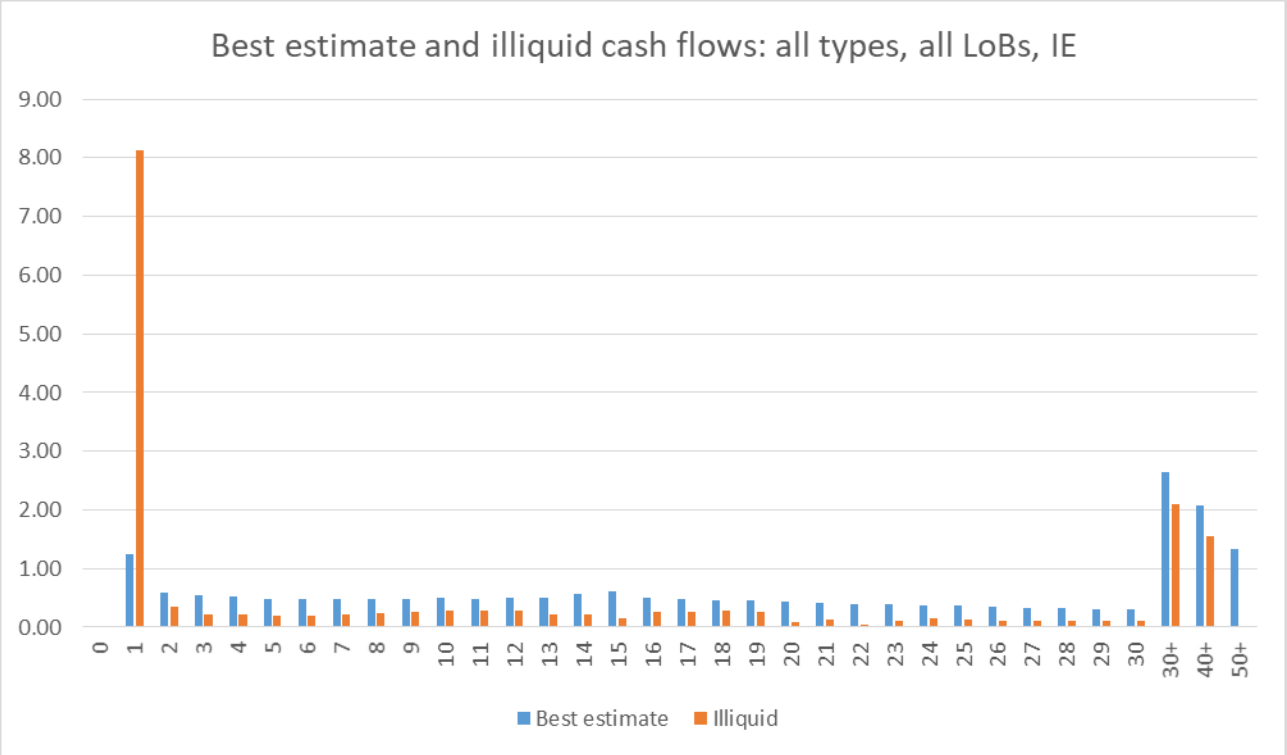

Best estimate and illiquid cash flows: all types, all LoBs, HR
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Ireland

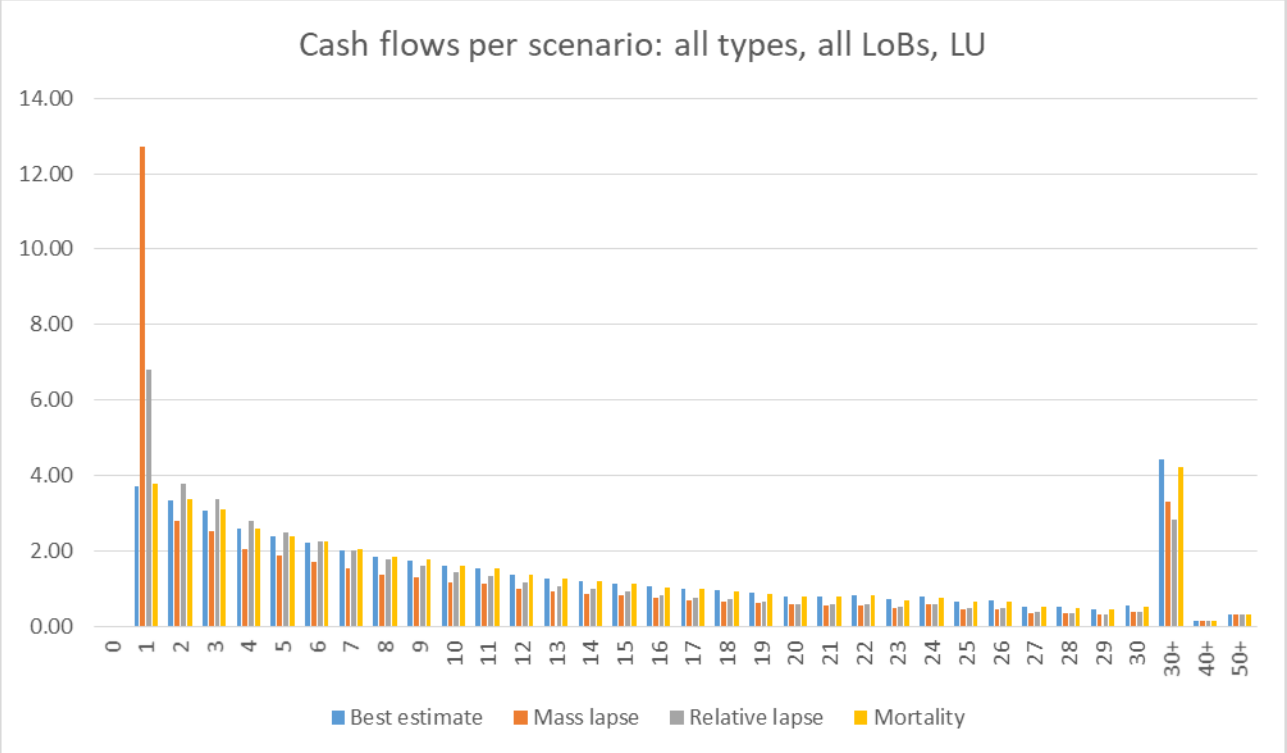

Cash flows per scenario: all types, all LoBs, IE
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

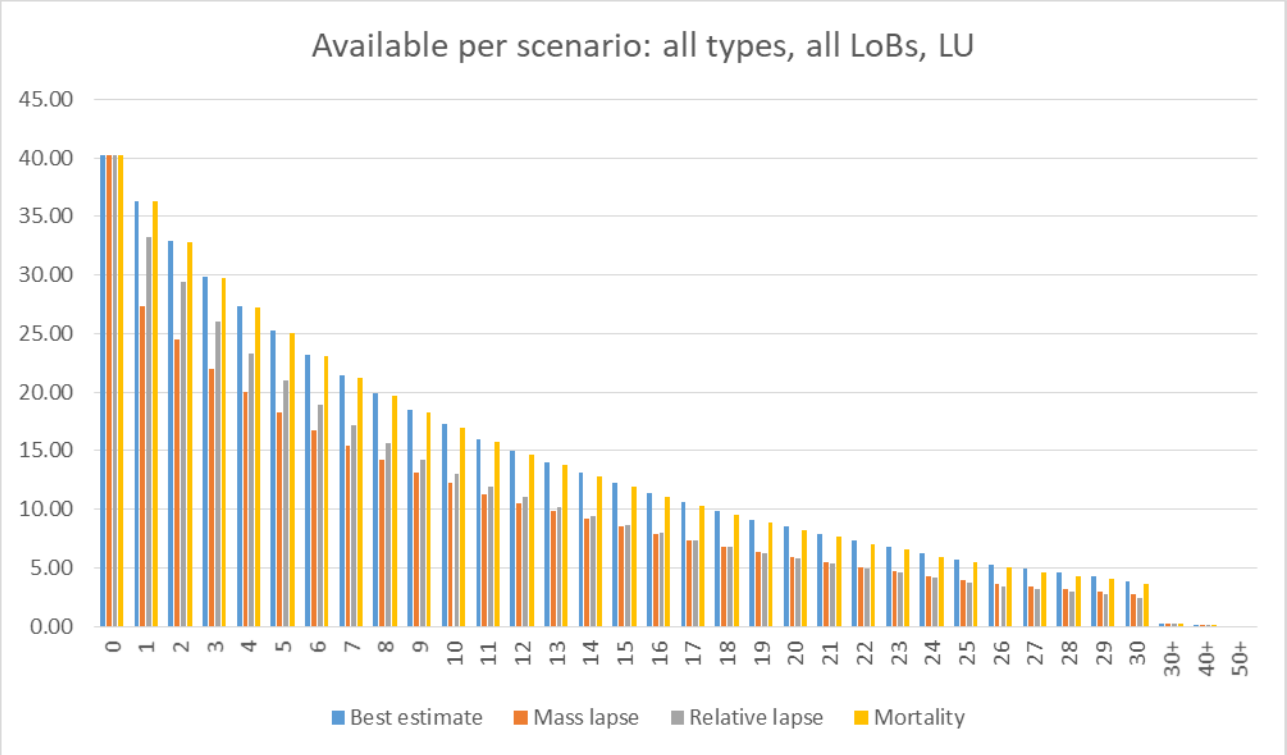

Available per scenario: all types, all LoBs, IE
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

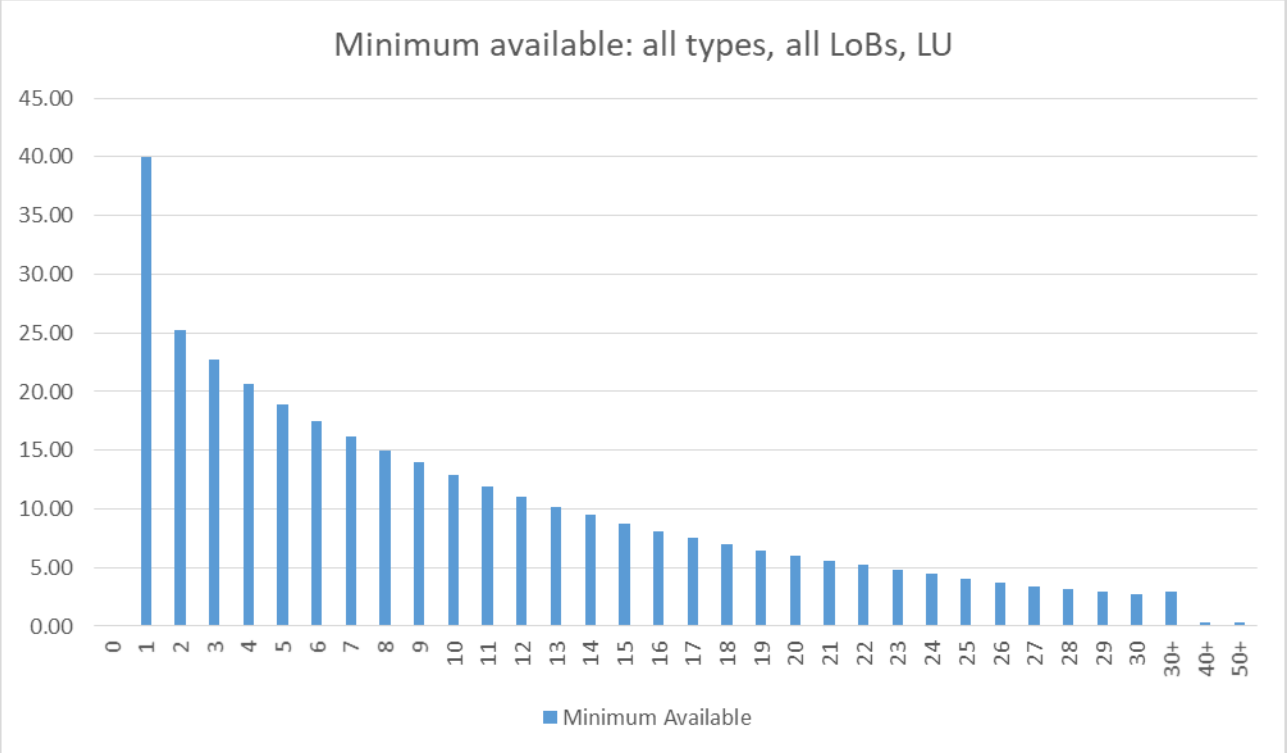

Minimum available: all types, all LoBs, IE
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

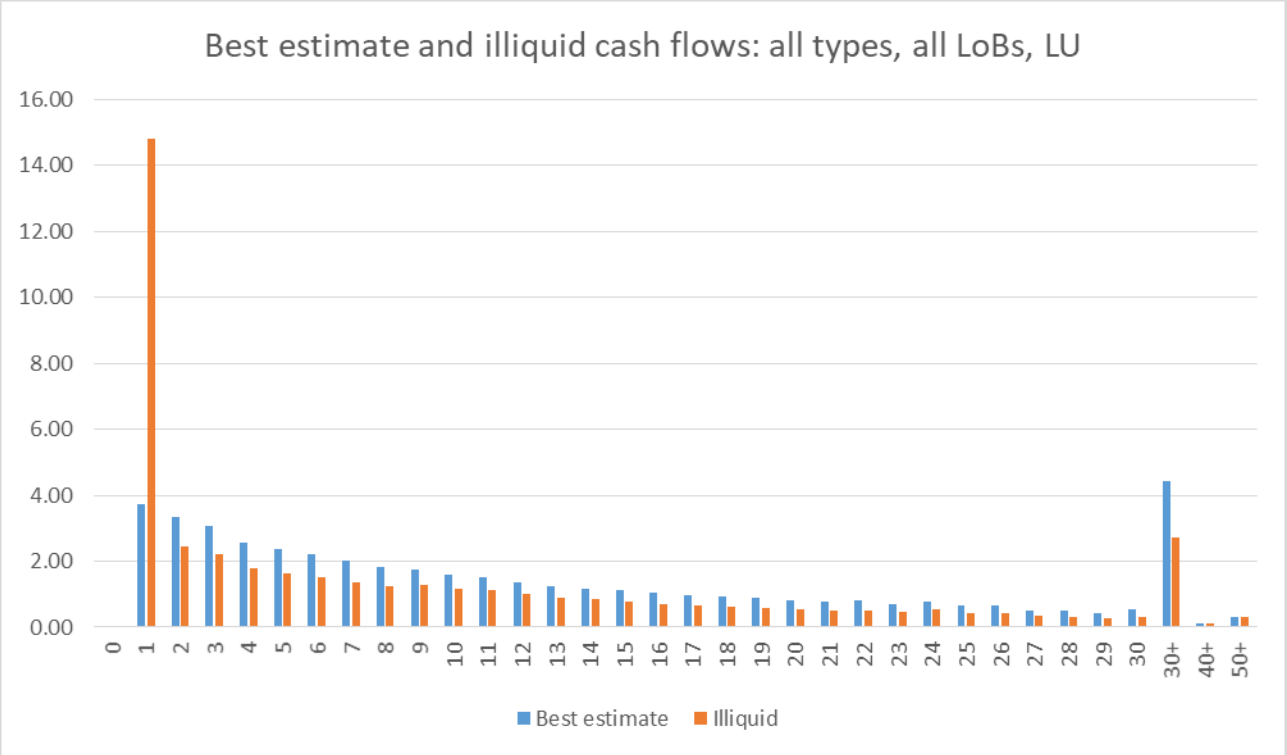

Best estimate and illiquid cash flows: all types, all LoBs, IE
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Luxembourg

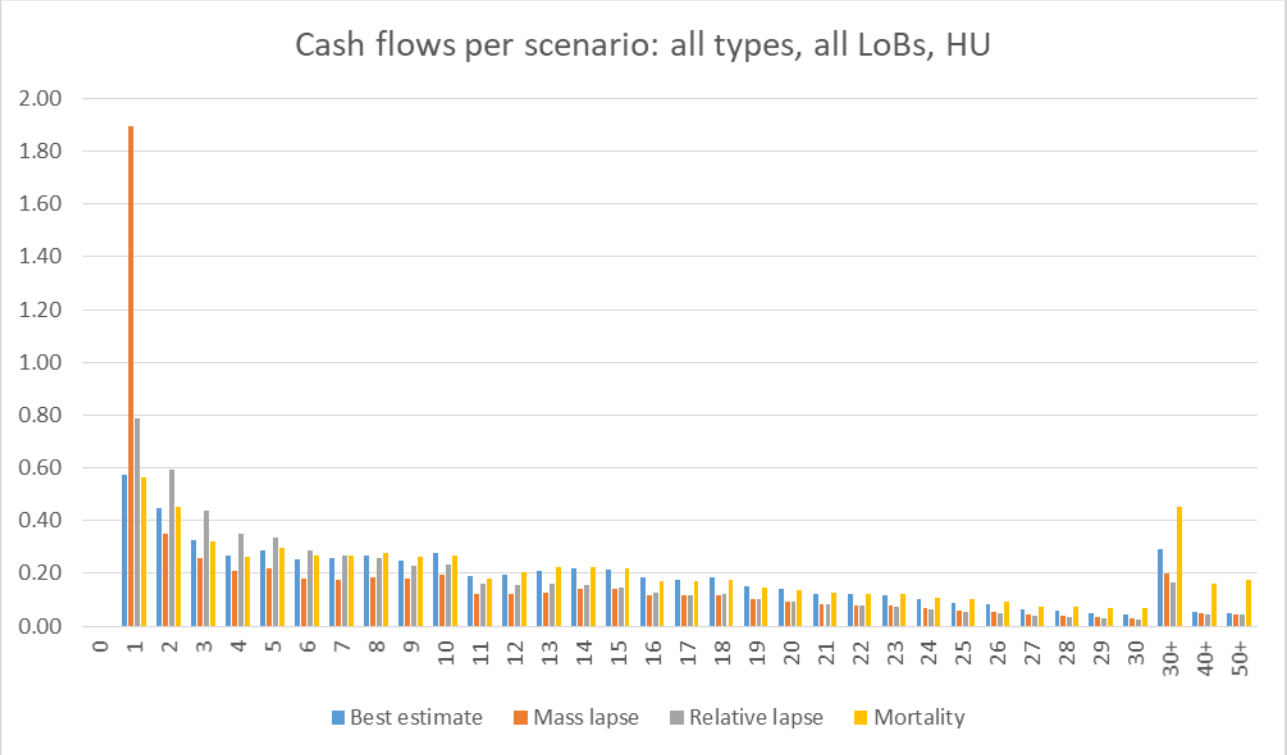

Cash flows per scenario: all types, all LoBs, LU
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

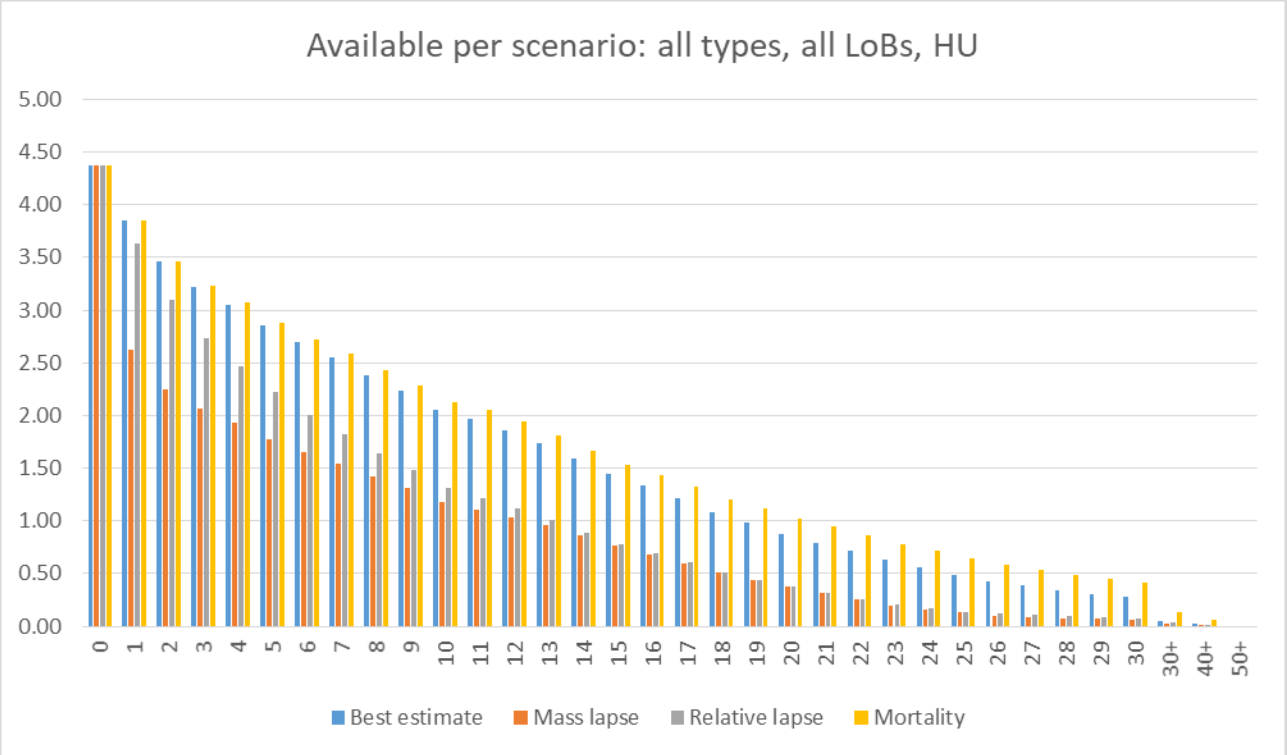

Available per scenario: all types, all LoBs, LU
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

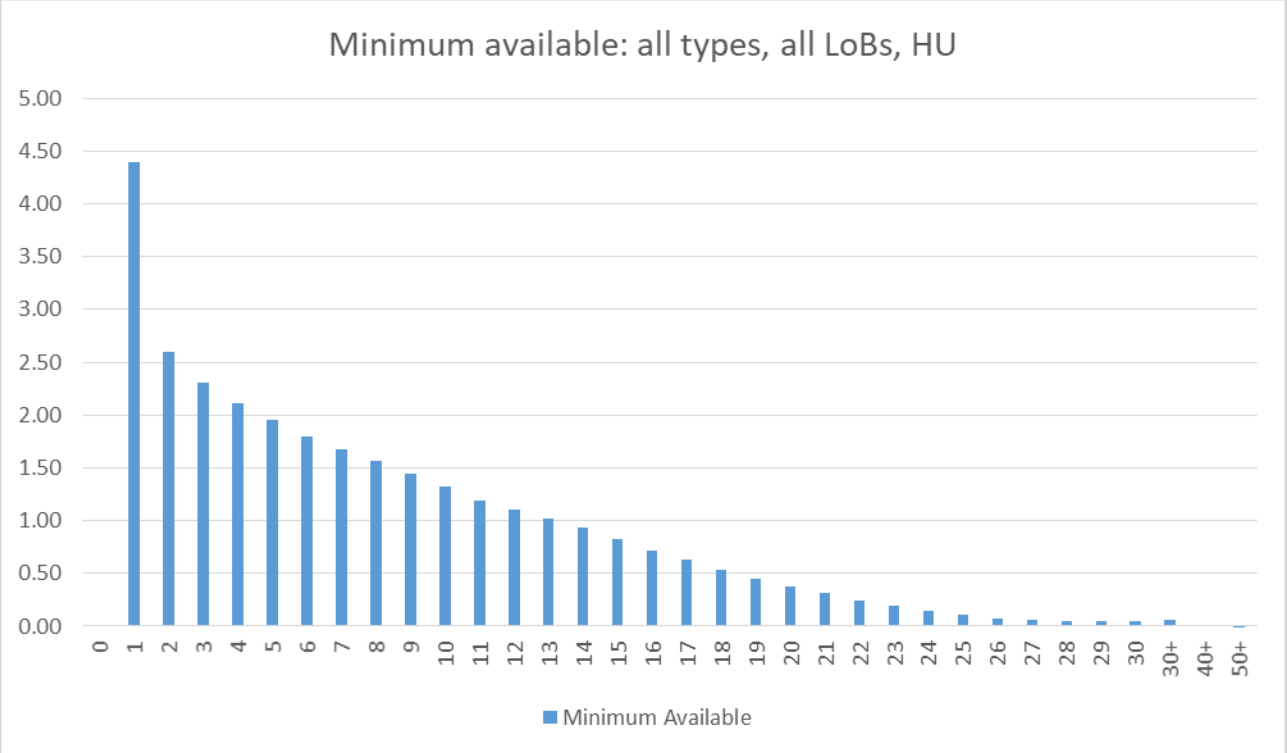

Minimum available: all types, all LoBs, LU
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

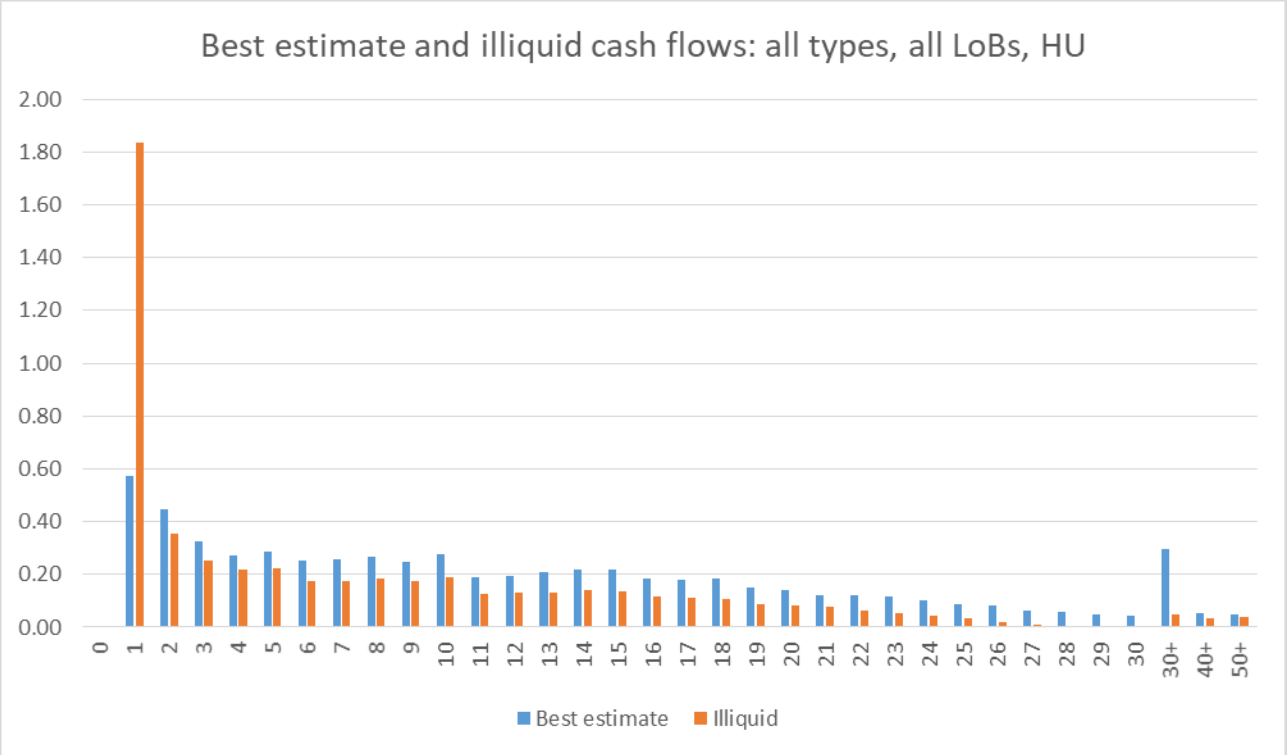

Best estimate and illiquid cash flows: all types, all LoBs, LU
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Hungary

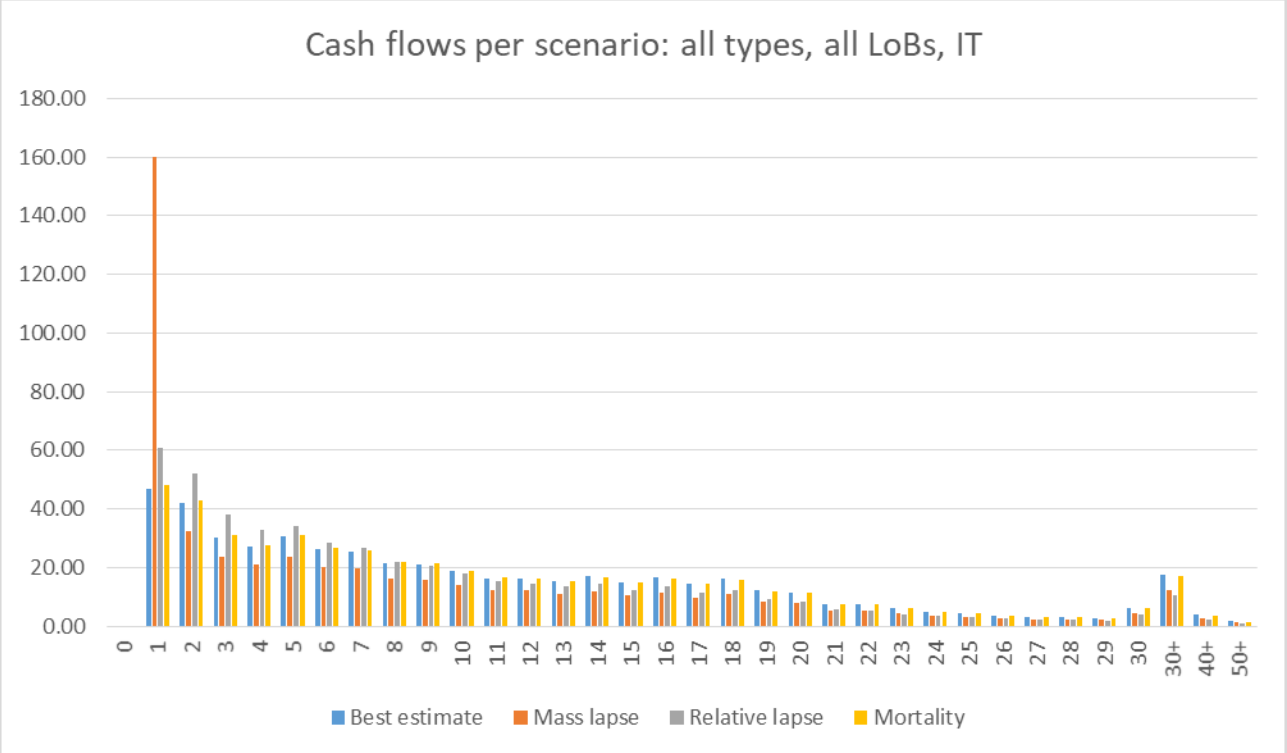

Cash flows per scenario: all types, all LoBs, HU
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

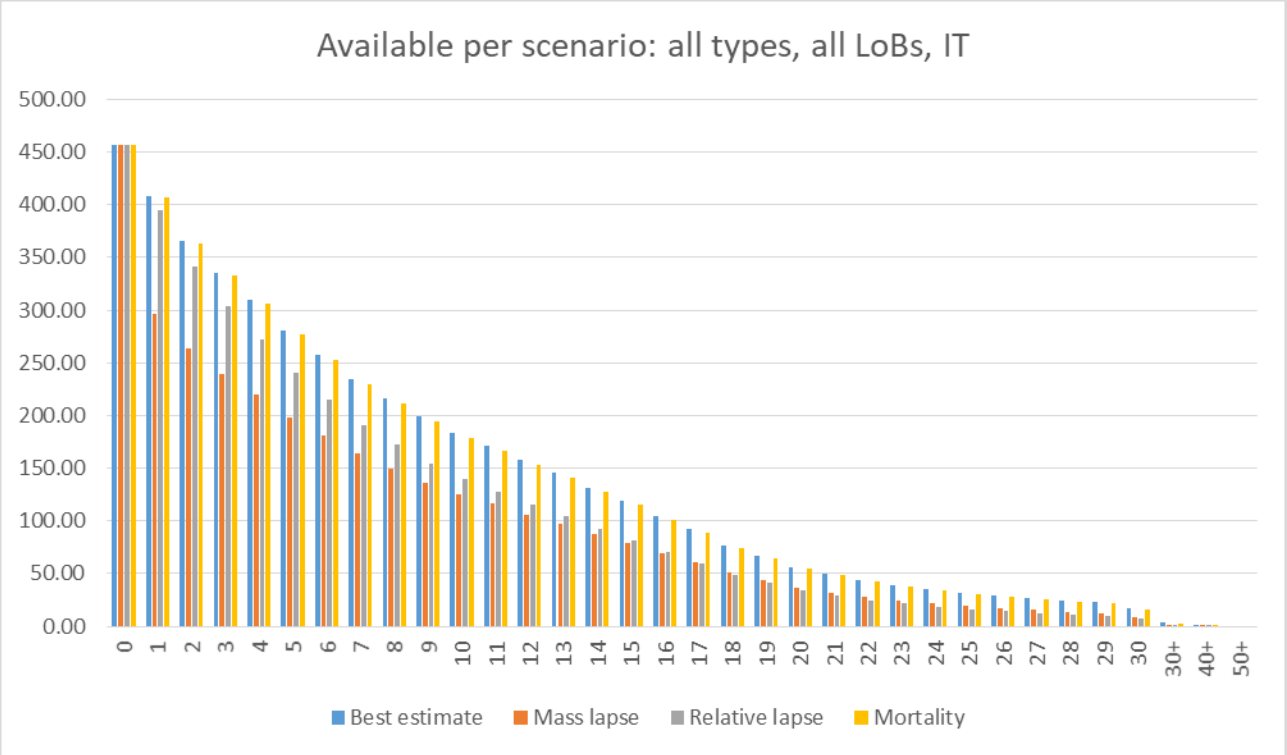

Available per scenario: all types, all LoBs, HU
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

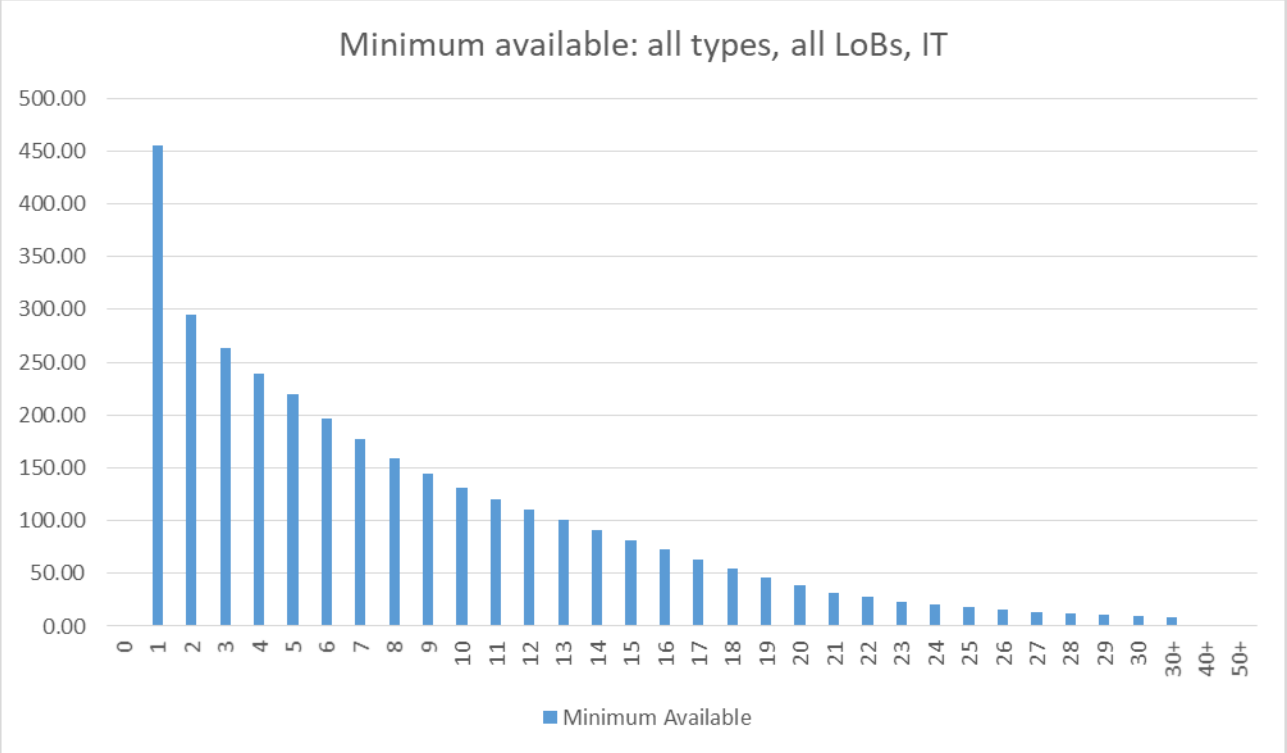

Minimum available: all types, all LoBs, HU
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

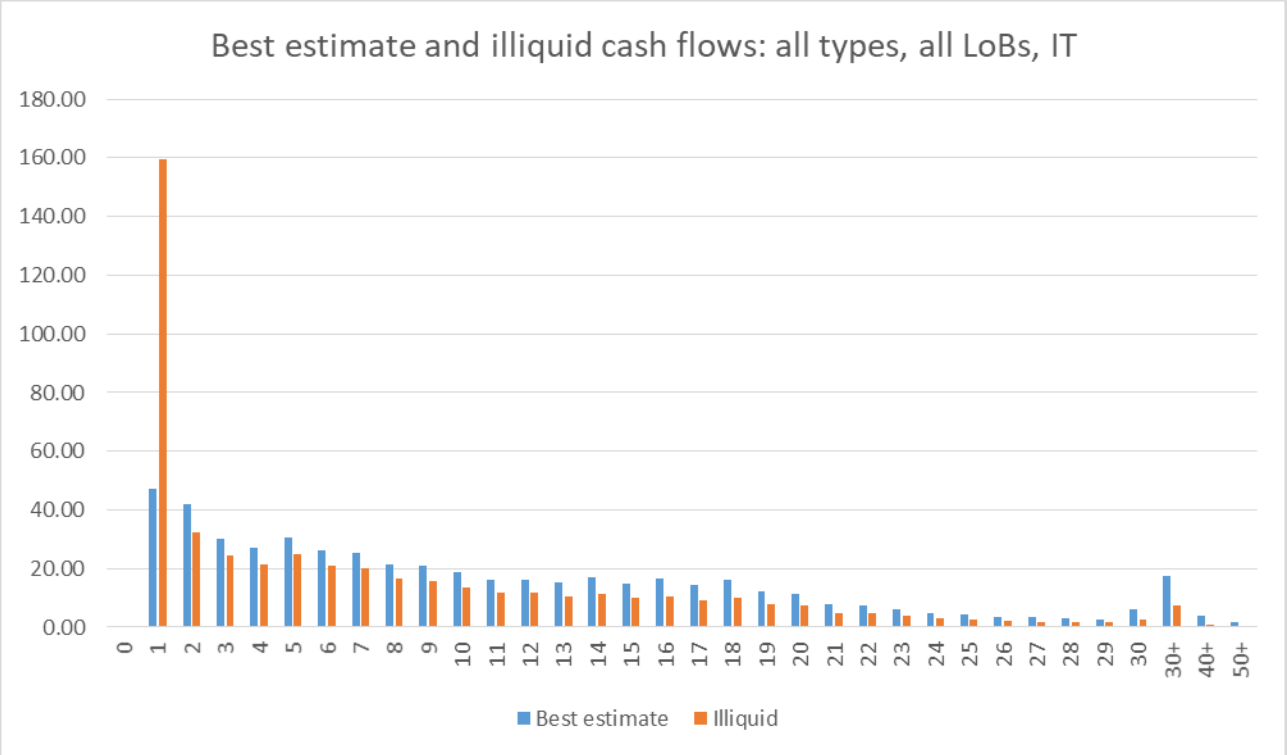

Best estimate and illiquid cash flows: all types, all LoBs, HU
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Italy

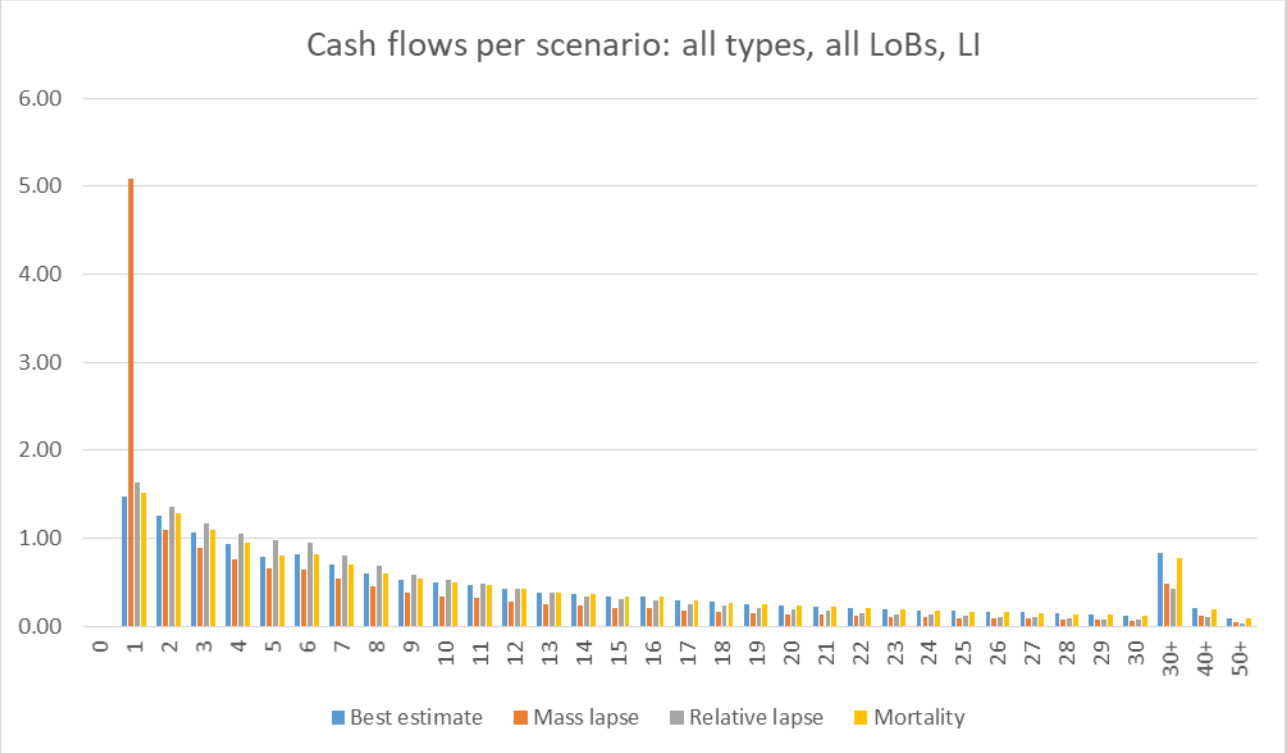

Cash flows per scenario: all types, all LoBs, IT
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

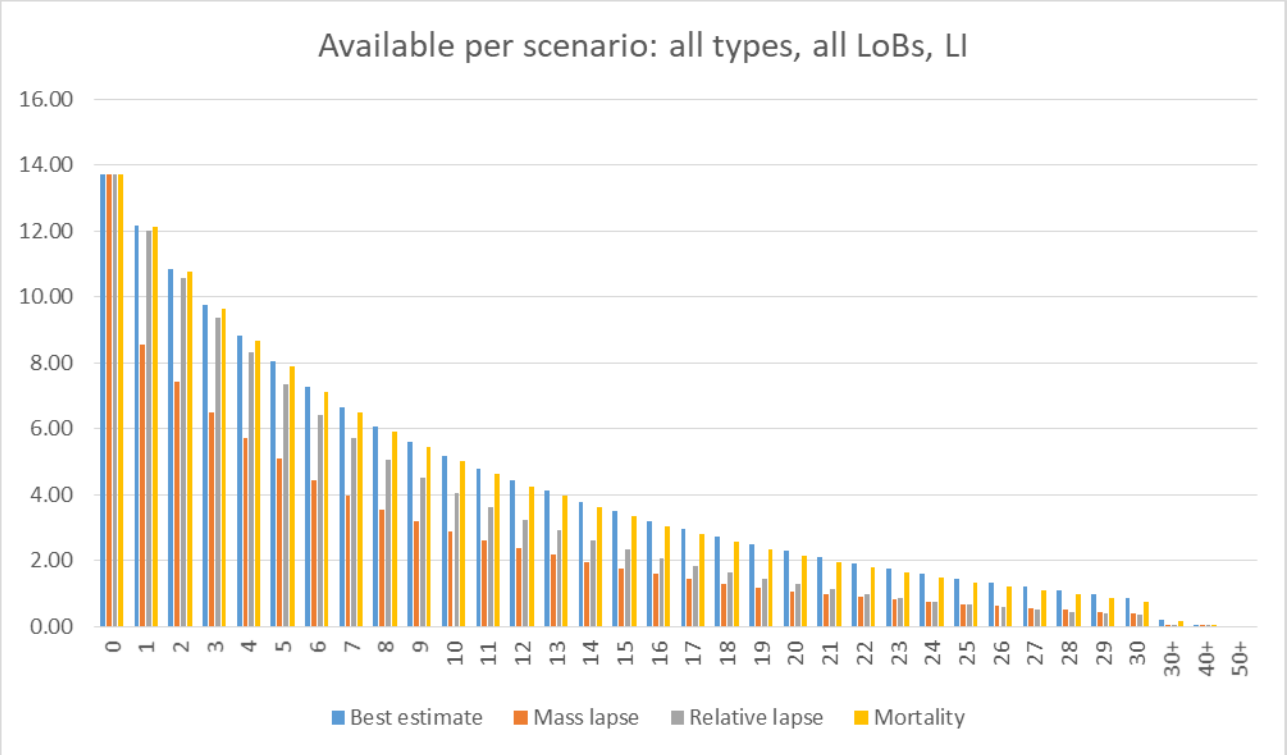

Available per scenario: all types, all LoBs, IT
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

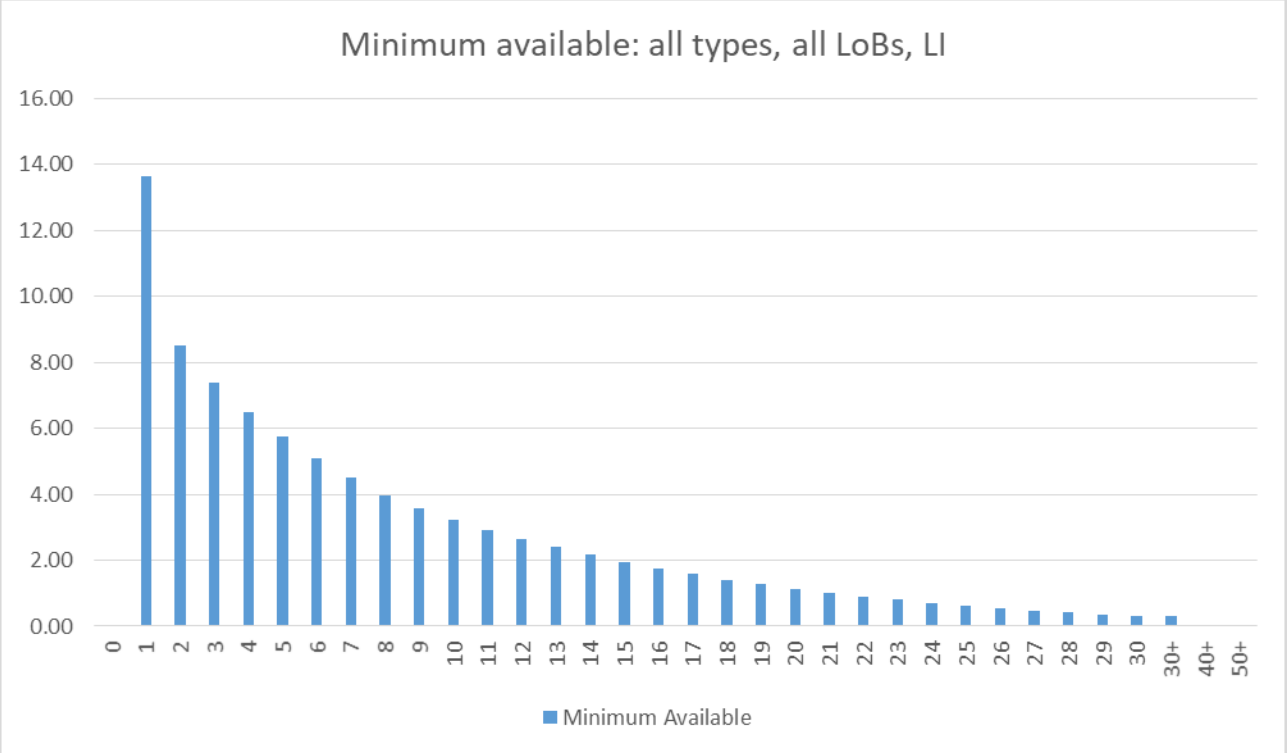

Minimum available: all types, all LoBs, IT
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

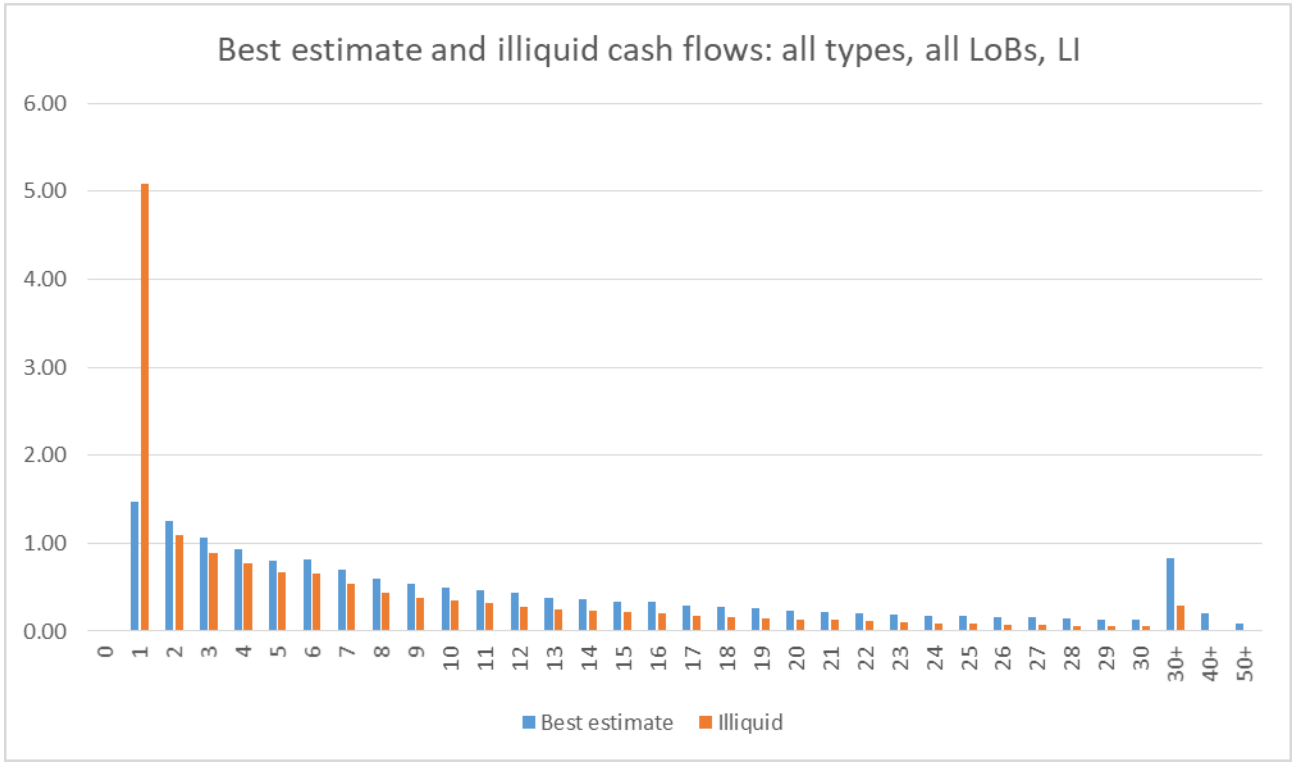


Liechtenstein

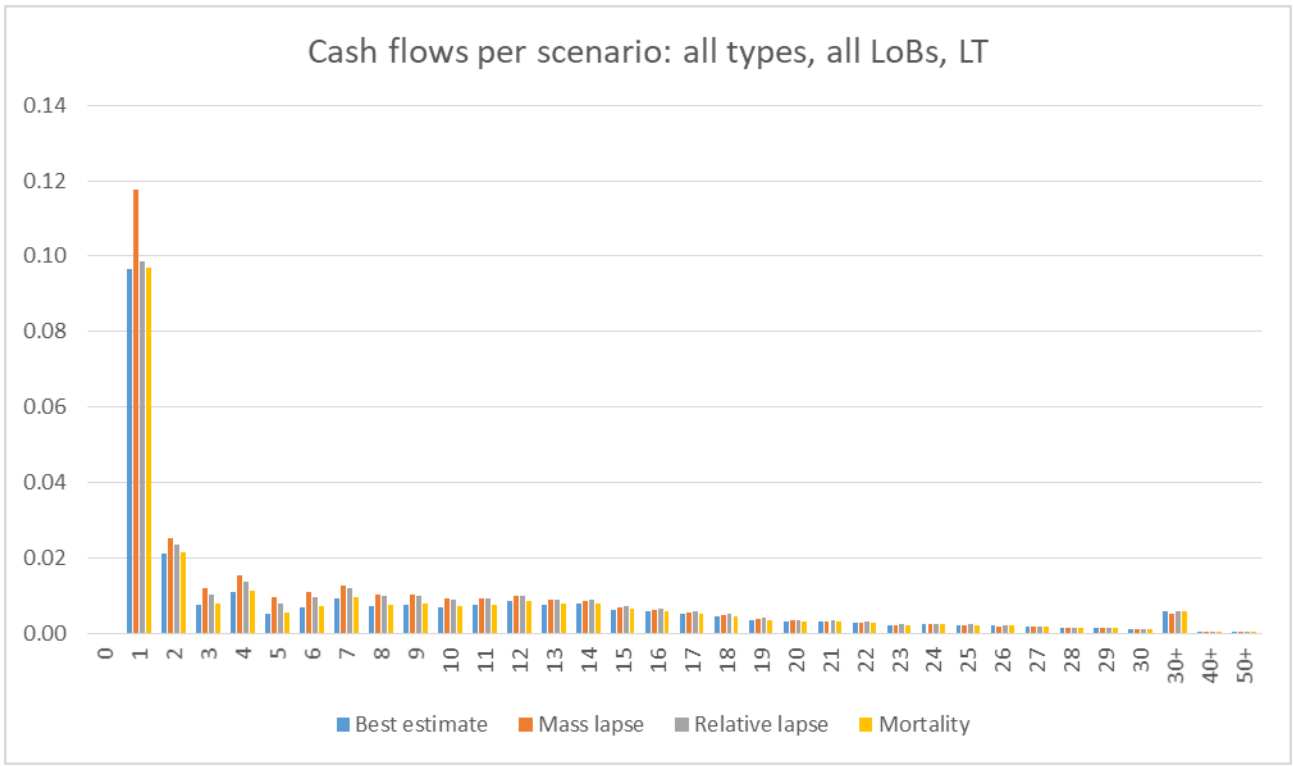


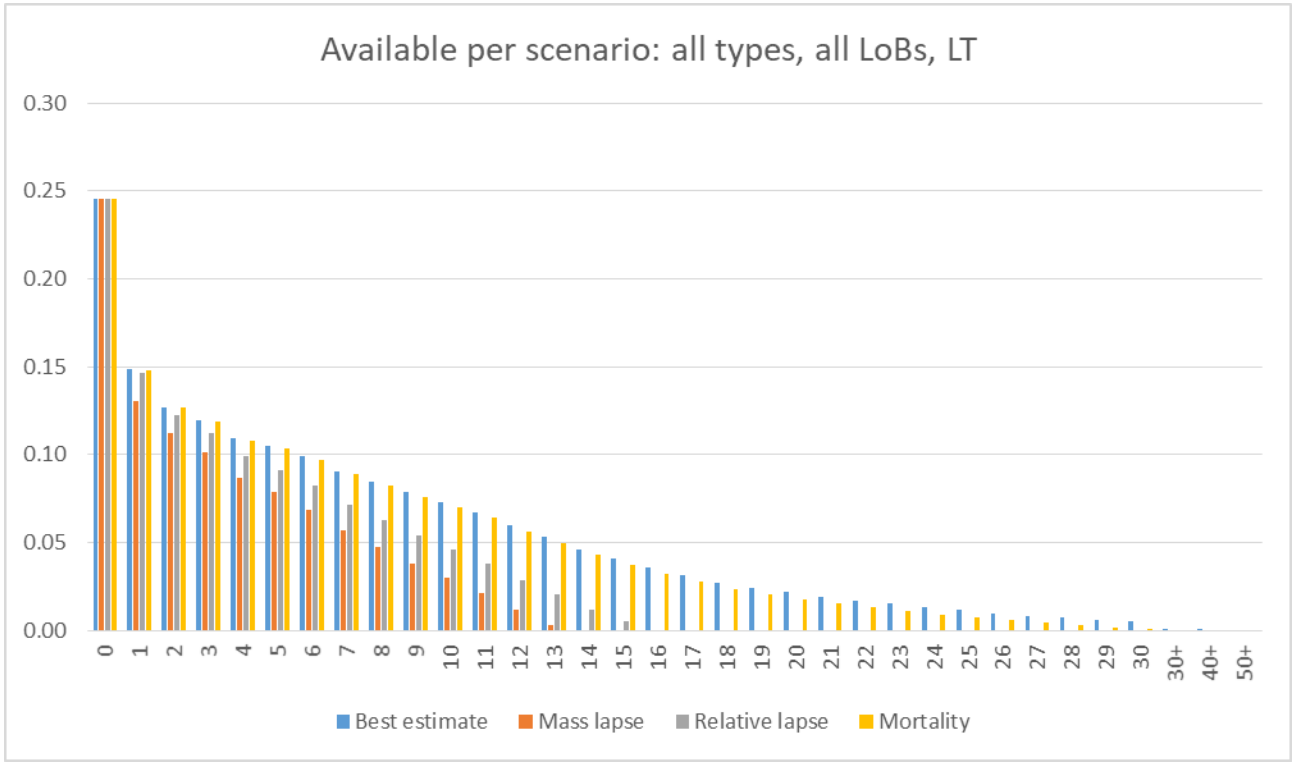

Available per scenario: all types, all LoBs, LI
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality


Minimum available: all types, all LoBs, LI
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

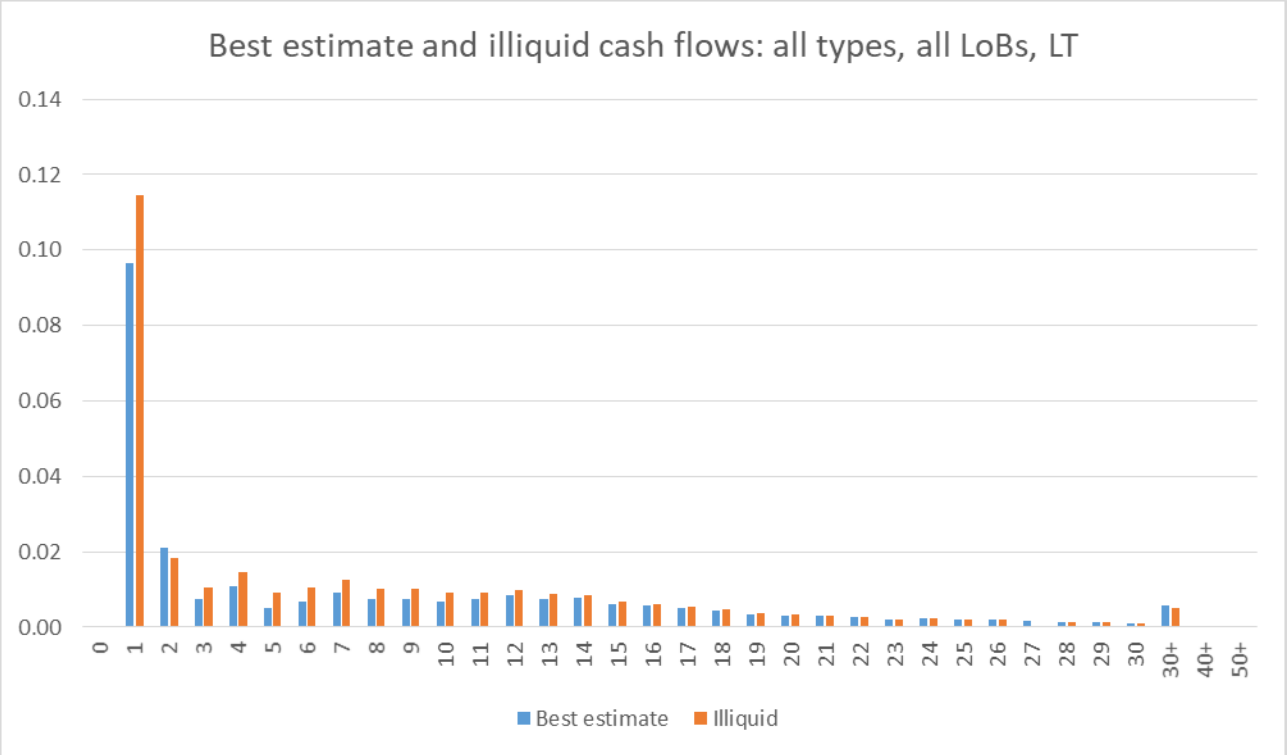

Best estimate and illiquid cash flows: all types, all LoBs, LI
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Lithuania

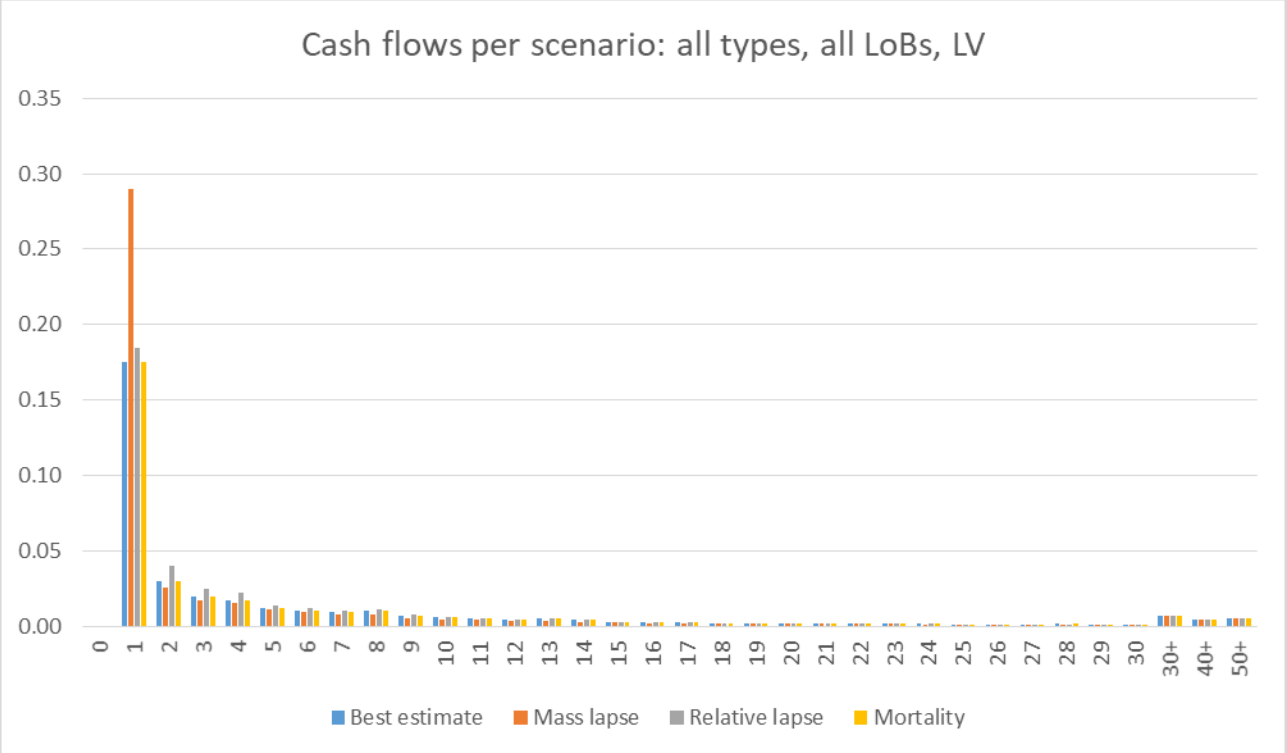

Cash flows per scenario: all types, all LoBs, LT
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

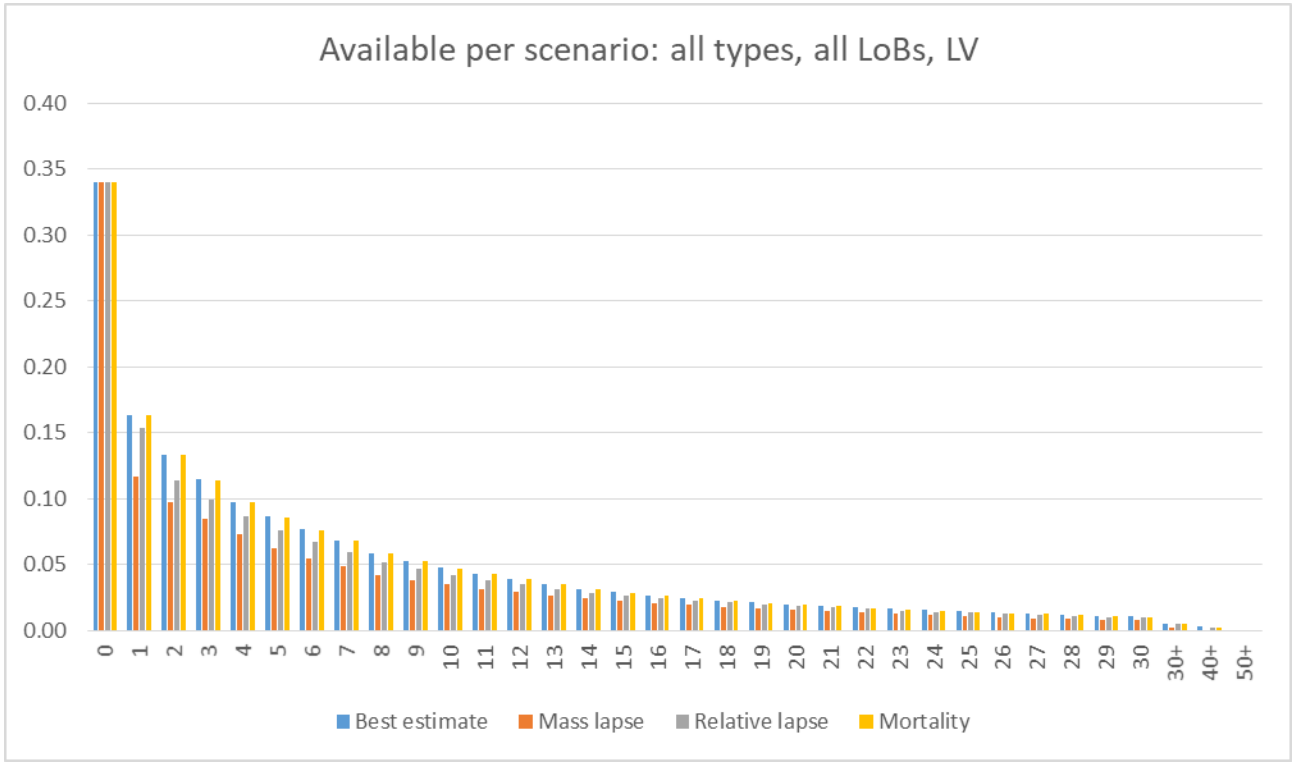

Available per scenario: all types, all LoBs, LT
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

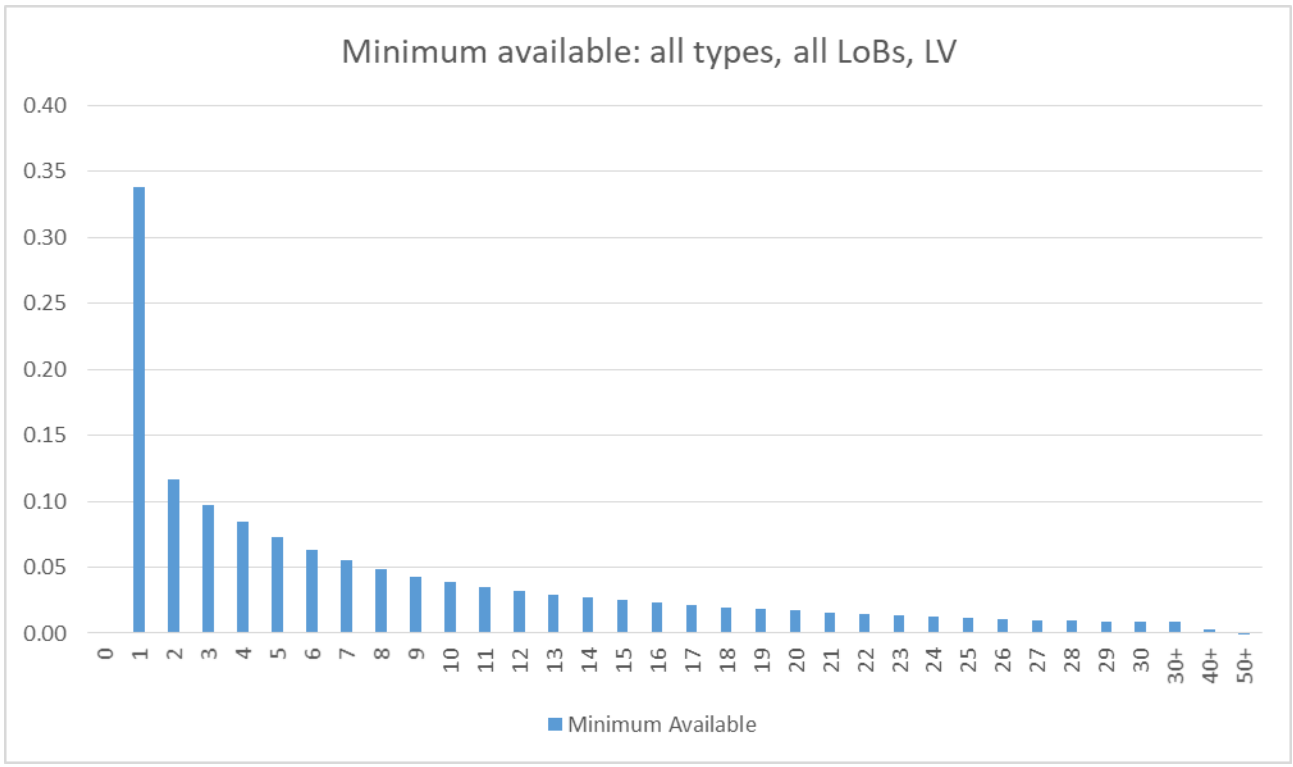

Minimum available: all types, all LoBs, LT
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

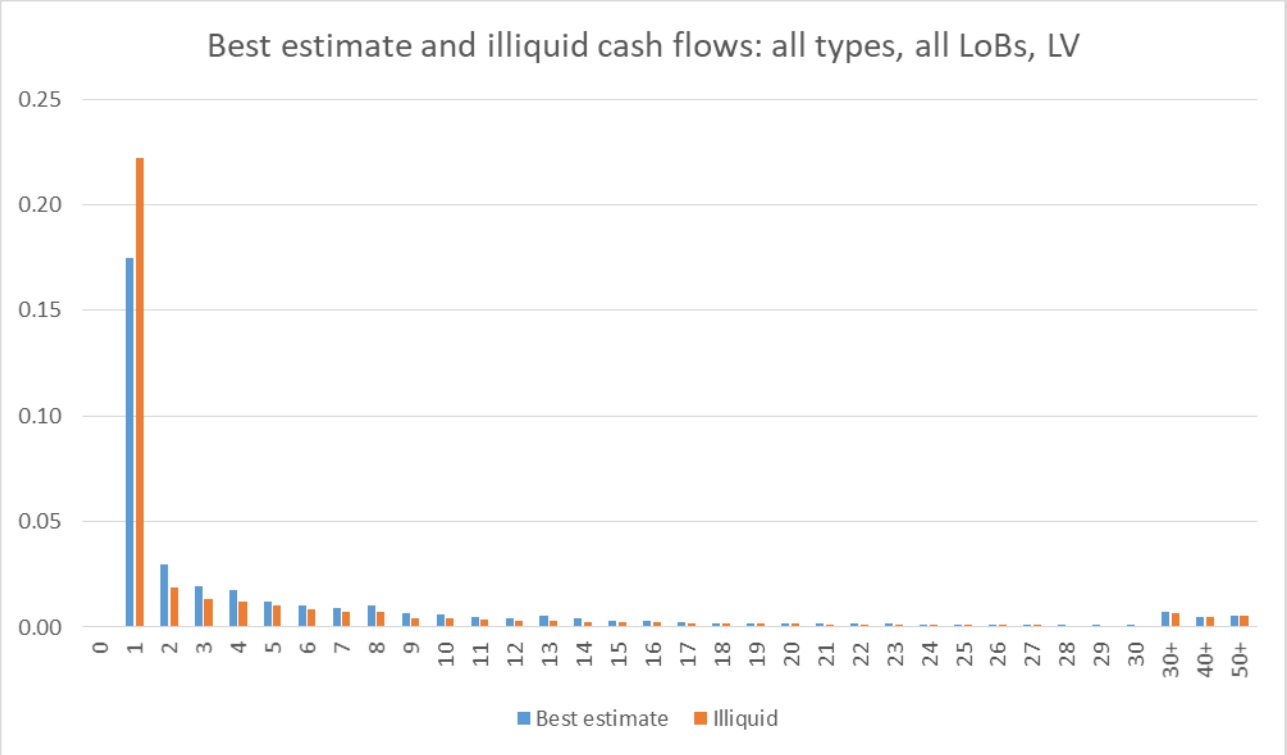

Best estimate and illiquid cash flows: all types, all LoBs, LT
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Latvia

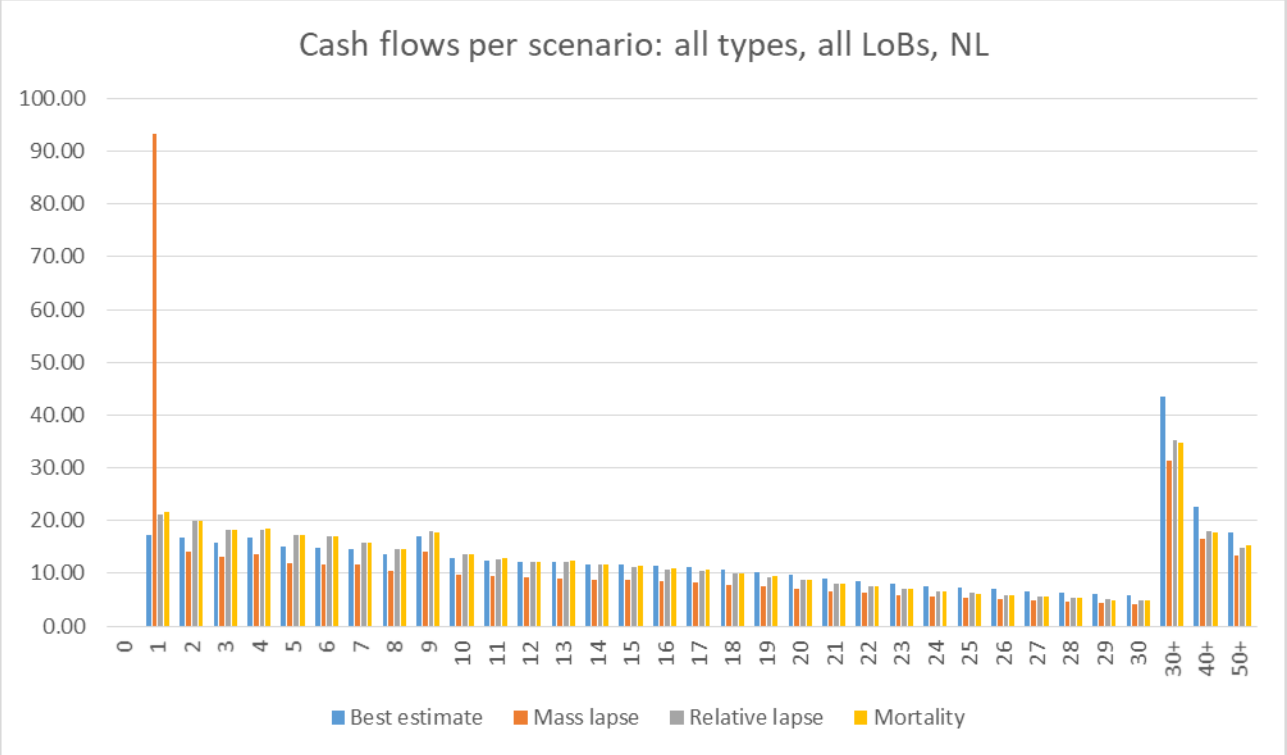

Cash flows per scenario: all types, all LoBs, LV
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

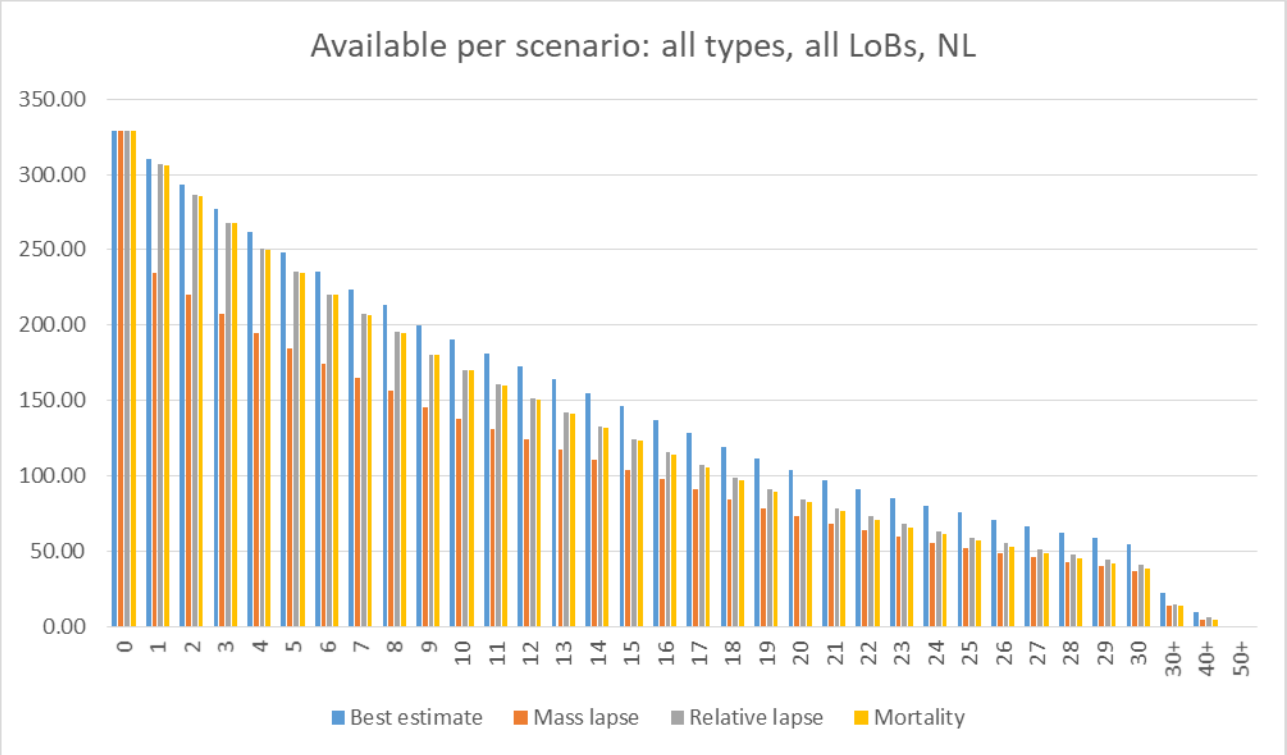

Available per scenario: all types, all LoBs, LV
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

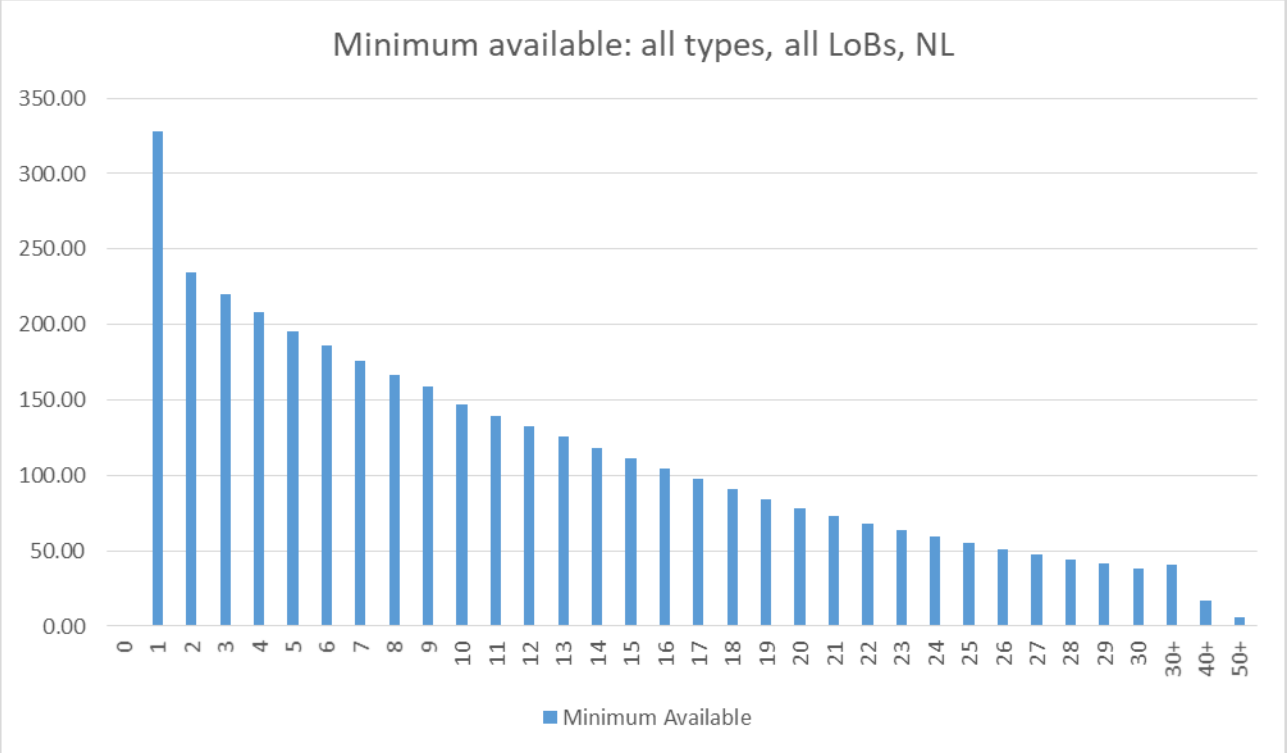

Minimum available: all types, all LoBs, LV
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

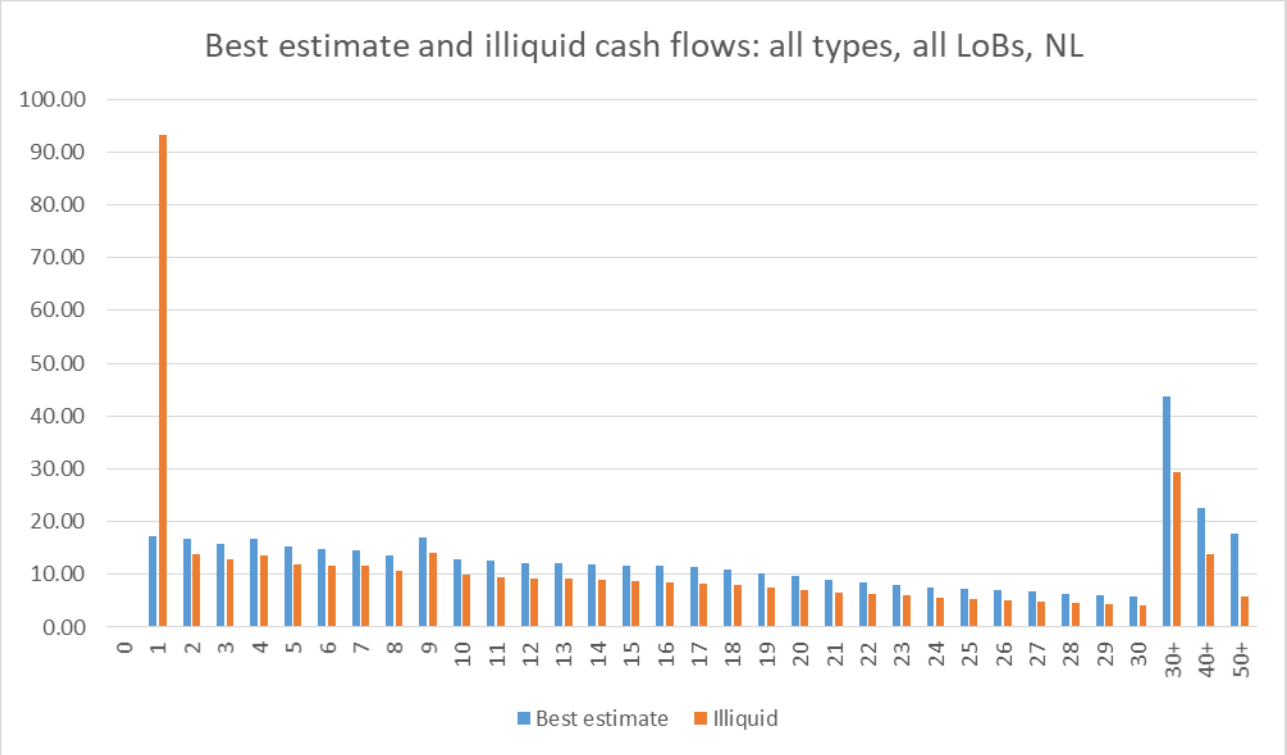


Netherlands

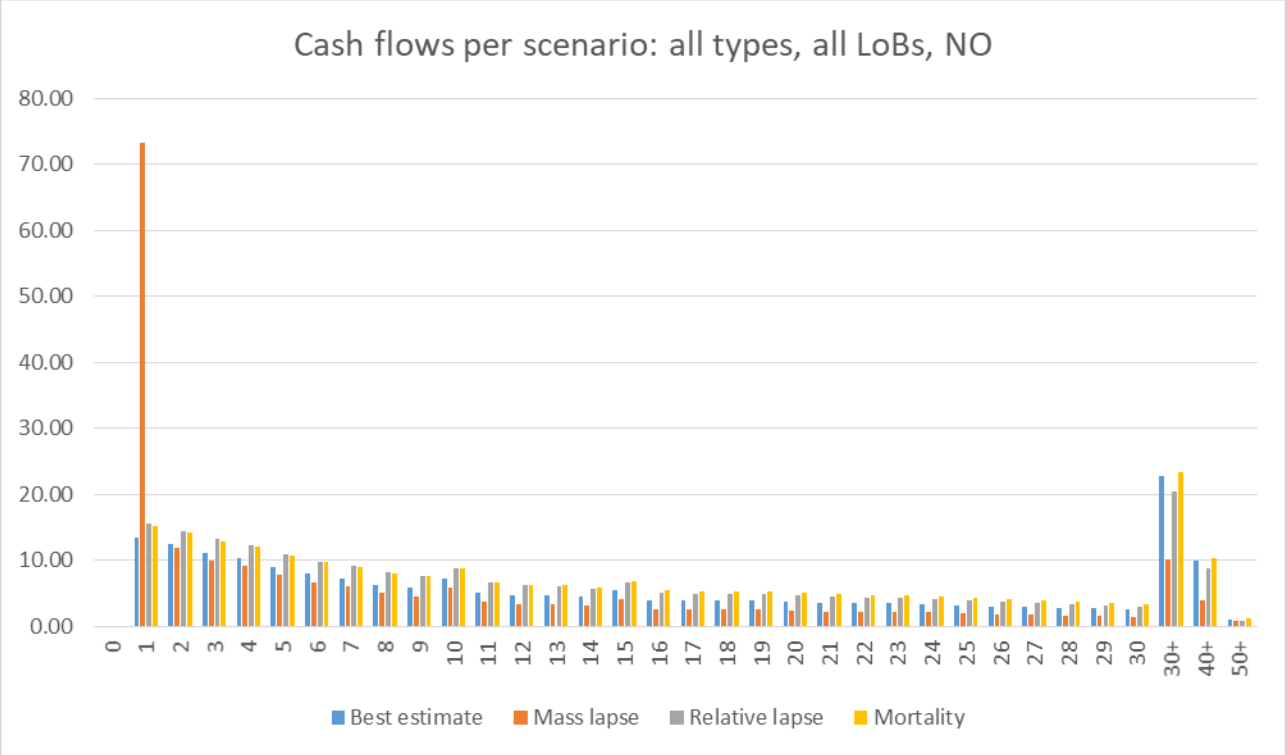


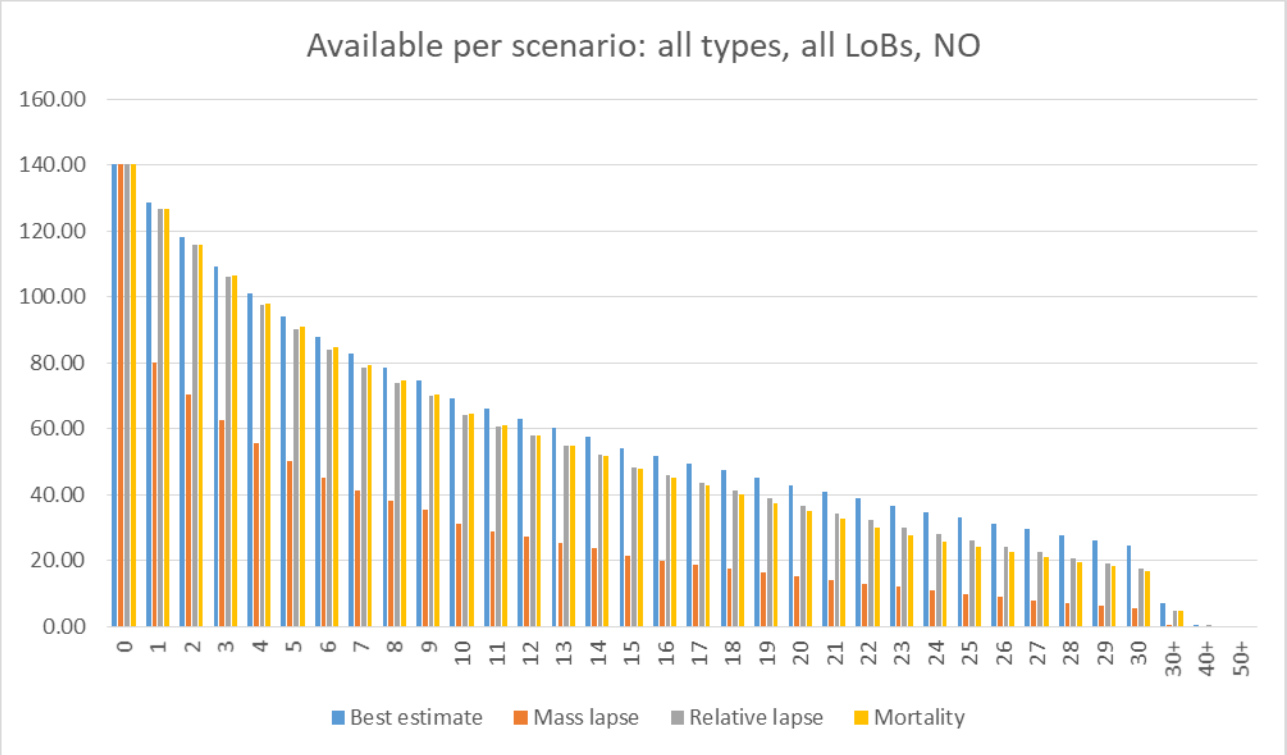

Available per scenario: all types, all LoBs, NL
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

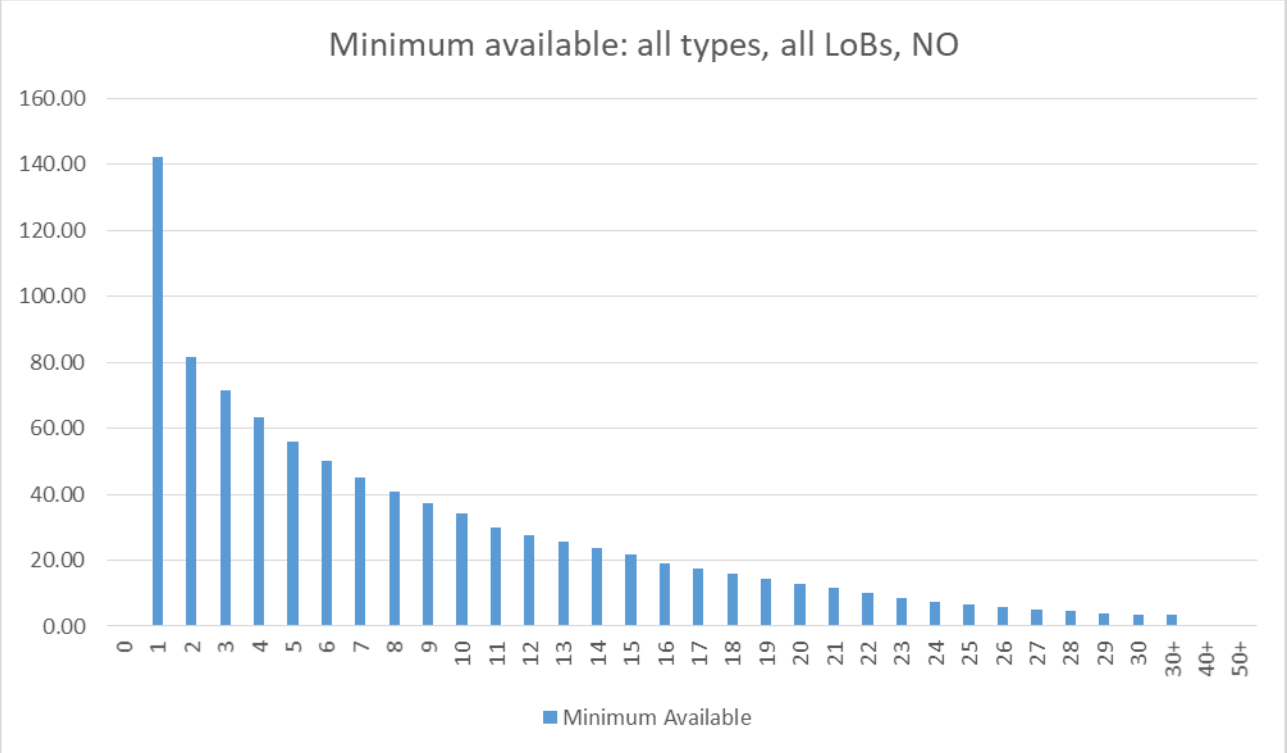

Minimum available: all types, all LoBs, NL
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

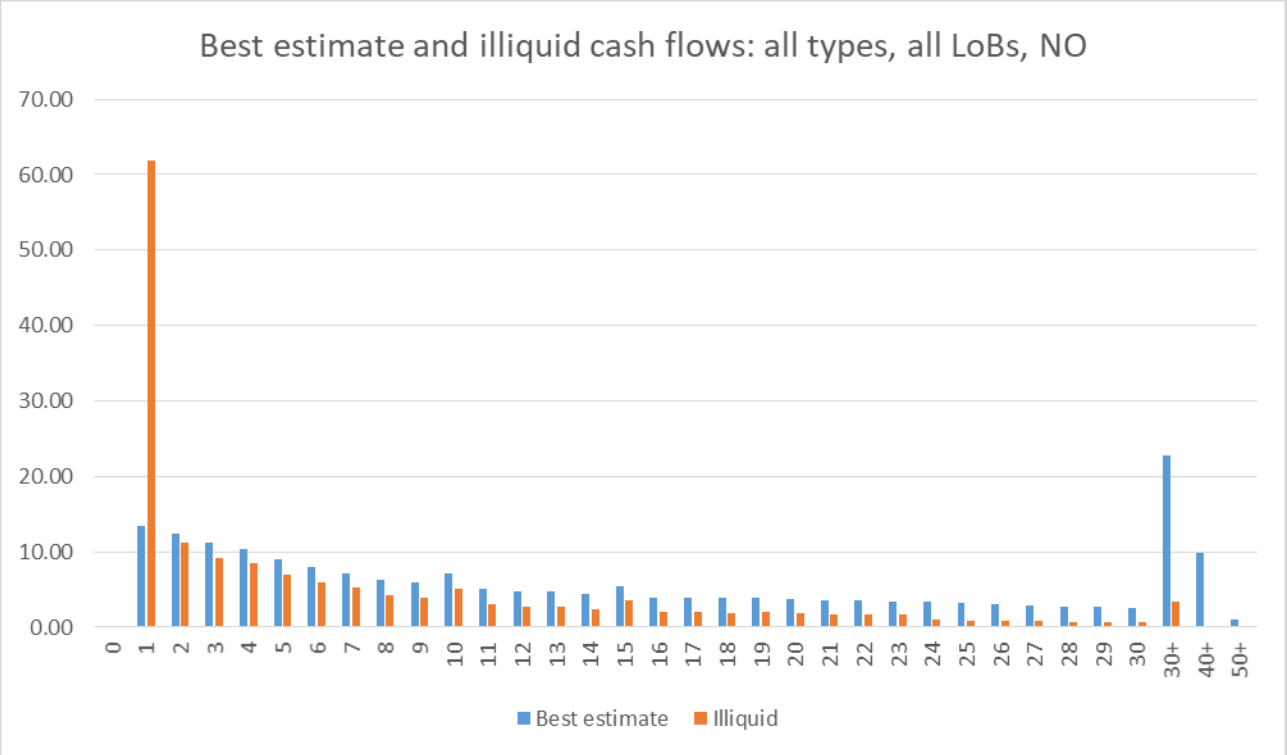

Best estimate and illiquid cash flows: all types, all LoBs, NL
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Norway

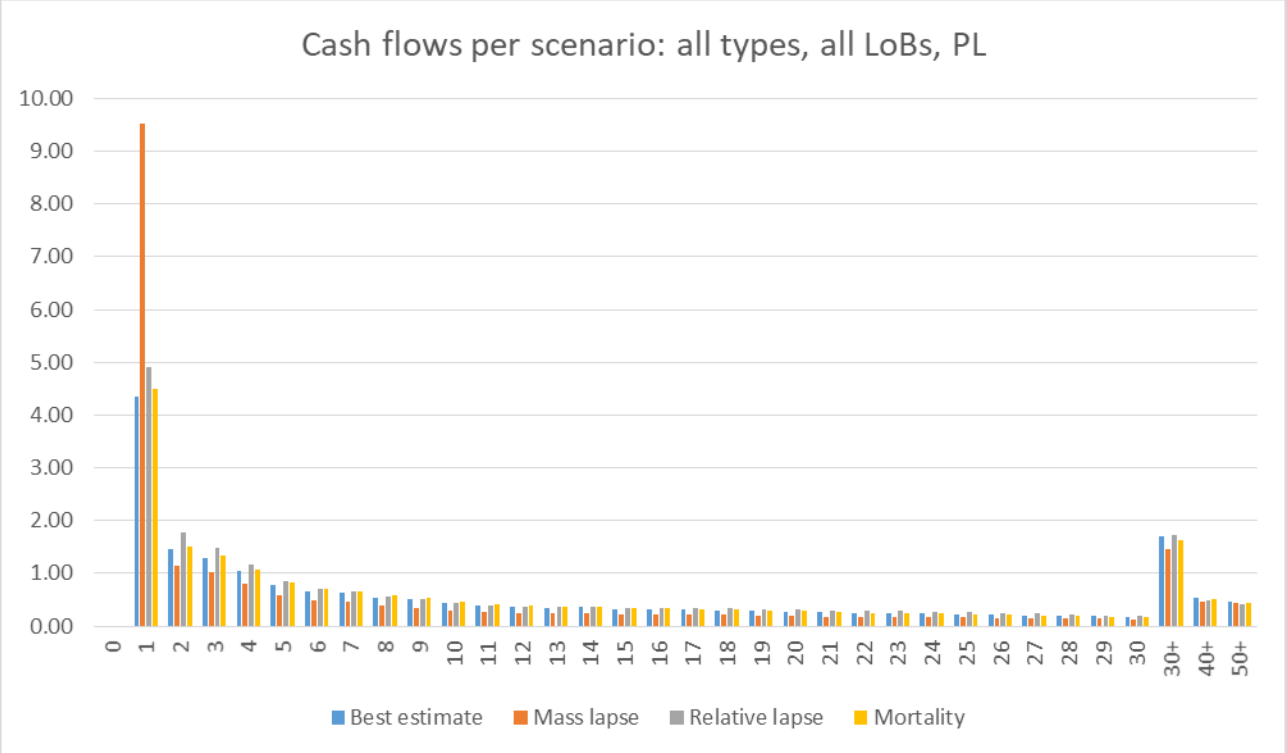

Cash flows per scenario: all types, all LoBs, NO
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

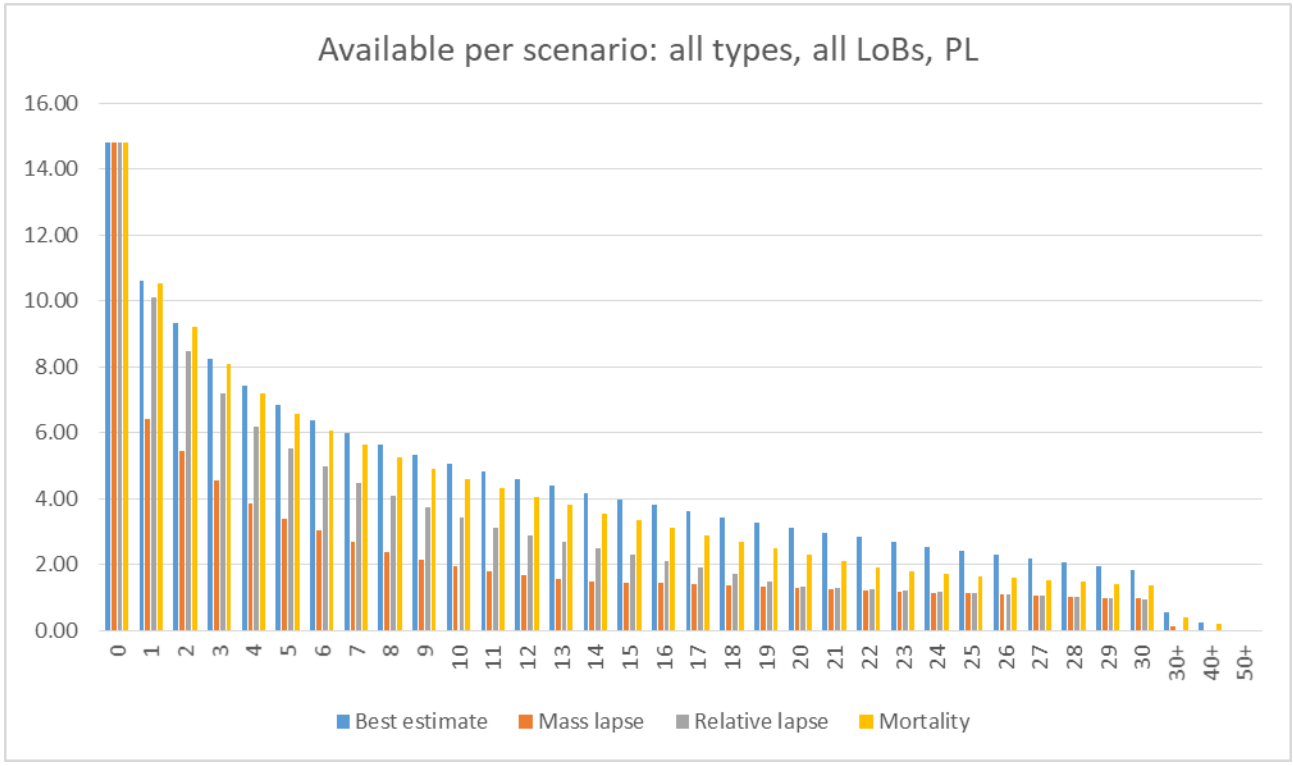

Available per scenario: all types, all LoBs, NO
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

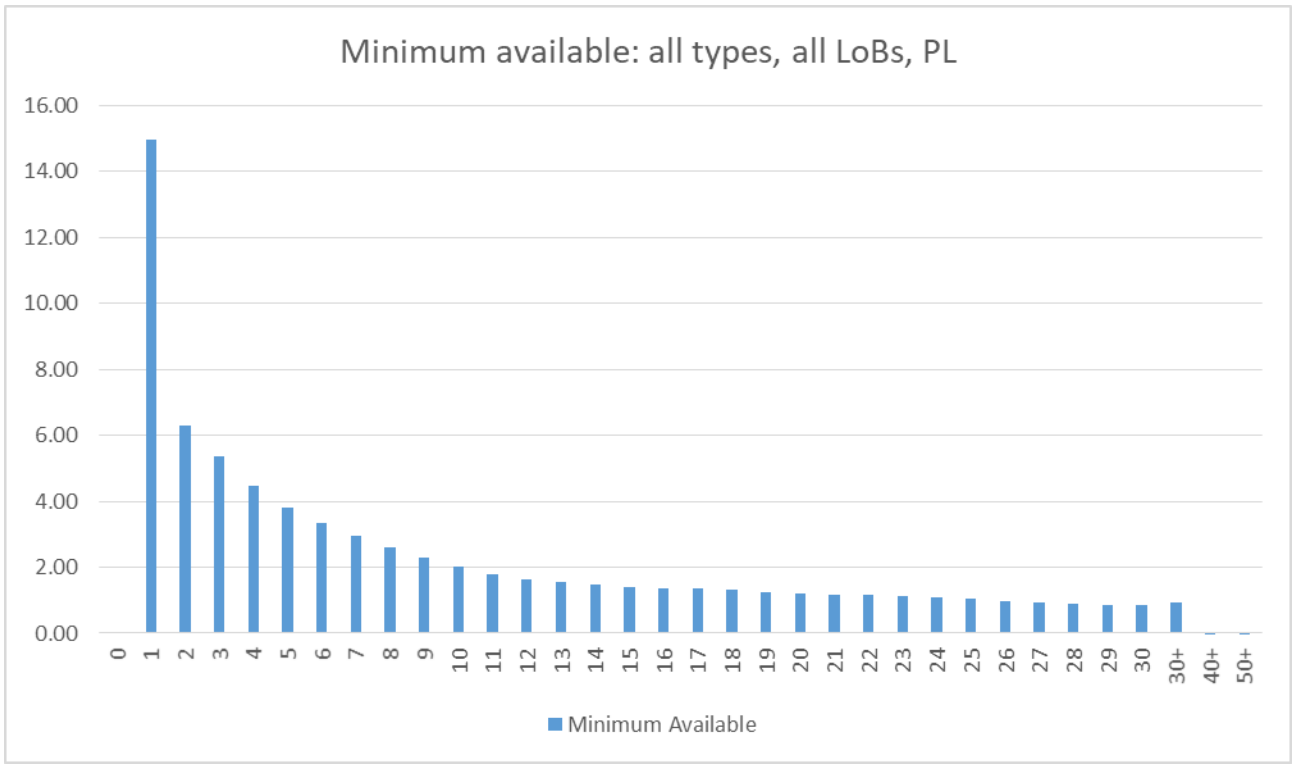

Minimum available: all types, all LoBs, NO
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

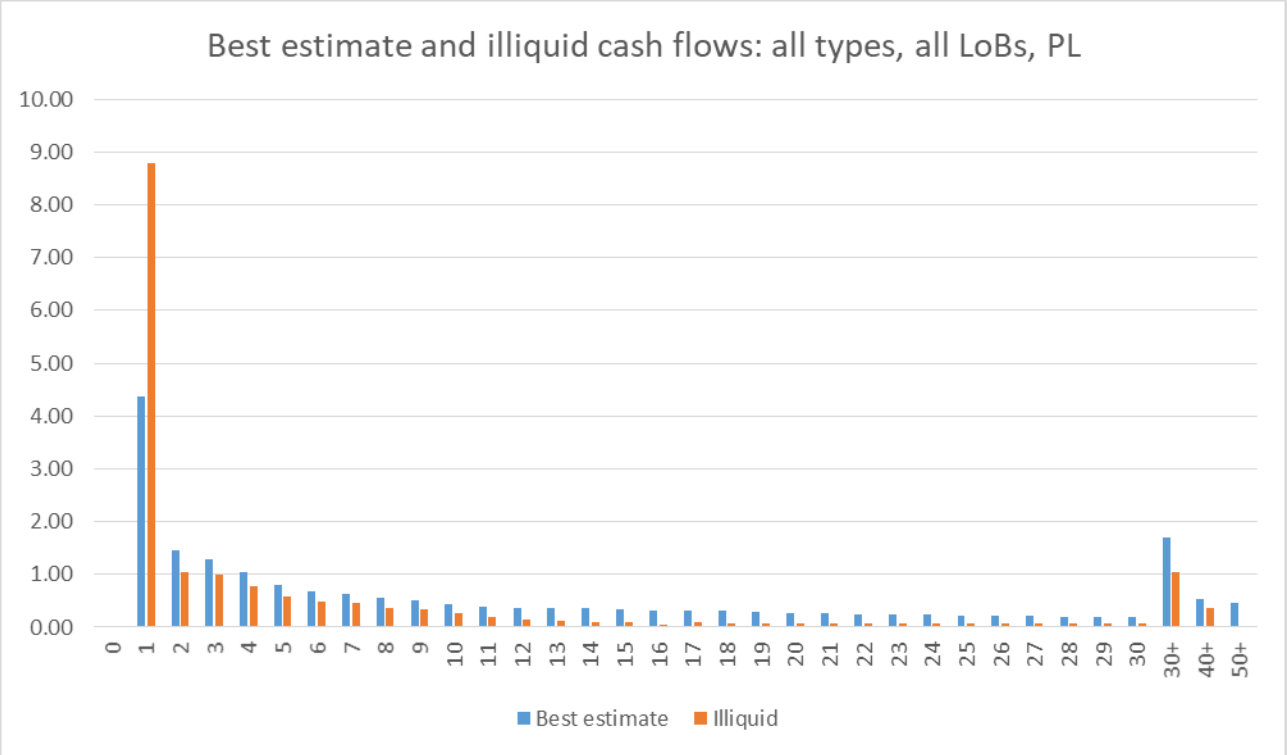

Best estimate and illiquid cash flows: all types, all LoBs, NO
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Poland

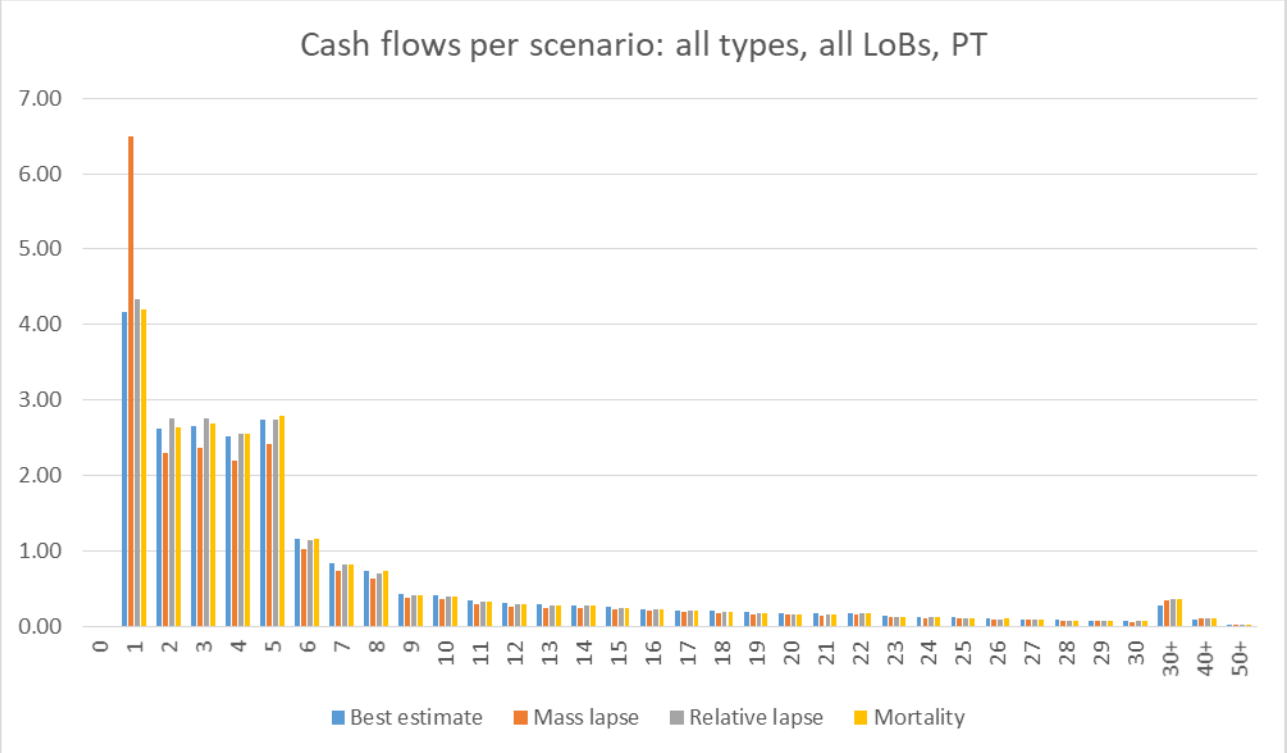

Cash flows per scenario: all types, all LoBs, PL
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

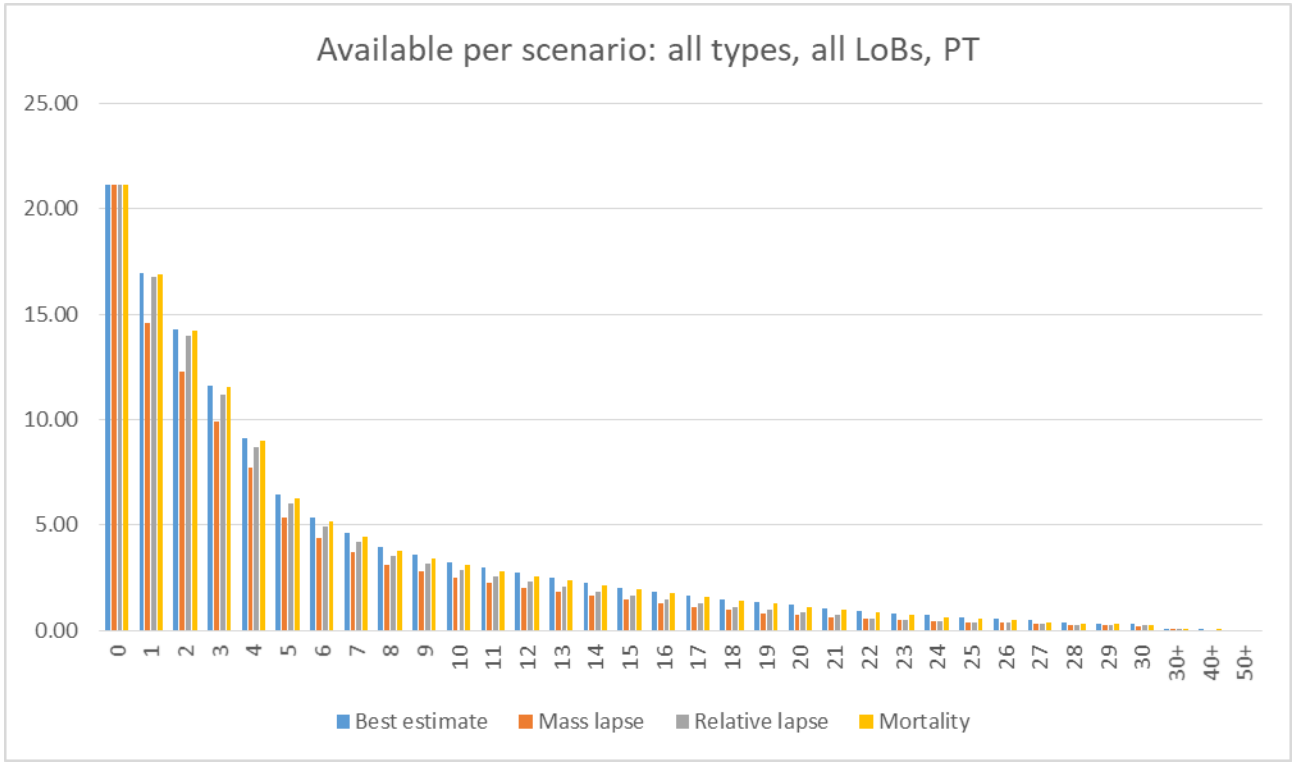

Available per scenario: all types, all LoBs, PL
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

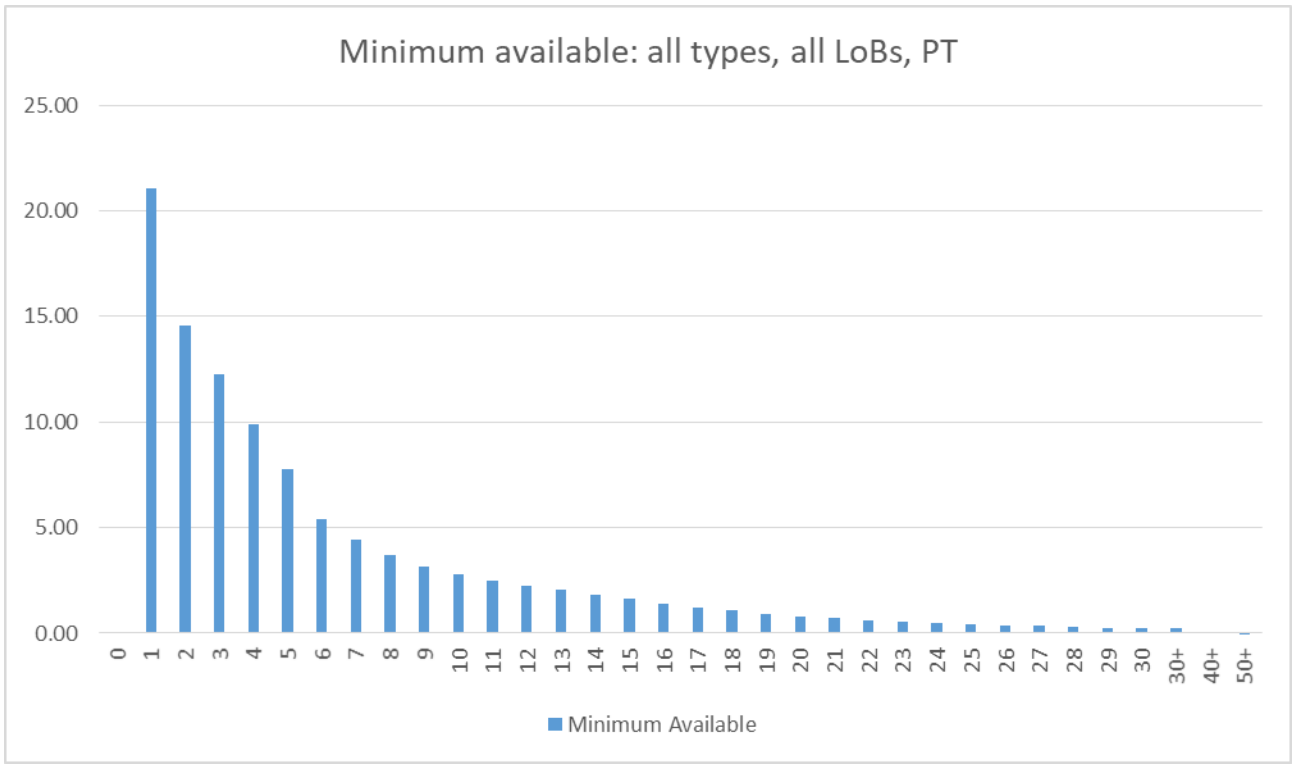

Minimum available: all types, all LoBs, PL
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

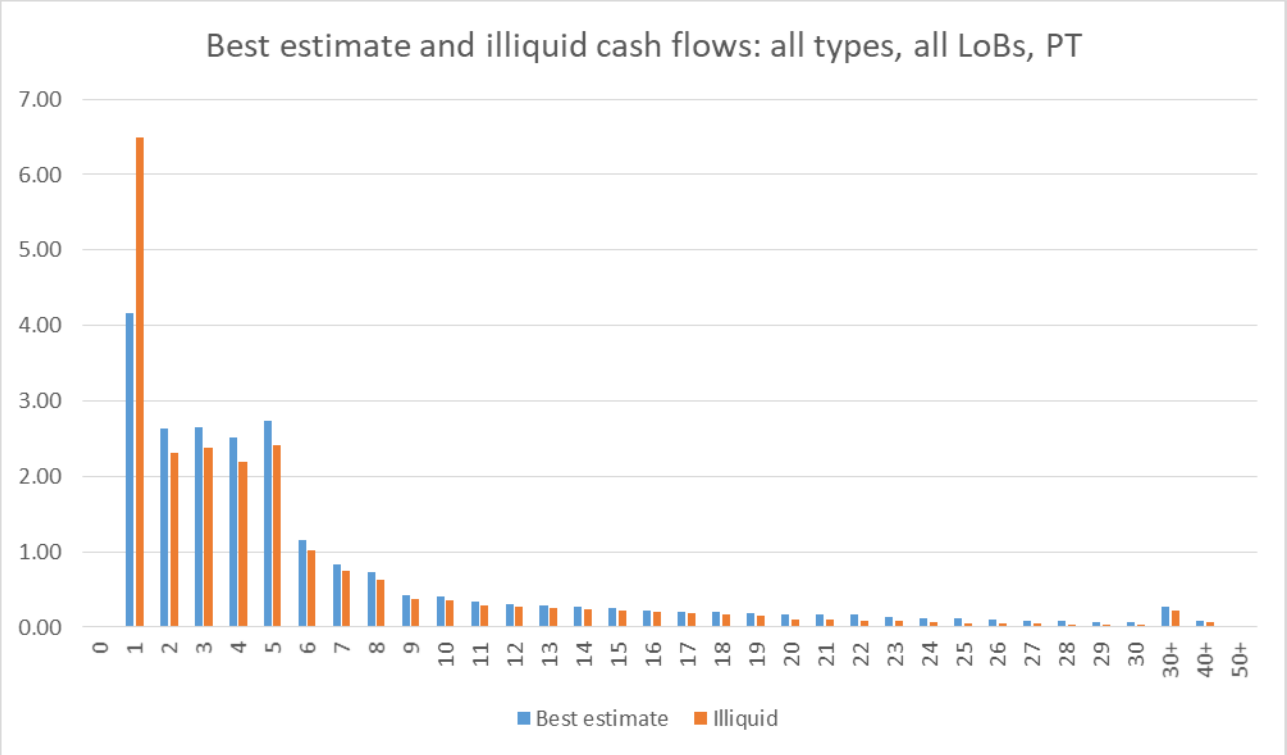

Best estimate and illiquid cash flows: all types, all LoBs, PL
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Portugal

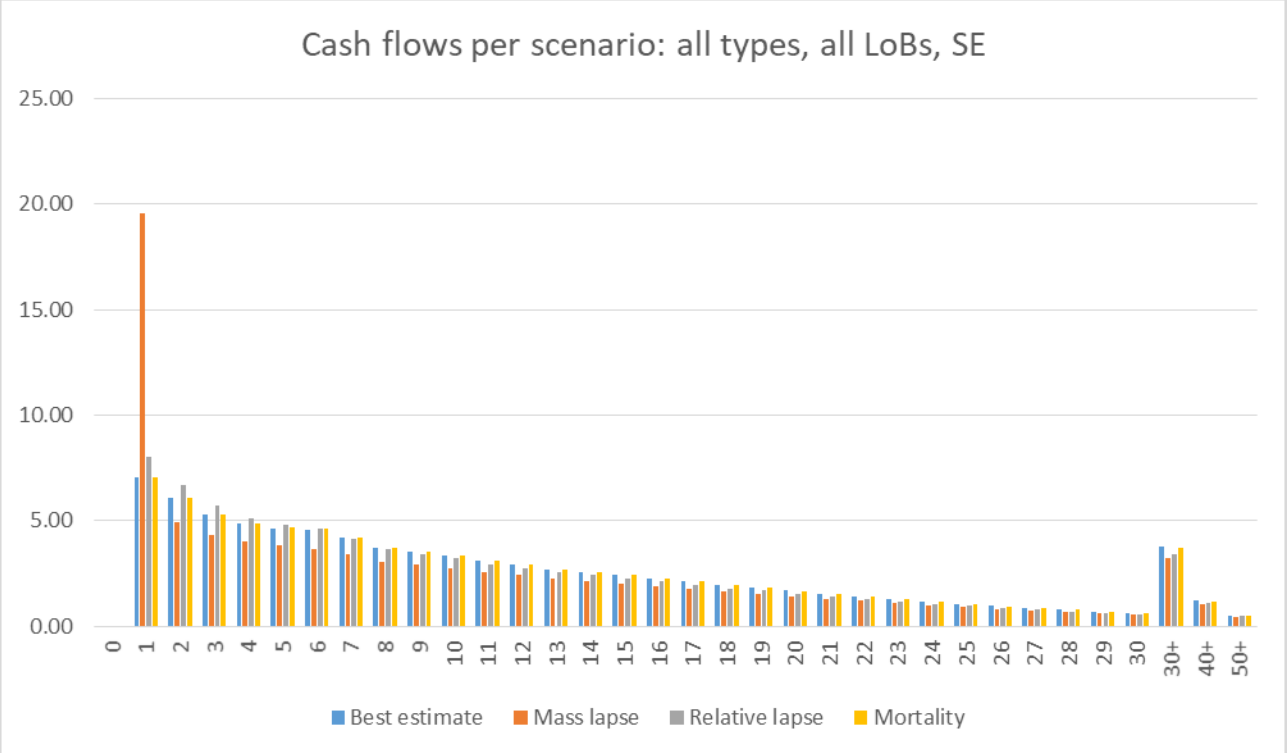

Cash flows per scenario: all types, all LoBs, PT
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

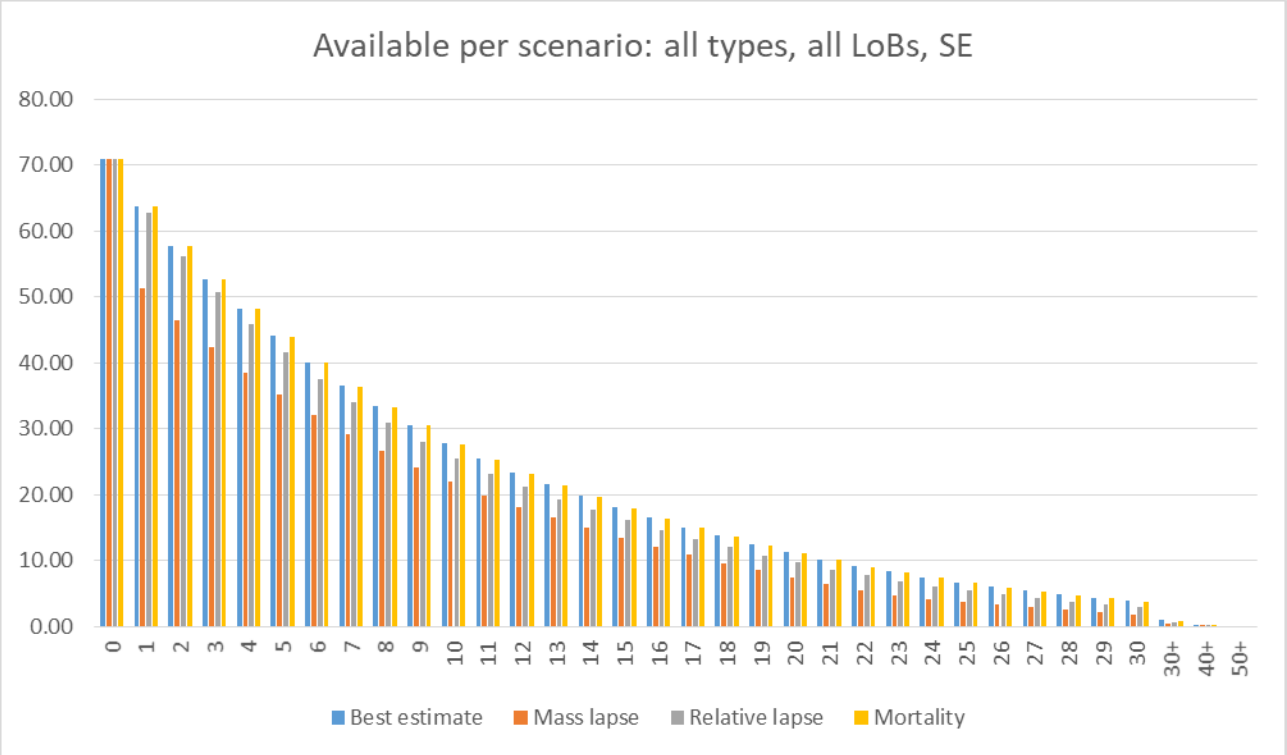

Available per scenario: all types, all LoBs, PT
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

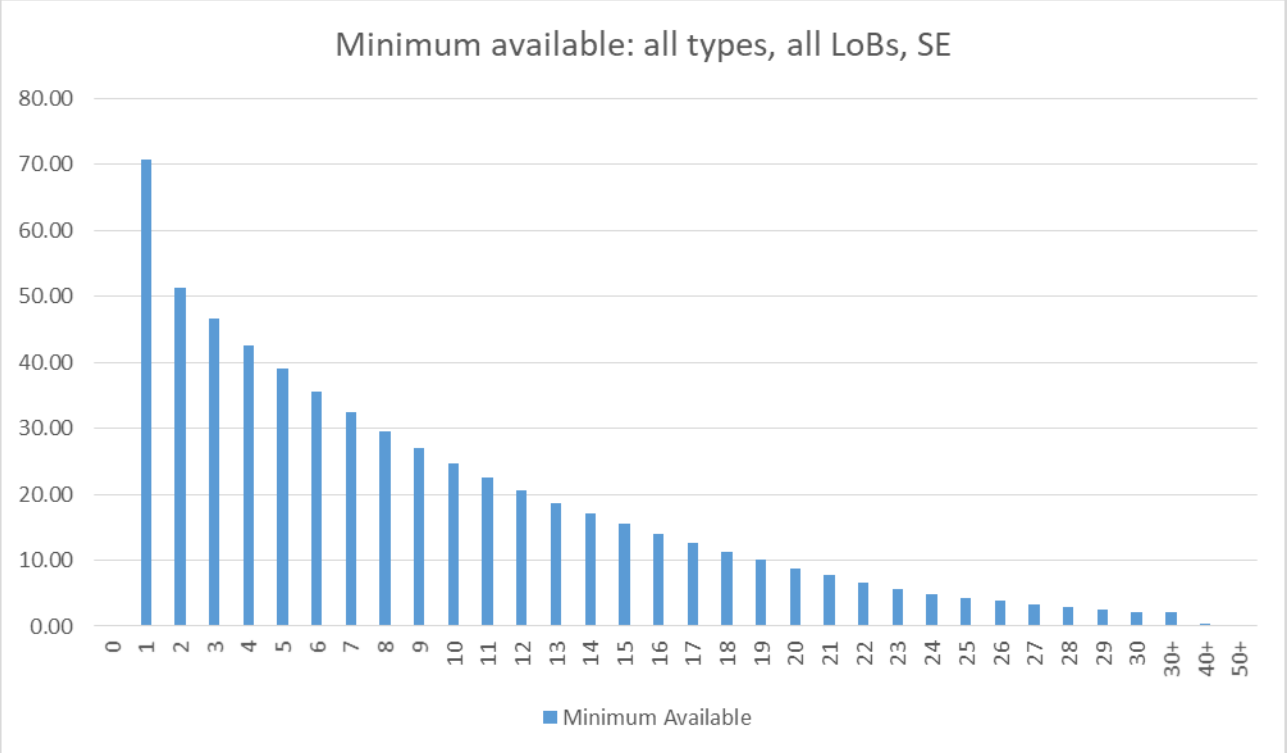

Minimum available: all types, all LoBs, PT
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

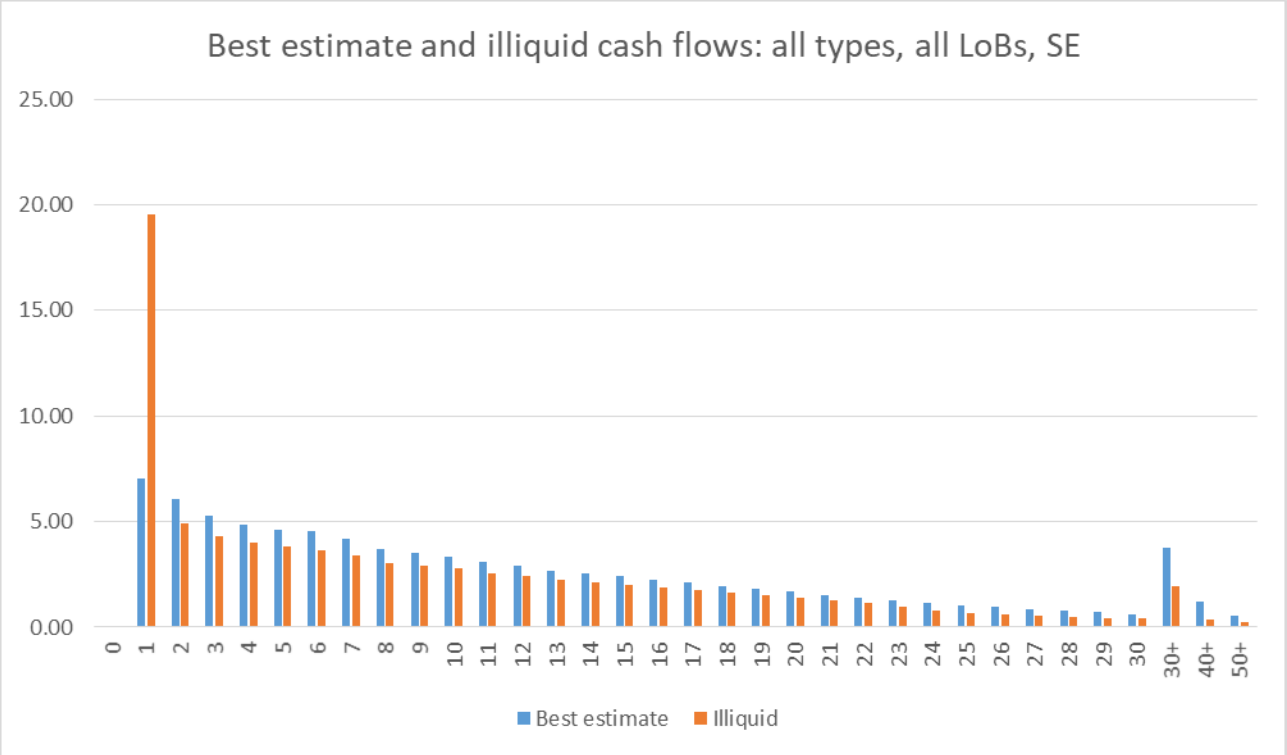

Best estimate and illiquid cash flows: all types, all LoBs, PT
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Sweden

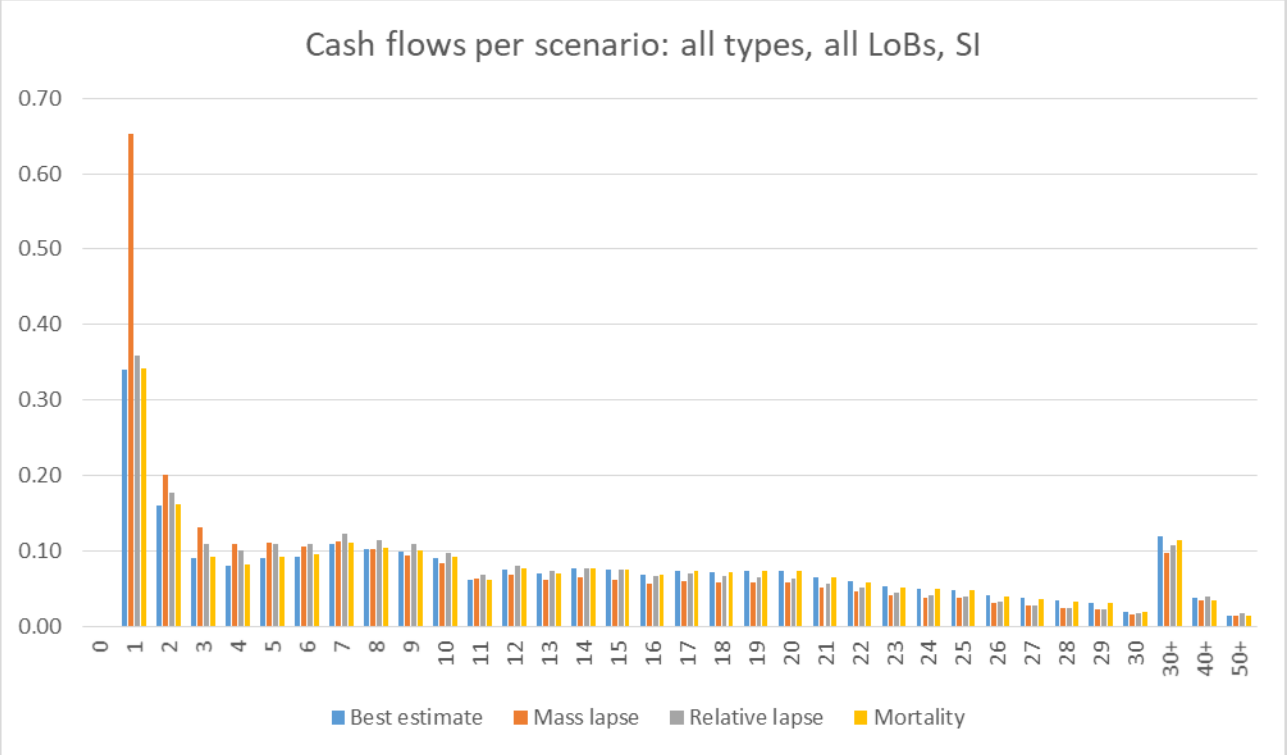

Cash flows per scenario: all types, all LoBs, SE
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

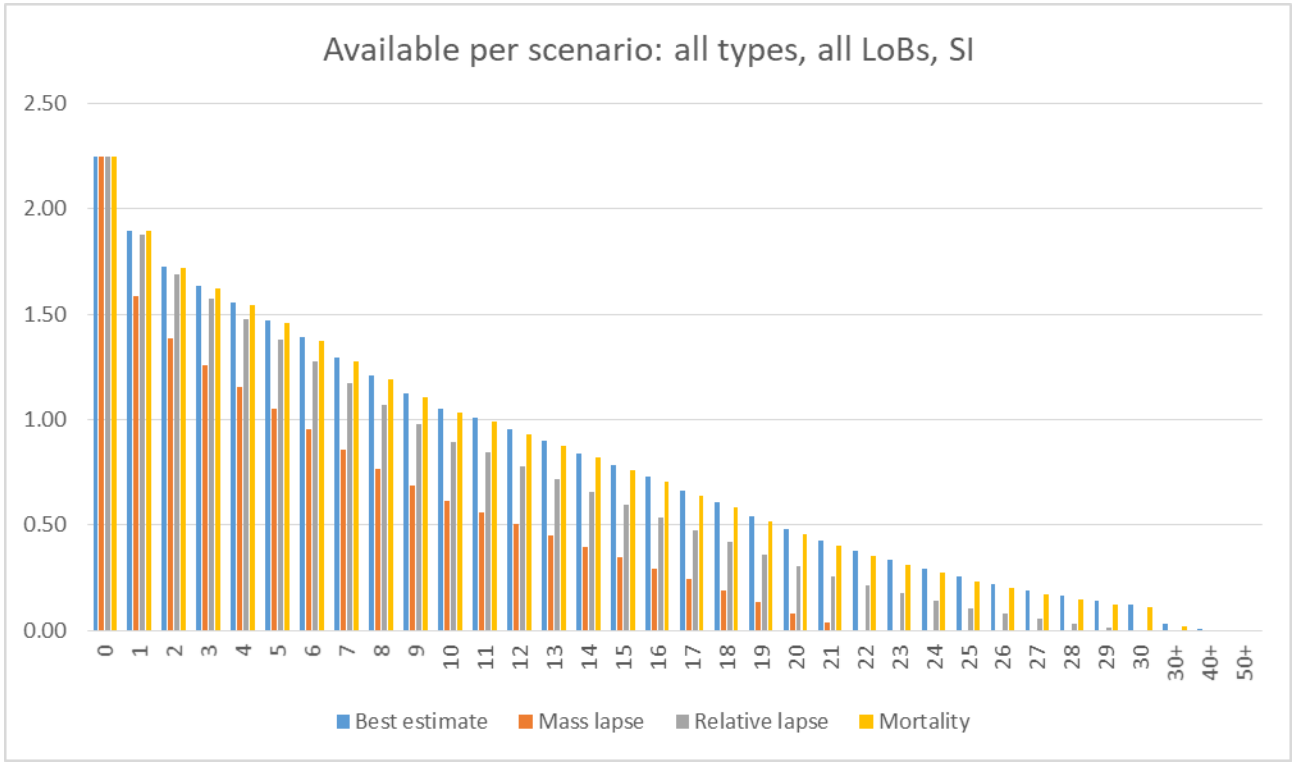

Available per scenario: all types, all LoBs, SE
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality


Minimum available: all types, all LoBs, SE
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

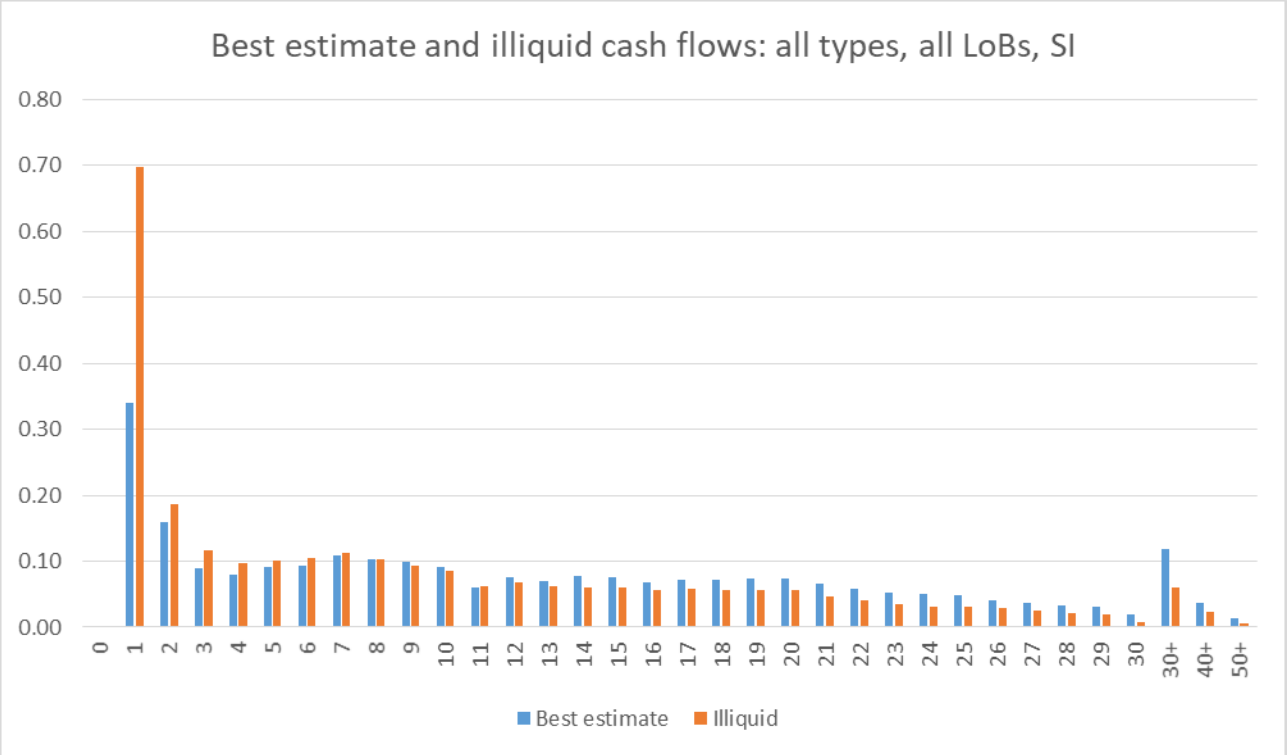

Best estimate and illiquid cash flows: all types, all LoBs, SE
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Slovenia

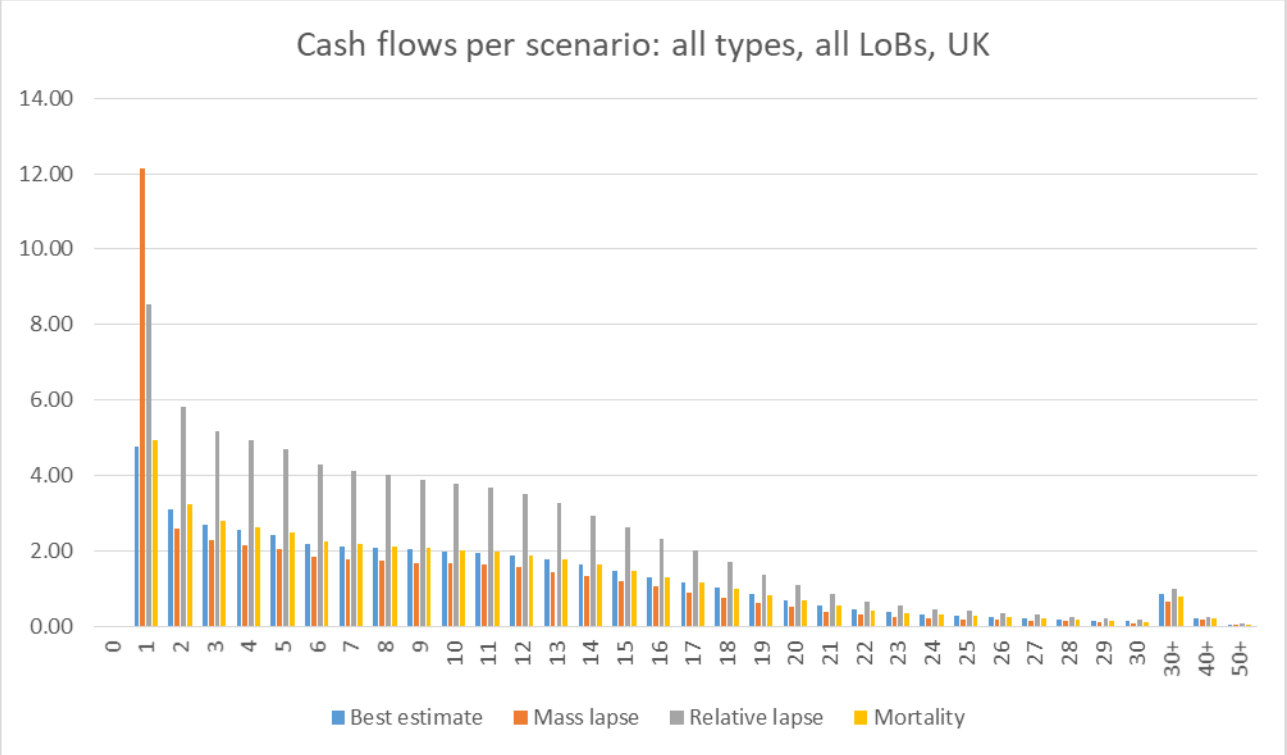

Cash flows per scenario: all types, all LoBs, SI
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

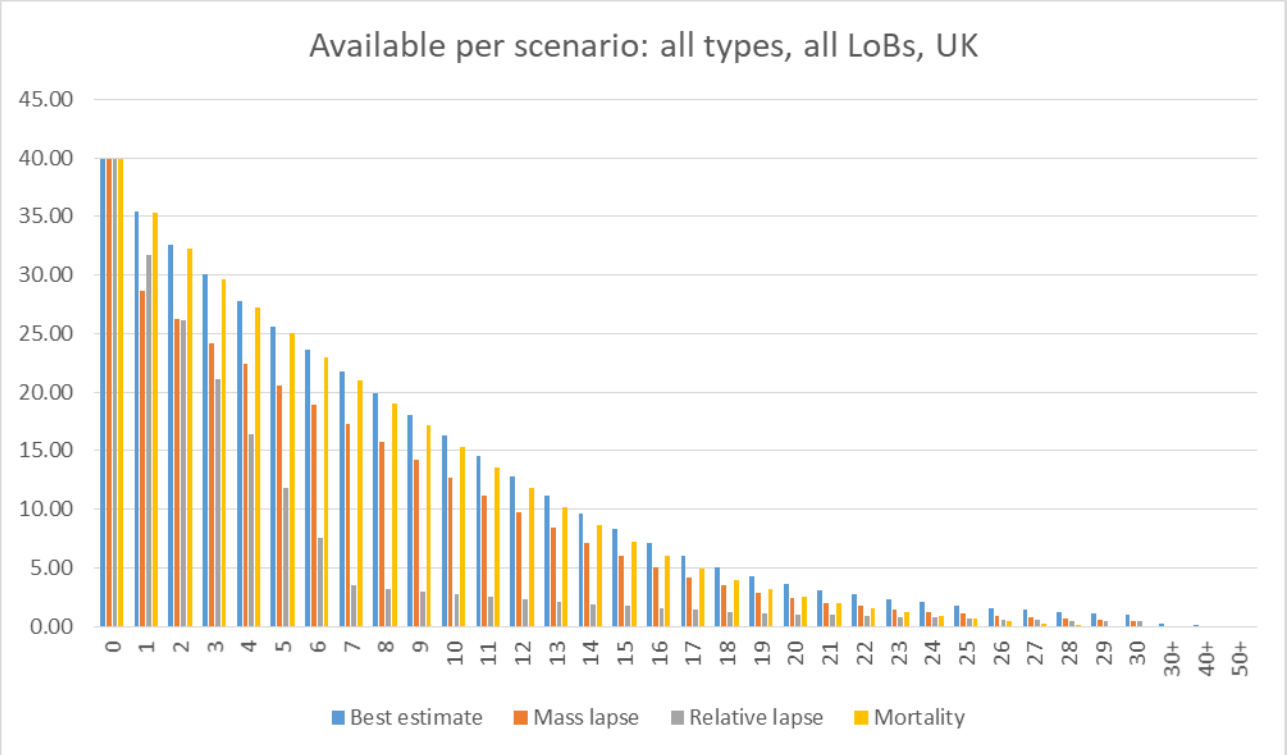

Available per scenario: all types, all LoBs, SI
2.50
2.00
1.50
1.00
0.50
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

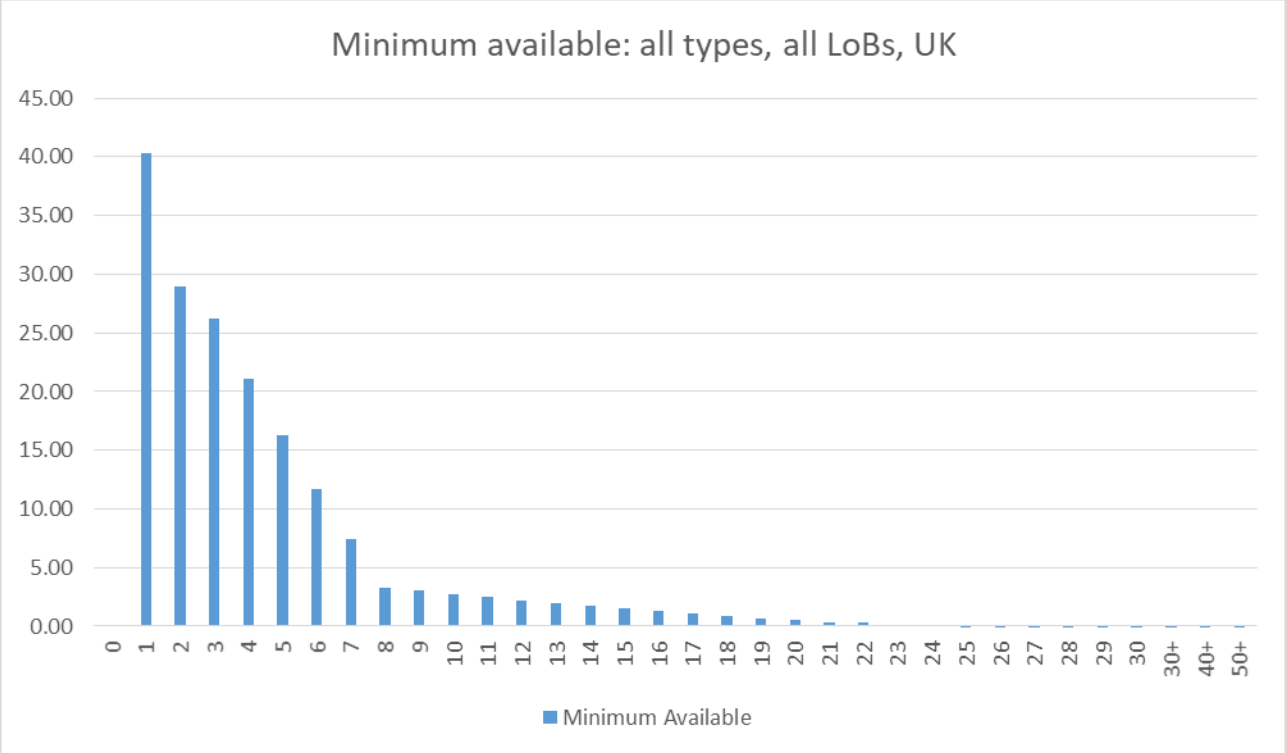

Minimum available: all types, all LoBs, SI
2.50
2.00
1.50
1.00
0.50
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

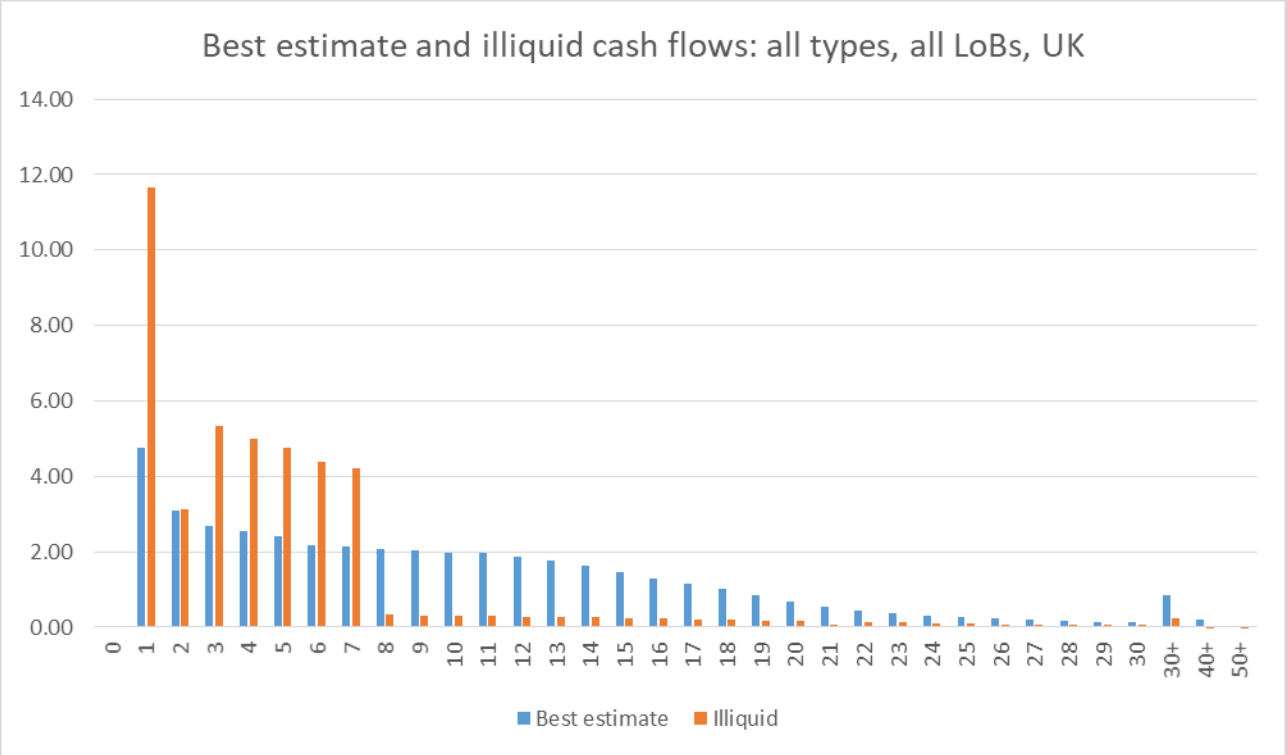

Best estimate and illiquid cash flows: all types, all LoBs, SI
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

UK

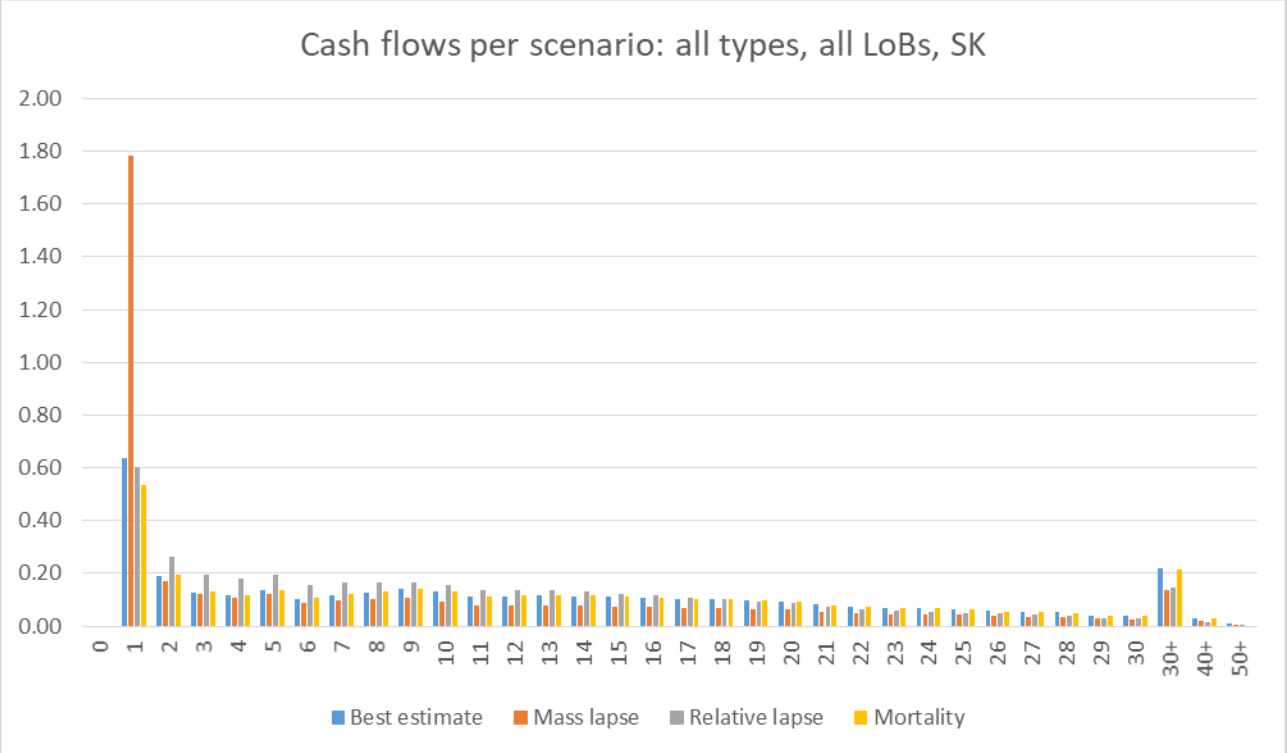

Cash flows per scenario: all types, all LoBs, UK
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

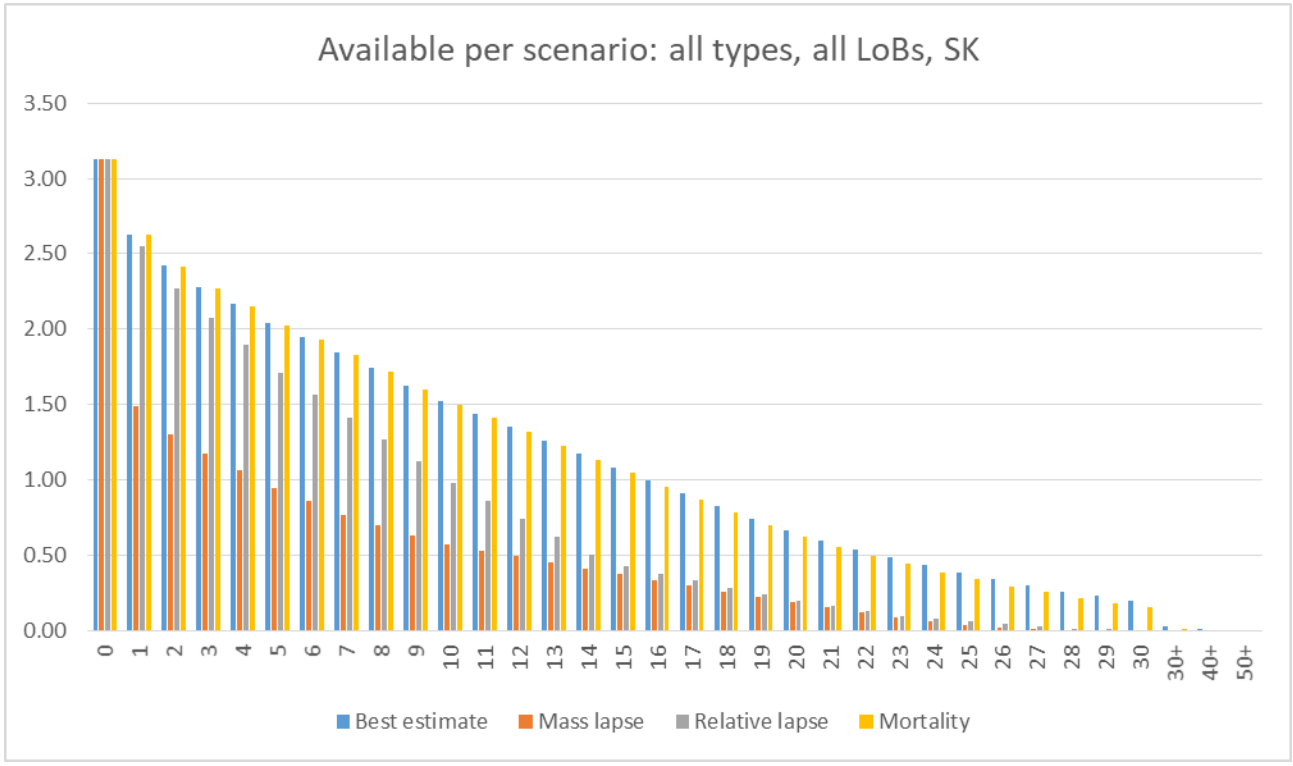

Available per scenario: all types, all LoBs, UK
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality


Minimum available: all types, all LoBs, UK
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

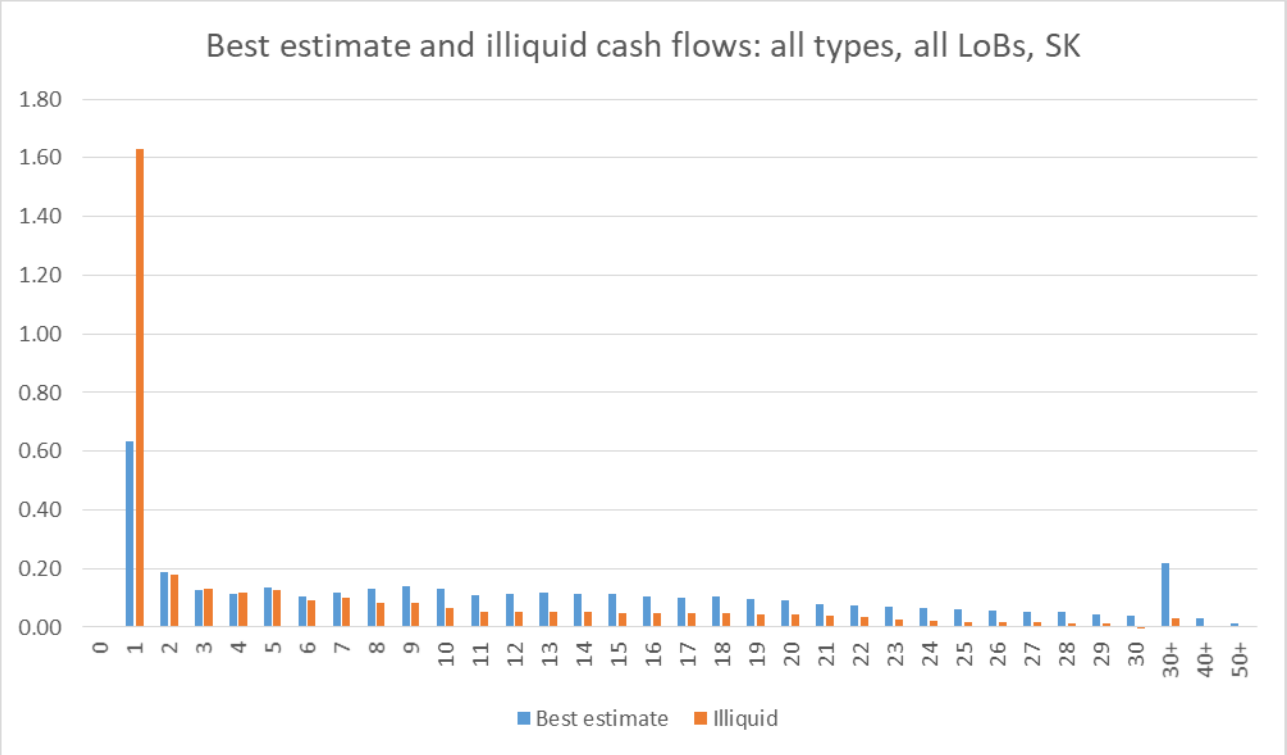

Best estimate and illiquid cash flows: all types, all LoBs, UK
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Slovakia

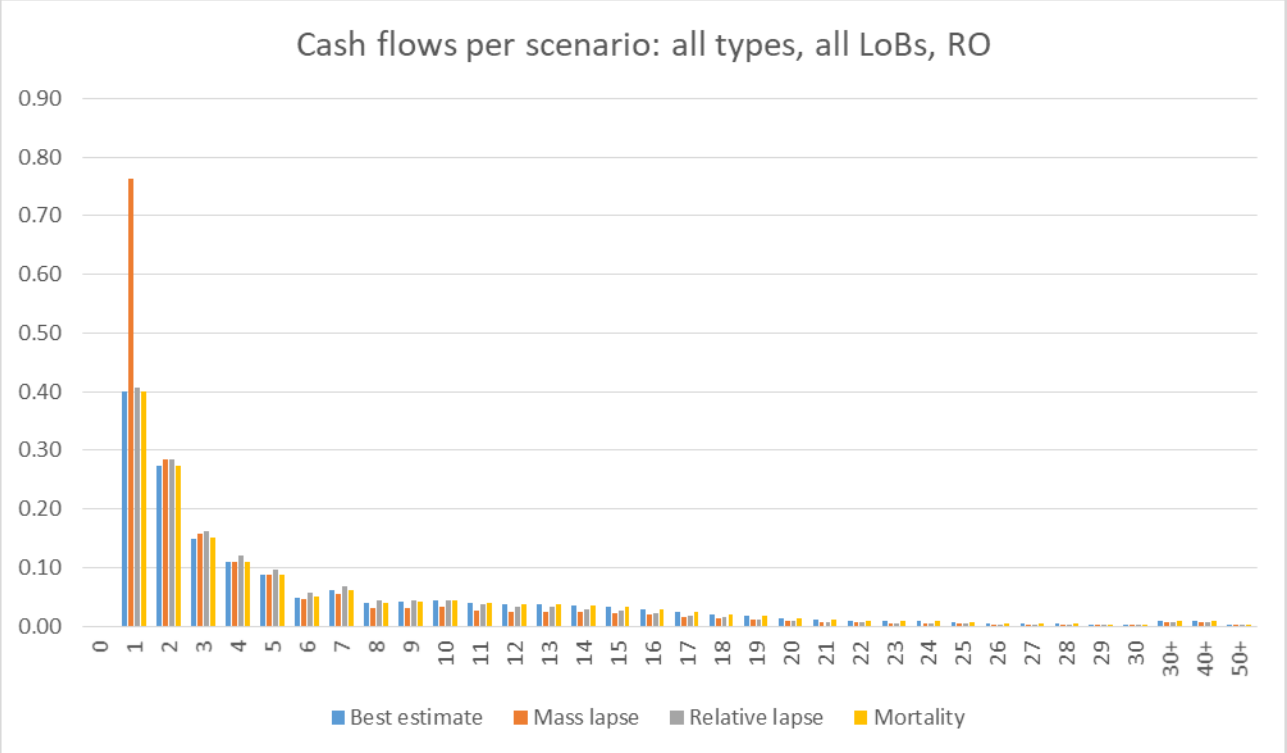

Cash flows per scenario: all types, all LoBs, SK
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

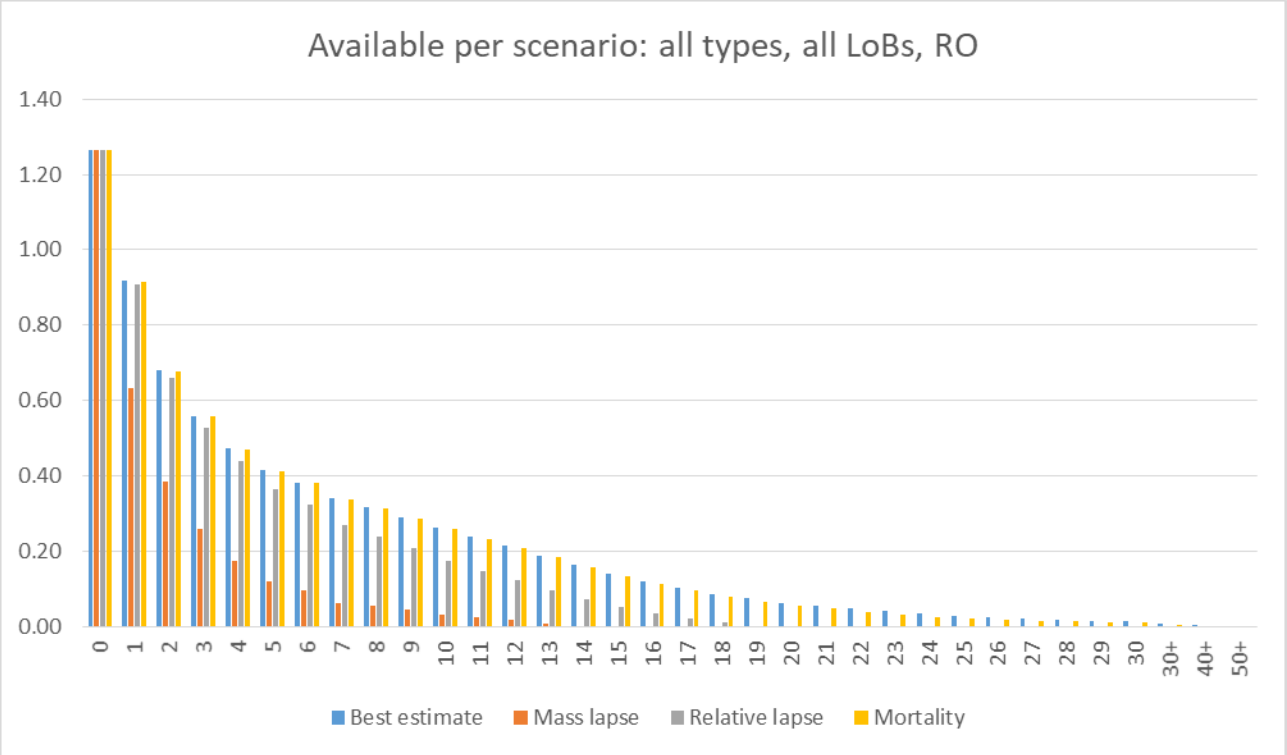

Available per scenario: all types, all LoBs, SK
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality

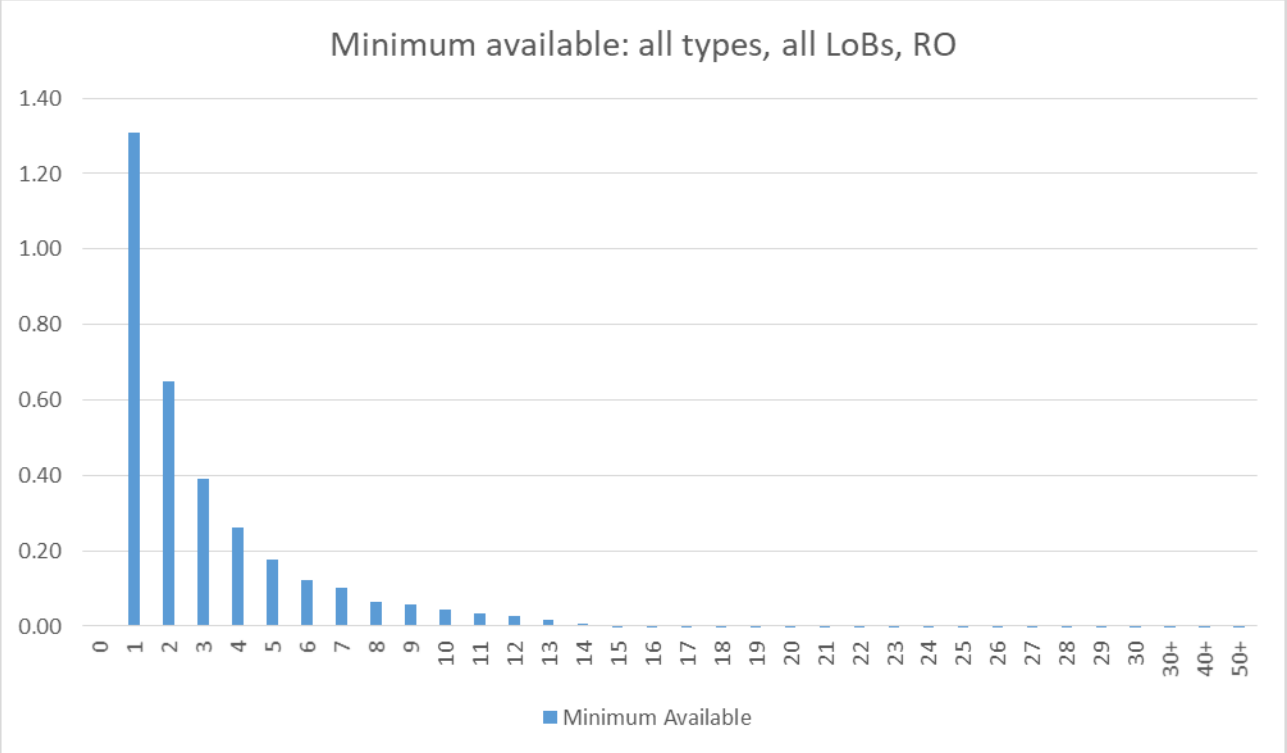

Minimum available: all types, all LoBs, SK
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available

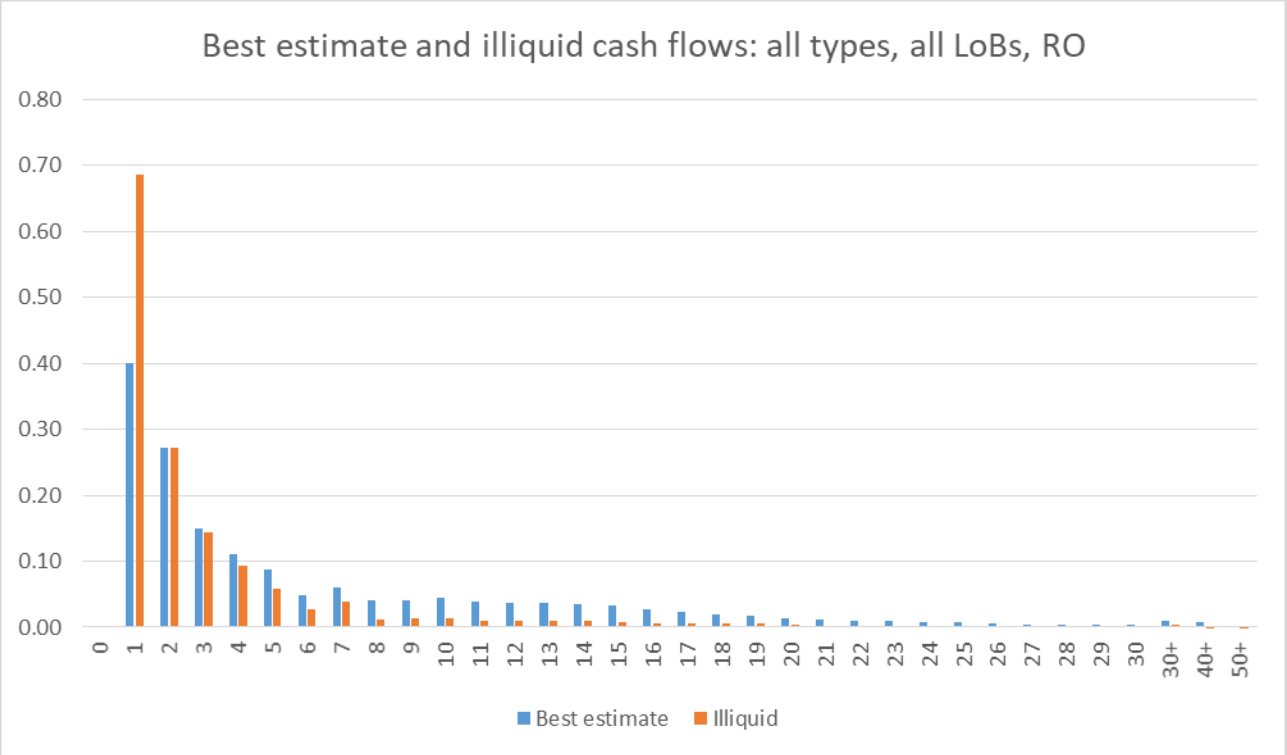

Best estimate and illiquid cash flows: all types, all LoBs, SK
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Illiquid

Romania


Cash flows per scenario: all types, all LoBs, RO
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality


Available per scenario: all types, all LoBs, RO
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Best estimate
Mass lapse
Relative lapse
Mortality


Minimum available: all types, all LoBs, RO
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 30+ 40+ 50+
Minimum Available


Best estimate and illiquid cash flows: all types, all LoBs, RO
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
30+
40+
50+
Best estimate
Illiquid