ESRB
European Systemic Risk Board
European System of Financial Supervision

Adverse scenario for the 2024 European Insurance and Occupational Pensions Authority's insurance sector stress test exercise

Introduction

The European Supervisory Authorities, in cooperation with the European Systemic Risk Board (ESRB), are required by legislation to conduct stress tests to assess the resilience of financial institutions and market participants to adverse market developments. As part of this cooperation, the ESRB designs adverse economic and financial market scenarios.

This document presents the adverse scenario that insurance undertakings are required to use in the 2024 EU-wide stress-testing exercise coordinated by the European Insurance and Occupational Pensions Authority (EIOPA). For this purpose, the ESRB, in collaboration with the European Central Bank (ECB) and EIOPA, provides the calibration of the adverse market stress parameters.

The adverse scenario describes shocks to key financial variables in a hypothetical situation triggered by the materialisation of risks to which the EU insurance sector is exposed. A stress test is a scenario-based analysis measuring how the insurance sector would fare given hypothetical adverse economic developments. Accordingly, the scenario should not be considered a forecast of the most likely negative shocks to the financial system.

The scenario horizon is one year. The shock profiles of the adverse scenario are one-off, instantaneous shifts in asset prices relative to their end-2023 levels without further evolution over the one-year horizon. In this adverse scenario, no monetary or fiscal policy actions are assumed beyond what is implicitly captured in historical asset price movements over time.

All insurance-specific components of the stress scenario were developed by EIOPA.

The adverse scenario was approved by the ESRB General Board on 22 March 2024 and transmitted to EIOPA on 25 March 2024.

Systemic risks and vulnerabilities addressed by the scenario

The scenario reflects the ESRB's assessment of prevailing sources of systemic risks identified for the EU financial system as of March 2024. These include: (i) a prolonged period of low growth and elevated inflation resulting in higher vulnerabilities for households and firms, (ii) deteriorating asset quality and profitability prospects for the banking sector, (iii) disorderly asset price corrections, (iv) a re-emergence of sovereign and corporate financing risk and debt sustainability concerns, and (v) the materialisation of accumulated risks in the real estate sector.

The adverse scenario is calibrated to be severe, consistent with the uncertainty deriving from the economic consequences of a re-intensification or prolongation of geopolitical tensions. Such an environment would fuel supply chain disruptions and lead to lower growth and higher inflation. Second-round effects stemming from a wage-price spiral would further exacerbate inflationary pressures, ultimately leading to a re-appraisal of market expectations of interest rates across tenors and currencies. Concerns about the persistent effects of severe adverse shocks are reflected in a larger increase in expected market rates at the short end of the yield curve than at the long end. This contributes to a further inversion of the yield curve. Despite expectations of decreasing inflationary pressures over time, growth will continue to be adversely affected.

The resulting tightening of financing conditions, combined with higher wages and sluggish economic growth, would weigh on corporate profitability. Expectations for corporate revenues would reflect this deteriorating outlook, resulting in higher credit risk premia and a widening of credit spreads.

The high level of government bond yields, partly driven by sustained high risk-free rates, would tighten financing conditions for public spending. The pandemic-induced elevated level of government debt and the need for mitigating measures to support the real economy in a downturn would fuel concerns about sovereign debt sustainability, leading to a further heterogenous increase in government bond rates.

Households would also experience losses in real income and face higher borrowing costs amid higher unemployment. This would make it challenging for homeowners to service their mortgages, resulting in an increase in mortgage defaults. The ensuing fall in residential real estate prices is exacerbated by a slowdown in residential property market activity. At the same time, the large increase in interest rates would fuel disorderly repricing in the commercial real estate market, in the context of structural changes in demand for office space induced by the coronavirus (COVID-19) pandemic.

The higher cost of debt servicing, coupled with the sharp fall in property prices, would trigger a sudden repricing of covered bonds and other asset-backed securities, driving spreads upwards.

Such market reactions would also trigger a sudden revaluation of other financial assets in an uncertain environment characterised by high volatility. In particular, equity valuations would drop substantially worldwide, while hedge funds, real estate investment trusts and private equity funds would incur losses. The latter would be largely affected by an amplification of liquidity stress. Finally, commodity prices would surge in line with supply chain-driven inflation prospects.

Scenario methodology, calibration and probability of materialisation

The methodology for the scenario calibration is based on the non-parametric application of a multivariate copula model.[1] The scenario is the outcome of several simulations based on a number of triggers that reflect the main sources of financial stability risks, with a focus on swap rates. Shocks to corporate and government credit spreads, equity and fund prices, commodities, infrastructure securities, and real estate prices in the European Union and other advanced economies are derived by conditioning on the triggering events. The sample for the calibration has been set in close collaboration with EIOPA to reflect the main features of the scenario as reflected in the current risk landscape, which was identified by the ESRB General Board. The sample period chosen for the calibration spans from January 2008 to December 2023. An increase in the one-year euro swap rate and the exacerbation of the euro swap rate curve inversion are the events triggering the adverse scenario. These triggers specifically enhance the severity of the scenario for insurance undertakings, given the negative duration gap that they typically exhibit.

The overall probability of materialisation of the market risk shocks depends on several factors, including the probabilities of the triggering events and their level of correlation. The market risk scenario has been calibrated on triggering events whereby the one-year euro swap rate and the euro swap curve slope[2] shocks are assumed to reach given thresholds (168 bps and 122 bps, respectively). These thresholds have been set so that the marginal probability for each trigger (the probability that each trigger in isolation takes a value at least as large the threshold considered) is 8% and 5% respectively. Based on the individual probabilities of the triggering events, and considering their sample correlation, the likelihood of a joint materialisation of the triggers is estimated at 4.5%.[3]

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[1] See "Technical note on the Financial Shock Simulator (FSS)" ECB, Frankfurt am Main, February 2019.

[2] The slope of the curve is measured as the difference between the EUR Swap 1Y and the EUR Swap 10Y. The level of the EUR Swap 10Y shock (46 bps) is implied from the slope.

[3] The European Court of Auditors suggested in its Special Report No 29/2018 that EIOPA compute the overall probability of materialisation of the scenario. The characterisation of the severity of the scenario via the measurement of the probability that it may materialise is complex, owing to the large dimensionality of the scenario and the continuous nature of the variables considered, ultimately requiring that such assessment be based on estimated marginal complementary cumulative distribution functions for the triggers or for the main outcome variables.

The overall likelihood of the scenario for affected variables can be gauged by the probabilities of the shocks simulated for each response variable jointly with the historical (sample-dependent) probability of the trigger events. These joint probabilities vary across the different categories of financial assets, ranging between 0.03% and 0.5%.

Annex A

Shock to swaps – absolute changes (basis points)

Shocks to swaps absolute changes (basis points)														
Country/region	Currency	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	25Y	30Y	35Y	40Y	50Y
EA	EUR	168	157	137	96	71	46	45	44	43	43	42	41	39
BG	BGN	202	197	191	161	150	136	125	115					
CZ	CZK	174	168	162	134	123	104	92	81	70	59			
HU	HUF	297	289	281	252	238	214	214	214					
RO	RON	220	214	208	177	164	150	138	126					
PL	PLN	184	180	176	150	141	132	118	104	90	75			
DK	DKK	161	131	111	78	63	46	45	44	43	43			
CH	CHF	128	113	99	65	49	48	46	44	41	39			
NO	NOK	172	162	151	116	94	62	59	57	55	54			
SE	SEK	168	157	145	108	85	57	57	56	55	54			
UK	GBP	174	163	152	111	88	56	54	52	50	48	46	45	41
AU	AUD	179	161	138	106	91	75	70	65	61	56			
CA	CAD	182	171	160	122	99	66	56	54	51	47			
CN	CNY	136	135	134	132	130	125							
HK	HKD	148	145	142	134	127	111	110	109					
JP	JPY	8	13	18	23	29	36	39	41	43	46			
MX	MXN	289	278	266	224	203	170	153	137					
NZ	NZD	174	165	157	131	114	88	85	82	79	77			
SG	SGD	162	136	125	99	93	85	82	78	75	72			
ZA	ZAR	193	189	185	168	161	150	146	143	140	137			
KR	KRW	188	176	163	134	109	90	72	70					
US	USD	188	175	162	119	93	57	56	55	52	51	50	48	47

Shocks to market-implied expectations of inflation –absolute changes (basis points)

Shocks to market-implied expectations of inflation absolute changes (basis points)							
Country/region	Currency	1Y	2Y	3Y	5Y	7Y	10Y
EU	EUR	196	140	98	60	39	20
UK	GBP	218	153	103	71	48	27
US	USD	182	131	94	64	43	24
JP	JPY	154	114	98	82	53	27

Inflation-linked SWAPs, spot rates – 2023 year-end rates (percentage points)

Inflation-linked SWAPs, spot rates 2023 year-end rates (percentage points)							
Country/region	Currency	1Y	2Y	3Y	5Y	7Y	10Y
EU	EUR	1.59	1.79	1.89	1.99	2.06	2.13
UK	GBP	3.49	3.57	3.62	3.64	3.62	3.46
US	USD	2.01	2.08	2.11	2.33	2.37	2.42
JP	JPY	2.08	1.83	1.45	1.39	1.33	1.27

Shocks to government bond spreads – absolute changes (basis points)

Shocks to government bond spreads absolute changes (basis points)								
Country/region	Country/region	1Y	2Y	5Y	10Y	15Y	20Y	30Y
AT	Austria	57	59	64	73	76	79	79
BE	Belgium	64	66	71	80	83	86	86
BG	Bulgaria	105	109	123	145	148	151	151
CY	Cyprus	106	111	124	146	149	152	152
HR	Croatia	92	95	107	127	130	133	133
CZ	Czech Republic	71	73	78	87	90	93	93
DK	Denmark	40	42	48	58	61	64	64
EE	Estonia							
FI	Finland	62	63	69	77	81	84	84
FR	France	45	47	54	66	69	72	72
DE	Germany	36	38	44	54	57	60	60
GR	Greece	110	114	127	149	152	156	156
HU	Hungary	99	103	116	138	142	145	145
IE	Ireland	55	57	62	70	73	77	77
IT	Italy	96	101	114	136	139	142	142
LV	Latvia	92	97	110	129	132	135	135
LT	Lithuania	96	100	113	135	138	142	142
LU	Luxembourg	48	51	58	69	72	75	75
MT	Malta	89	91	98	109	113	116	116
NL	Netherlands	44	46	53	65	68	71	71
PL	Poland	95	99	111	132	135	138	138
PT	Portugal	85	87	92	101	104	108	108
RO	Romania	99	103	116	139	142	145	145
SK	Slovakia	80	81	85	91	94	97	97
SI	Slovenia	84	86	91	100	103	106	106
ES	Spain	92	96	108	127	130	134	134
SE	Sweden	60	62	67	76	79	82	82
EA (weighted averages)	Euro area	60	63	71	84	87	90	90
EU (weighted averages)	European Union	62	65	73	87	90	93	93
UK	United Kingdom	78	79	81	84	88	91	91
CH	Switzerland	43	45	51	61	64	67	67
NO	Norway	50	52	57	65	68	71	71
IS	Iceland							
BR	Brazil	236	240	252	272	275	278	278
US	United States	45	47	55	68	72	75	75
JP	Japan	41	43	48	56	59	62	62
Other advanced economies	Other advanced economies	53	55	60	70	73	76	76
Emerging markets	Emerging markets	171	177	194	222	226	229	229

Notes: Owing to the absence of liquid benchmark bonds issued by Estonia, shocks for sovereign bond spreads are not provided for this country. In order to treat exposures to recently issued Estonian government bonds, shocks at euro area level should be considered.

Shocks to government bond yields –absolute changes (basis points)

Country/region	Country/region	1Y	2Y	5Y	10Y	15Y	20Y	30Y
AT	Austria	226	216	160	119	121	124	122
BE	Belgium	232	223	167	126	128	130	129
BG	Bulgaria	307	306	284	281	273	266	266
CY	Cyprus	275	268	220	192	194	197	195
HR	Croatia	260	253	203	172	175	177	176
CZ	Czech Republic	245	241	212	190	182	174	152
DK	Denmark	201	173	126	104	106	109	107
EE	Estonia							
FI	Finland	230	221	165	123	126	128	126
FR	France	213	205	150	112	114	117	115
DE	Germany	205	195	140	100	102	104	103
GR	Greece	278	271	223	195	198	200	198
HU	Hungary	395	392	369	353	356	359	359
IE	Ireland	224	214	158	116	119	121	119
IT	Italy	265	258	210	182	184	187	185
LV	Latvia	261	254	206	175	177	180	178
LT	Lithuania	264	257	209	181	184	186	184
LU	Luxembourg	217	208	154	115	117	120	118
MT	Malta	258	249	194	155	158	160	158
NL	Netherlands	213	204	150	111	113	116	114
PL	Poland	279	279	261	263	253	242	213
PT	Portugal	254	244	189	147	149	152	150
RO	Romania	319	317	294	288	280	271	271
SK	Slovakia	248	238	181	137	139	141	140
SI	Slovenia	252	243	187	145	148	150	149
ES	Spain	261	253	204	173	175	178	176
SE	Sweden	228	218	175	133	135	138	136
EA (weighted averages)	Euro area	228	220	167	130	132	135	133
EU (weighted averages)	European Union	234	225	175	141	143	144	141
UK	United Kingdom	253	243	192	140	142	143	139
CH	Switzerland	171	158	116	109	111	111	106
NO	Norway	223	214	173	127	128	129	125
IS	Iceland							
BR	Brazil	456	454	460	457	449	436	436
US	United States	233	222	174	126	128	129	125
JP	Japan	49	56	71	92	98	103	108
Other advanced economies	Other advanced economies	241	230	179	127	129	131	127
Emerging markets	Emerging markets	391	391	379	380	383	378	335

Shocks to corporate bond spreads –absolute changes (basis points)

Country/region	Type	AAA	AA	A	BBB	BB	B	CCC	Average duration (years)
EU	*Financial*	147	170	194	253	397	424	484	3.6
	Non-financial	126	148	172	242	389	414	473	4.5
UK	*Financial*	153	177	201	258	405	433	492	5.3
	Non-financial	133	154	177	247	394	422	481	6.6
US	*Financial*	166	190	214	272	419	444	503	5.0
	Non-financial	159	180	204	261	408	433	492	7.6
Emerging markets	*Financial*	281	304	328	386	532	559	618	5.8
	Non-financial	264	286	309	375	522	548	607	7.9
Other advanced economies	*Financial*	156	179	203	261	407	434	493	4.6
	Non-financial	139	161	184	250	397	423	482	6.3

Shocks to covered bond spreads –absolute changes (basis points)

Country/region	AAA	AA	A	BBB	Average duration (years)
EU	109	131	163	219	4.0
UK	123	144	178	235	2.7
US	118	139	171	227	2.6
Asia	160	194	244	250	2.8
Emerging markets	252	277	314	358	3.9
Other advanced economies	127	152	189	233	3.1

Shocks to residential mortgage-backed securities (RMBS) spreads –absolute changes (basis points)

Country/region	AAA	AA	A	BBB	Average duration (years)
EU	157	187	230	287	4.9
UK	156	186	229	286	6.5
US	200	251	286	342	3.4
Asia	251	285	335	342	4.5
Emerging markets	316	352	395	439	6.2
Other advanced economies	191	227	270	314	4.9

Shocks to stock prices – relative changes (percentage points)

Shocks to stock prices relative changes (percentage points)		
Country/region	**Country/region**	**Shock**
EU	European Union	-42
UK	United Kingdom	-49
CH	Switzerland	-39
NO	Norway	-44
US	United States	-49
JP	Japan	-42
Other advanced economies	Other advanced economies	-44
Emerging markets	Emerging markets	-47

Shocks to other assets – relative changes (percentage points)

Shocks to other assets relative changes (percentage points)						
Private equity		**Hedge funds**		**Real estate investment trusts**		**Commodities**
EU	**Global**	**EU**	**Global**	**EU**	**Global**	
-58	-65	-47	-49	-51	-48	56

Shocks to infrastructure assets –relative changes (percentage points)

Shocks to infrastructure assets relative changes (percentage points)					
Equity		**Bonds**		**Other**	
EU	**Global**	**EU**	**Global**	**EU**	**Global**
-40	-43	-22	-27	-31	-35

Shocks to real estate – relative changes (percentage points)

Shocks to real estate relative changes (percentage points)			
Country/region	**Country/region**	**Residential**	**Office & commercial**
AT	Austria	-12.6	-17.4
BE	Belgium	-9.1	-19.3
BG	Bulgaria	-9.5	-14.7
CY	Cyprus	-2.6	-9.5
HR	Croatia	-9.9	-17.0
CZ	Czech Republic	-15.7	-18.5
DK	Denmark	-15.3	-18.6
EE	Estonia	-11.5	-17.5
FI	Finland	-9.4	-17.0
FR	France	-7.5	-15.5
DE	Germany	-10.6	-19.1
GR	Greece	-3.2	-9.8
HU	Hungary	-5.1	-16.9
IE	Ireland	-2.2	-16.3
IT	Italy	-3.2	-11.3
LV	Latvia	-3.6	-16.5
LT	Lithuania	-7.9	-18.6
LU	Luxembourg	-10.7	-16.7
MT	Malta	-3.6	-8.9
NL	Netherlands	-14.7	-19.7
PL	Poland	-3.4	-19.7
PT	Portugal	-10.2	-17.8
RO	Romania	-5.2	-13.0
SK	Slovakia	-10.2	-18.4
SI	Slovenia	-2.8	-13.0
ES	Spain	-7.6	-14.8
SE	Sweden	-18.8	-19.6
EA (weighted averages)	Euro area	-8.3	-16.7
EU (weighted averages)	European Union	-8.7	-16.9
UK	United Kingdom	-13.4	-16.6
CH	Switzerland	-13.4	-16.6
NO	Norway	-23.5	-23.6
US	United States	-13.4	-16.6
JP	Japan	-13.4	-16.6
Other advanced economies	Other advanced economies	-13.4	-16.6
Emerging markets	Emerging markets	-13.4	-16.6