

Adverse scenario for the 2023 European Securities and Markets Authority's money market fund stress testing guidelines

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 sets out the adverse financial market scenario for the stress testing exercise carried out by the European Securities and Markets Authority (ESMA). Specifically, ESMA has developed guidelines for managers of money market funds (MMFs), who are required to conduct internal stress tests and report the results to the national competent authorities and ESMA.¹ For this purpose, the ESRB, in collaboration with the European Central Bank (ECB) and ESMA, has updated the calibration of stress parameters for the 2023 ESMA MMF guidelines.² The updated parameters were approved by the ESRB General Board on 4 December 2023 and transmitted to ESMA on 5 December 2023.

All assumptions about redemptions and the additional guidance on applying the scenario are provided by ESMA as part of its MMF stress testing guidelines.

¹ Article 28 of Regulation (EU) 2017/1131 of the European Parliament and of the Council of 14 June 2017 on money market funds (the MMF Regulation) provides that ESMA will issue guidelines that establish common reference parameters for the stress test scenarios to be included in the stress tests that MMF managers are required to conduct (OJ L 169, 30.6.2017, p. 8).

² The scenario presented in this document is not a forecast. It should not be interpreted as the ESRB's expectations about future economic and financial developments including monetary policy decisions and their impacts. It constitutes a severe hypothetical scenario.

Scenario methodology and calibration

This section discusses the calibration methodology and the main sources of risk behind the adverse scenario, as well as the key features that ESMA considers relevant to the MMF sector. The calibration of the scenario has benefited from interactions with ESMA and discussions with ESRB member institutions.

Calibration methodology

The methodology for the scenario calibration is based on the non-parametric application of a multivariate copula model, as used in previous ESMA MMF stress testing guidelines.³ 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 special focus on swap rates, corporate and government credit spreads, foreign exchange rates and securitisations in the European Union and other advanced economies. The calibration sample and probability of the triggering events have been set in close collaboration with ESMA to reflect the main features of the scenario as dictated by the current risk landscape, which was identified by the ESRB General Board. More precisely, the sample period chosen for the calibration spans from January 2008 to September 2023, and the probability of the triggering events is set over the horizon of one quarter for all the tables in the scenario except for Table A.5 (on liquidity shocks to bid-ask spreads), which has been calibrated over a five-day horizon. The shocks reported should be interpreted as immediate and permanent shifts in asset prices relative to their cut-off date levels, as specified in ESMA's guidelines.

Scenario

The scenario reflects the ESRB's assessment of prevailing sources of systemic risks identified for the EU financial system as of November 2023. 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) 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 not only lower growth but also higher prices. Second-round effects stemming from the wage-price spiral would further exacerbate inflationary pressures, ultimately leading to a broad re-appraisal of market expectations of interest rates, shifting up yield curves over the whole maturity spectrum. The resulting tightening of financing conditions, combined with higher wages and sluggish economic growth, would weigh on corporates' profitability. Households would also experience losses in

³ See "Technical note on the Financial Shock Simulator", ECB, Frankfurt am Main, February 2019.



real income and face stronger borrowing costs amid higher unemployment. Banks' income and solvency outlook would also end up deteriorating substantially due to increased funding costs and defaults.

Corporate profitability expectations would reflect these degraded prospects, driving credit risk premia upwards and resulting in a widening of credit spreads and rating downgrades worldwide. In addition, the sustained high risk-free rates, together with the prevailing pandemic-induced elevated level of government debt, would fuel concerns about sovereign debt sustainability, putting further pressure on bond rates.

Such market reactions would also trigger a sudden revaluation of other financial assets and real estate prices in an uncertain environment characterised by high volatility. The rapid repricing of financial instruments held at fair value would amplify liquidity stress in the economy, which would be reflected in a widening of bid-ask spreads.



Annex A

Table A.1: Shocks to swap rates

Shocks to interest rates Absolute changes (basis points)							
Geographic area	Country	Description	1M	3M	6M	1Y	2Y
EU	Euro area	Interest rate swap on the EUR (euro)	87	99	112	120	130
EU	Bulgaria	Interest rate swap on the BGN (Bulgarian lev)	112	130	148	156	166
EU	Czech Republic	Interest rate swap on the CZK (Czech koruna)	110	112	125	133	144
EU	Denmark	Interest rate swap on the DKK (Danish krone)	91	105	115	124	132
EU	Hungary	Interest rate swap on the HUF (Hungarian forint)	170	182	191	206	222
EU	Poland	Interest rate swap on the PLN (Polish zloty)	101	108	124	133	144
EU	Romania	Interest rate swap on the RON (Romanian leu)	112	130	148	154	161
EU	Sweden	Interest rate swap on the SEK (Swedish krona)	92	105	115	126	135
Rest of Europe	United Kingdom	Interest rate swap on the GBP (British pound)	92	107	121	129	135
Rest of Europe	Iceland	Interest rate swap on the ISK (Icelandic króna)					
Rest of Europe	Norway	Interest rate swap on the NOK (Norwegian krone)	90	104	113	123	133
Rest of Europe	Russia	Interest rate swap on the RUB (Russian ruble)	188	188	188	244	286
Rest of Europe	Switzerland	Interest rate swap on the CHF (Swiss franc)	64	83	107	122	136
Rest of Europe	Turkey	Interest rate swap on the TRY (Turkish lira)	195	250	305	322	340
North America	Canada	Interest rate swap on the CAD (Canadian dollar)	98	112	127	137	141
North America	United States	Interest rate swap on the USD (US dollar)	97	111	126	133	139
Australia and Pacific	Australia	Interest rate swap on the AUD (Australian dollar)	99	113	139	142	152
Australia and Pacific	New Zealand	Interest rate swap on the NZD (New Zealand dollar)	102	113	135	139	149
South and Central America	Brazil	Interest rate swap on the BRL (Brazilian real)					
South and Central America	Chile	Interest rate swap on the CLP (Chilean peso)	167	180	193	206	220
South and Central America	Colombia	Interest rate swap on the COP (Colombian peso)	218	224	246	251	256
South and Central America	Mexico	Interest rate swap on the MXN (Mexican peso)	168	171	184	220	235
Asia	China	Interest rate swap on the CNY (Chinese yuan)	98	115	135	154	177
Asia	Hong Kong	Interest rate swap on the HKD (Hong Kong dollar)	108	125	144	157	179
Asia	India	Interest rate swap on the INR (Indian rupee)	110	127	147	166	189
Asia	Japan	Interest rate swap on the JPY (Japanese yen)	8	9	14	19	29
Asia	Korea	Interest rate swap on the KRW (South Korean won)	94	111	128	162	189
Asia	Malaysia	Interest rate swap on the MYR (Malaysian ringgit)	34	51	83	104	107
Asia	Singapore	Interest rate swap on the SGD (Singapore dollar)	119	130	138	148	148
Asia	Thailand	Interest rate swap on the THB (Thai baht)	41	58	90	111	113
Africa	South Africa	Interest rate swap on the ZAR (South African rand)	162	166	169	188	210
EU	All countries	Default value for countries not included in the table	109	121	135	144	154
Other advanced economies	All countries	Default value for countries not included in the table	85	99	115	128	141
Emerging markets	All countries	Default value for countries not included in the table	140	155	174	196	210

Note: The grey cells indicate data that are not available.



Table A.2: Shocks to government bond spreads

Shocks to government bond spreads Absolute changes (basis points)					
Geographic area	Country	3M	6M	1Y	2Y
EU	Austria	36	48	58	61
EU	Belgium	37	48	55	61
EU	Bulgaria	54	56	72	78
EU	Croatia	46	59	68	74
EU	Cyprus	72	89	104	110
EU	Czech Republic	71	87	103	109
EU	Denmark	22	33	46	57
EU	Finland	38	49	56	62
EU	France	17	26	39	40
EU	Germany	12	23	30	32
EU	Greece	72	89	104	110
EU	Hungary	13	22	39	40
EU	Ireland	23	37	44	51
EU	Italy	55	66	78	82
EU	Latvia	50	64	73	80
EU	Lithuania	47	60	69	76
EU	Luxembourg	17	29	35	39
EU	Malta	38	53	57	62
EU	Netherlands	14	25	31	35
EU	Poland	58	68	80	86
EU	Portugal	62	74	87	100
EU	Romania	35	43	58	67
EU	Slovakia	49	63	72	79
EU	Slovenia	16	27	34	37
EU	Spain	52	63	71	78
EU	Sweden	13	22	31	41
Euro area (weighted averages)	Euro area (weighted averages)	29	39	49	52
EU (weighted averages)	EU (weighted averages)	30	41	50	55
Rest of Europe	United Kingdom	14	25	36	43
Rest of Europe	Switzerland	30	31	33	35
Rest of Europe	Norway	14	26	34	45
Rest of Europe	Iceland				
Rest of Europe	Liechtenstein				
Advanced economies	United States	16	23	31	40
Advanced economies	Japan	35	35	45	45
Advanced economies	Non-EU and non-US advanced economies	23	29	37	42
Advanced economies	Advanced economies (weighted average)	25	33	42	47
Emerging markets	Emerging markets	95	117	136	214
World	World	60	75	89	131

Notes: The weighted averages are based on real GDP and some missing values have been interpolated. “Non-EU and non-US advanced economies” refers to all other advanced economies (as defined by the International Monetary Fund).



Table A.3: Shocks to foreign exchange rates (EUR appreciation against USD)

Shocks to FX (appreciation of EUR against USD) Relative changes (%)			
Geographic area	Description	Exchange rate name	Shock
EU	EUR/BGN represents 1 EUR per x BGN (Bulgarian lev)	EUR/BGN	
EU	EUR/CZK represents 1 EUR per x CZK (Czech koruna)	EUR/CZK	4.80
EU	EUR/HUF represents 1 EUR per x HUF (Hungarian forints)	EUR/HUF	10.90
EU	EUR/PLN represents 1 EUR per x PLN (Polish zloty)	EUR/PLN	7.52
EU	EUR/RON represents 1 EUR per x RON (Romanian leu)	EUR/RON	2.87
EU	EUR/SEK represents 1 EUR per x SEK (Swedish krona)	EUR/SEK	9.33
Rest of Europe	EUR/RSD represents 1 EUR per x RSD (Serbian dinar)	EUR/RSD	2.10
Rest of Europe	EUR/NOK represents 1 EUR per x NOK (Norwegian krone)	EUR/NOK	12.85
Rest of Europe	EUR/GBP represents 1 EUR per x GBP (British pound)	EUR/GBP	8.79
Rest of Europe	EUR/CHF represents 1 EUR per x CHF (Swiss franc)	EUR/CHF	5.72
Rest of Europe	EUR/RUB represents 1 EUR per x RUB (Russian ruble)	EUR/RUB	35.42
Rest of Europe	EUR/TRY represents 1 EUR per x TRY (Turkish lira)	EUR/TRY	16.95
North America	USD/CAD represents 1 USD per x CAD (Canadian dollar)	USD/CAD	-5.92
North America	EUR/USD represents 1 EUR per x USD (US dollar)	EUR/USD	7.86
Australia and Pacific	AUD/USD represents 1 AUD per x USD (Australian dollar)	AUD/USD	10.59
Australia and Pacific	NZD/USD represents 1 NZD per x USD (New Zealand dollar)	NZD/USD	10.44
South and Central America	USD/ARS represents 1 USD per x ARS (Argentine peso)	USD/ARS	9.24
South and Central America	USD/BRL represents 1 USD per x BRL (Brazilian real)	USD/BRL	-17.62
South and Central America	USD/MXN represents 1 USD per x MXN (Mexican peso)	USD/MXN	-12.46
Asia	USD/CNY represents 1 USD per x CNY (Chinese yuan renminbi)	USD/CNY	-3.38
Asia	USD/HKD represents 1 USD per x HKD (Hong Kong dollar)	USD/HKD	-0.65
Asia	USD/INR represents 1 USD per x INR (Indian rupee)	USD/INR	-2.99
Asia	USD/JPY represents 1 USD per x JPY (Japanese yen)	USD/JPY	-8.47
Asia	USD/KRW represents 1 USD per x KRW (South korean won)	USD/KRW	-8.11
Asia	USD/MYR represents 1 USD per x MYR (Malaysian ringgit)	USD/MYR	-3.64
Asia	USD/SGD represents 1 USD per x SGD (Singapore dollar)	USD/SGD	-4.97
Asia	USD/THB represents 1 USD per x THB (Thai baht)	USD/THB	-7.21
Asia	USD/TWD represents 1 USD per x TWD (New Taiwan dollar)	USD/TWD	
Africa	USD/ZAR represents 1 USD per x ZAR (South African rand)	USD/ZAR	-12.16

Notes: The grey cells indicate data that are not available. A positive figure indicates an appreciation of the first currency against the second.



Table A.4: Shocks to foreign exchange rates (EUR depreciation against USD)

Shocks to FX (depreciation of EUR against USD) Relative changes (%)			
Geographic area	Description	Exchange rate name	Shock
EU	EUR/BGN represents 1 EUR per x BGN (Bulgarian lev)	EUR/BGN	
EU	EUR/CZK represents 1 EUR per x CZK (Czech koruna)	EUR/CZK	-6.44
EU	EUR/HUF represents 1 EUR per x HUF (Hungarian forints)	EUR/HUF	-13.46
EU	EUR/PLN represents 1 EUR per x PLN (Polish zloty)	EUR/PLN	-8.38
EU	EUR/RON represents 1 EUR per x RON (Romanian leu)	EUR/RON	-2.70
EU	EUR/SEK represents 1 EUR per x SEK (Swedish krona)	EUR/SEK	-5.47
Rest of Europe	EUR/RSD represents 1 EUR per x RSD (Serbian dinar)	EUR/RSD	-1.95
Rest of Europe	EUR/NOK represents 1 EUR per x NOK (Norwegian krone)	EUR/NOK	-6.77
Rest of Europe	EUR/GBP represents 1 EUR per x GBP (British pound)	EUR/GBP	-5.92
Rest of Europe	EUR/CHF represents 1 EUR per x CHF (Swiss franc)	EUR/CHF	-8.21
Rest of Europe	EUR/RUB represents 1 EUR per x RUB (Russian ruble)	EUR/RUB	-41.06
Rest of Europe	EUR/TRY represents 1 EUR per x TRY (Turkish lira)	EUR/TRY	-7.74
North America	USD/CAD represents 1 USD per x CAD (Canadian dollar)	USD/CAD	10.11
North America	EUR/USD represents 1 EUR per x USD (US dollar)	EUR/USD	-11.34
Australia and Pacific	AUD/USD represents 1 AUD per x USD (Australian dollar)	AUD/USD	-15.68
Australia and Pacific	NZD/USD represents 1 NZD per x USD (New Zealand dollar)	NZD/USD	-14.33
South and Central America	USD/ARS represents 1 USD per x ARS (Argentine peso)	USD/ARS	17.90
South and Central America	USD/BRL represents 1 USD per x BRL (Brazilian real)	USD/BRL	16.00
South and Central America	USD/MXN represents 1 USD per x MXN (Mexican peso)	USD/MXN	9.14
Asia	USD/CNY represents 1 USD per x CNY (Chinese yuan renminbi)	USD/CNY	7.38
Asia	USD/HKD represents 1 USD per x HKD (Hong Kong dollar)	USD/HKD	0.80
Asia	USD/INR represents 1 USD per x INR (Indian rupee)	USD/INR	6.85
Asia	USD/JPY represents 1 USD per x JPY (Japanese yen)	USD/JPY	14.25
Asia	USD/KRW represents 1 USD per x KRW (South korean won)	USD/KRW	12.95
Asia	USD/MYR represents 1 USD per x MYR (Malaysian ringgit)	USD/MYR	6.53
Asia	USD/SGD represents 1 USD per x SGD (Singapore dollar)	USD/SGD	5.55
Asia	USD/THB represents 1 USD per x THB (Thai baht)	USD/THB	8.90
Asia	USD/TWD represents 1 USD per x TWD (New Taiwan dollar)	USD/TWD	
Africa	USD/ZAR represents 1 USD per x ZAR (South African rand)	USD/ZAR	18.84

Notes: The grey cells indicate data that are not available. A positive figure indicates an appreciation of the first currency against the second.



Table A.5: Shocks to bid-ask spreads

Shocks to bid-ask prices of government bonds				
Absolute changes (EUR)				
	3M	6M	1Y	2Y
DE	0.18	0.26	0.65	0.87
ES	0.22	0.42	0.99	1.23
FR	0.19	0.39	0.90	1.11
IT	0.19	0.36	0.80	1.07
NL	0.20	0.40	0.95	1.16
Other	0.20	0.37	0.86	1.09

Shocks to bid-ask prices of corporate bonds		
Absolute changes (EUR)		
	1Y	2Y
DE	1.16	1.28
ES	1.20	1.42
FR	1.16	1.35
IT	1.24	1.39
NL	1.17	1.29
Other	1.19	1.34

Note: Bid-ask shocks are calibrated over a five-day horizon.

Table A.6: Shocks to residential mortgage-backed securities spreads (RMBS)

Shocks to RMBS				
Absolute changes (basis points)				
Geographic area	AAA	AA	A	BBB
EU	137	144	189	261
North America	140	147	193	267
Asia	132	139	183	252
All	136	143	189	260



Table A.7: Shocks to corporate bond spreads

Shocks to corporate credit spreads (1-3Y)				
Absolute changes (basis points)				
	Non-financial	Financial covered	Financial	All
AAA	121	92	129	114
AA	124	106	149	126
A	147	120	162	143
BBB	210	196	253	220
BB	273	247	313	278
B	329	297	372	333
<=CCC	397	366	453	405
Investment-grade	151	128	173	151
High-yield	333	303	380	339
All	242	216	276	245

Shocks to credit default swap indices (CDSIs)		
Absolute changes (basis points)		
Geographic area	Index	1Y
EU	Itraxx overall 5y	133
	Itraxx crossover 5y	558
	Itraxx high-volatility 5y	187
	Itraxx non-financial 5y	168
	Itraxx sub-financial 5y	365
US	Investment-grade CDSI	82
	High-yield CDSI	357