

Adverse scenario for the European Securities and Markets Authority's money market fund stress-testing guidelines in 2020

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 or market participants to adverse market developments. As part of this cooperation, the ESRB designs scenarios of adverse economic and financial market developments.

In this document the ESRB describes the adverse financial market scenario for the stress-testing exercise planned 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 competent authorities and ESMA.¹ On 27 August 2020, ESMA announced that the 2019 stress test guidelines will continue to apply until the 2020 guidelines have been published. To this end, the European Central Bank (ECB), in collaboration with the ESRB and ESMA, has updated the calibration of stress parameters for the 2020 ESMA MMF guidelines.² These were approved by the ESRB General Board on 24 September 2020 and transmitted to ESMA.

Assumptions about redemptions and additional guidance on applying the scenario, which are needed for ESMA's MMF stress test, are provided by ESMA and presented in ESMA's 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 (OJ L 169, 30.6.2017, p. 8) (the "MMF Regulation") provides that ESMA will issue guidelines that establish common reference parameters of the stress test scenarios to be included in the stress tests that managers of MMFs are required to conduct.

² The scenario presented in this document is not a forecast. It should not be interpreted as either the ESRB's expectations about future economic and financial developments or any unintended consequences of future monetary policy decisions. It constitutes a severe yet plausible hypothetical scenario.

Scenario methodology and calibration

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

Calibration methodology

The methodology for the scenario calibration is based on a non-parametric application of a multivariate copula model, as used in previous stress tests such as those conducted under the 2019 ESMA MMF stress-testing guidelines.³ The scenario is the outcome of several simulations based on different triggers that reflect the main sources of financial stability risks, with a special focus on corporate and government credit spreads, swap rates, foreign exchange shocks 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 motivated by the current risk landscape identified by the ESRB General Board. More precisely, the sample period chosen for the calibration spans from January 2004⁴ to August 2020 and the probability of the triggering events is below 1% over the horizon of one quarter.⁵ The shocks reported should be interpreted as one-off, instantaneous and permanent shifts in asset prices relative to their cut-off date levels as specified in ESMA's guidelines.

Scenario

The shocks in the tables below are calibrated to be severe, plausible and consistent with the ECB's projections of the baseline COVID-19 scenario, as well as being in line with the market risk scenarios that were designed for the recently published COVID-19 Vulnerability Analysis.⁶ More specifically, under the baseline COVID-19 scenario, GDP in the euro area is projected to fall by 8.7% in 2020 and to rebound by 5.2% in 2021 (see Chart 1).⁷ Foreign exchange shocks from the 2019 MMF scenario calibration have been confirmed and remain unchanged, as they were already were in line with the COVID-19 Vulnerability Analysis scenarios. Other shocks have been re-calibrated over the above-mentioned horizon, while targeting a relative level of severity for the shocks that is commensurate with the "severe" scenario of the COVID-19 Vulnerability Analysis. Although equity prices are not used in the MMF scenario as such, this

³ See the "Technical note on the [Financial Shock Simulator \(FSS\)](#)", ESRB, February 2019.

⁴ The model uses daily data and the majority of time series have sufficient data as of 2004.

⁵ All shocks are calibrated over the horizon of one quarter, except for shocks to bid-ask spreads for use as liquidity discount factors (see Table A.5), which are calibrated over a horizon of five days.

⁶ See [COVID-19 Vulnerability Analysis](#), ECB, July 2020 and [Eurosystem staff macroeconomic projections for the euro area](#), ECB, June 2020

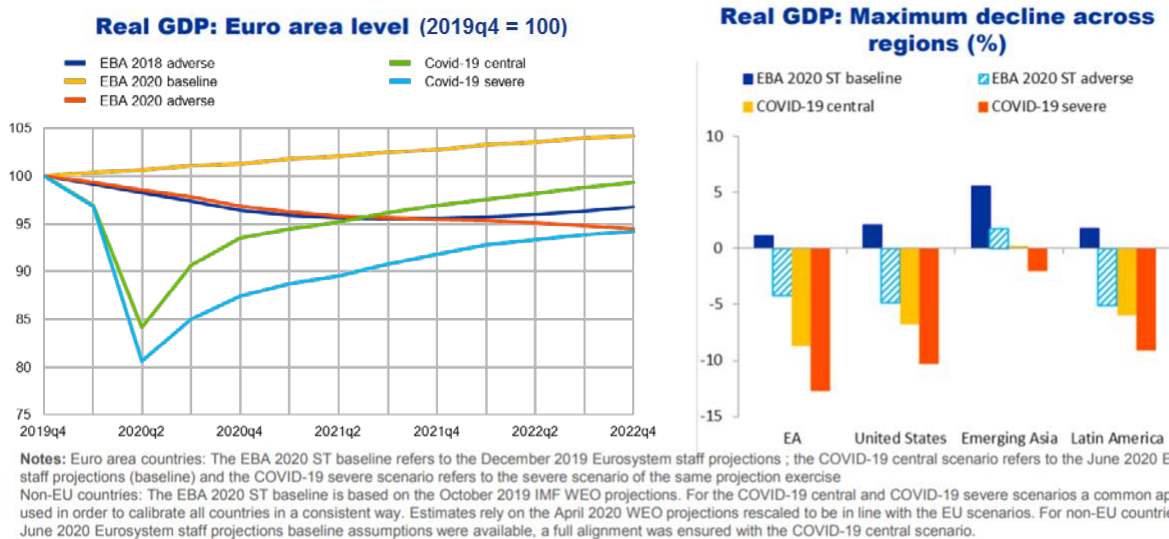
⁷ Note that the September 2020 [ECB staff macroeconomic projections for the euro area](#) project GDP to fall by 8.0% in 2020 and to rebound by 5.0% in 2021.



level of severity of the shocks is consistent with, on average, an equity price drop of -39% for the euro area and -38% for the European Union.

Furthermore, the scenario calibration reflects important systemic risks identified by the ESRB General Board, including (i) widespread defaults in the private sector due to a deep global recession, (ii) a difficult macroeconomic environment for banks, insurers and pension schemes, (iii) a re-emergence of sovereign financing risk and debt sustainability concerns, and (iv) instability and pockets of illiquidity in financial markets.⁸

Chart 1: Real GDP evolution



⁸ See Table 1 entitled “ESRB risk assessment as at 25 June 2020” in the [ESRB’s Annual Report](#).



Annex A

Table A.1: Shocks to swap rates

Shocks to interest rate yields Absolute changes (basis points)							
Geographic Area	Country	Description	1M	3M	6M	1Y	2Y
EU	Euro area	Interest rate swap on the EUR (euro)	25	16	11	14	15
EU	Bulgaria	Interest rate swap on the BGN (Bulgarian lev)	25	16	11	14	15
EU	Croatia	Interest rate swap on the HRK (Croatian kuna)	25	16	11	14	15
EU	Czech Republic	Interest rate swap on the CZK (Czech koruna)	25	16	11	14	15
EU	Denmark	Interest rate swap on the DKK (Danish krone)	8	16	11	14	15
EU	Hungary	Interest rate swap on the HUF (Hungarian forint)	11	23	15	19	26
EU	Poland	Interest rate swap on the PLN (Polish zloty)	17	16	13	17	20
EU	Romania	Interest rate swap on the RON (Romanian leu)	24	47	30	40	47
EU	Sweden	Interest rate swap on the SEK (Swedish krona)	4	8	5	7	12
Rest of Europe	United Kingdom	Interest rate swap on the GBP (British pound)	15	30	19	26	28
Rest of Europe	Iceland	Interest rate swap on the ISK (Icelandic króna)					
Rest of Europe	Norway	Interest rate swap on the NOK (Norwegian krone)	3	6	4	5	8
Rest of Europe	Russia	Interest rate swap on the RUB (Russian ruble)	19	38	24	32	40
Rest of Europe	Switzerland	Interest rate swap on the CHF (Swiss franc)	5	10	6	8	12
Rest of Europe	Turkey	Interest rate swap on the TRY (Turkish lira)	30	61	39	51	66
North America	Canada	Interest rate swap on the CAD (Canadian dollar)	7	14	9	12	15
North America	United States	Interest rate swap on the USD (US dollar)	14	29	19	24	27
Australia and Pacific	Australia	Interest rate swap on the AUD (Australian dollar)	5	10	7	9	13
Australia and Pacific	New Zealand	Interest rate swap on the NZD (New Zealand dollar)					
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)	32	63	41	54	81
South and Central America	Colombia	Interest rate swap on the COP (Colombian peso)	25	50	32	42	59
South and Central America	Mexico	Interest rate swap on the MXN (Mexican peso)	38	76	49	64	78
Asia	China	Interest rate swap on the CNY (Chinese yuan)	2	4	3	3	4
Asia	Hong Kong	Interest rate swap on the HKD (Hong Kong dollar)	32	64	41	55	69
Asia	India	Interest rate swap on the INR (Indian rupee)	41	81	52	69	85
Asia	Japan	Interest rate swap on the JPY (Japanese yen)	1	3	2	2	4
Asia	Korea	Interest rate swap on the KRW (South Korean won)	21	41	27	35	45
Asia	Malaysia	Interest rate swap on the MYR (Malaysian ringgit)	14	28	18	23	33
Asia	Singapore	Interest rate swap on the SGD (Singapore dollar)	18	36	23	30	38
Asia	Thailand	Interest rate swap on the THB (Thai baht)	25	50	33	43	55
Africa	South Africa	Interest rate swap on the ZAR (South African rand)	1	3	2	3	5

Interest rate yield shocks Absolute changes (basis points)							
Geographic Area	Country	Description	1M	3M	6M	1Y	2Y
EU	All countries	Default value for countries not included above	17	16	13	17	20
Other Advanced Economies	All countries	Default value for countries not included above	12	8	8	10	13
Emerging Markets	All countries	Default value for countries not included above	45	29	29	38	50

Note: The grey cells indicate data are not available.



Table A.2: Shocks to government bond yields

Shocks to government bond yields Absolute changes (basis points)					
Geographic Area	Country	3M	6M	1Y	2Y
EU	Austria	63	71	93	112
EU	Belgium	56	62	82	98
EU	Bulgaria	70	77	102	123
EU	Croatia	70	77	102	123
EU	Cyprus	121	135	178	214
EU	Czech Republic	154	164	216	258
EU	Denmark	64	71	93	112
EU	Finland	60	67	88	106
EU	France	51	57	75	90
EU	Germany	35	39	51	62
EU	Greece	66	73	97	116
EU	Hungary	121	125	164	200
EU	Ireland	71	79	104	125
EU	Italy	146	165	220	266
EU	Latvia	48	53	70	84
EU	Lithuania	64	71	93	112
EU	Luxembourg	35	39	51	62
EU	Malta	72	80	106	127
EU	Netherlands	36	40	53	64
EU	Poland	115	125	164	201
EU	Portugal	76	85	111	134
EU	Romania	97	86	114	135
EU	Slovakia	87	98	128	154
EU	Slovenia	48	54	71	85
EU	Spain	89	99	131	157
EU	Sweden	64	68	90	111
EA (weighted average)	EA (weighted average)	66	74	98	117
EU (weighted average)	EU (weighted average)	70	77	102	123
Advanced economies	United Kingdom	54	46	61	71
Advanced economies	Switzerland	28	35	45	58
Advanced economies	Norway	37	39	51	64
Advanced economies	Iceland	46	47	62	77
Advanced economies	Liechtenstein	26	36	48	59
Advanced economies	United States	76	72	94	111
Advanced economies	Japan	141	157	206	248
Advanced economies	Advanced economies non-EU and non-US	46	47	62	77
Advanced economies	Advanced economies (weighted average)	54	118	155	158
Emerging markets	Emerging markets	337	379	505	517
World	World	195	248	330	333

Note: The weighted averages are based on real GDP and some missing values have been interpolated. "Advanced economies non-EU and non-US" refer to all other advanced economies (as defined by the IMF).



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

Shocks to FX (appreciation of the EUR against the USD)			
Relative changes (%)			
Geographic Area	Description	Exchange rate name	Shock
EU	BGNUSD represents 1 BGN (Bulgarian lev) per x USD	BGNUSD	25.4
EU	EURCZK represents 1 EUR per x CZK (Czech koruna)	EURCZK	-2.2
EU	EURHRK represents 1 EUR per x HRK (Croatian kuna)	EURHRK	0.1
EU	EURHUF represents 1 EUR per x HUF (Hungarian forint)	EURHUF	-5.2
EU	USDNOK represents 1 USD per x NOK (Norwegian krone)	USDNOK	-23.2
EU	EURPLN represents 1 EUR per x PLN (Polish zloty)	EURPLN	-1.5
EU	EURRON represents 1 EUR per x RON (Romanian leu)	EURRON	0.0
EU	EURRSD represents 1 EUR per x RSD (Serbian dinar)	EURRSD	-1.9
EU	USDSEK represents 1 USD per x SEK (Swedish krona)	USDSEK	-25.4
Rest of Europe	EURGBP represents 1 EUR per x GBP (British pound)	EURGBP	11.1
Rest of Europe	EURCHF represents 1 EUR per x CHF (Swiss franc)	EURCHF	3.7
Rest of Europe	EURRUB represents 1 EUR per x RUB (Russian ruble)	EURRUB	10.1
Rest of Europe	EURTRY represents 1 EUR per x TRY (Turkish lira)	EURTRY	13.5
North America	USDCAD represents 1 USD per x CAD (Canadian dollar)	USDCAD	-13.0
North America	EURUSD represents 1 EUR per x USD (US dollar)	EURUSD	25.4
Australia and Pacific	AUDUSD represents 1 AUD per x USD (Australian dollar)	AUDUSD	17.5
Australia and Pacific	NZDUSD represents 1 NZD per x USD (New Zealand dollar)	NZDUSD	18.0
South and Central America	USDARS represents 1 USD per x ARS (Argentine peso)	USDARS	-0.8
South and Central America	USDBRL represents 1 USD per x BRL (Brazilian real)	USDBRL	-12.2
South and Central America	USDMXN represents 1 USD per x MXN (Mexican peso)	USDMXN	-7.9
Asia	USDCNY represents 1 USD per x CNY (Chinese yuan renminbi)	USDCNY	-0.7
Asia	USDHKD represents 1 USD per x HKD (Hong Kong dollar)	USDHKD	-0.1
Asia	USDINR represents 1 USD per x INR (Indian rupee)	USDINR	-2.5
Asia	USDJPY represents 1 USD per x JPY (Japanese yen)	USDJPY	-8.7
Asia	USDKRW represents 1 USD per x KRW (South Korean won)	USDKRW	-2.1
Asia	USDMYR represents 1 USD per x MYR (Malaysian ringgit)	USDMYR	-2.3
Asia	USDSGD represents 1 USD per x SGD (Singapore dollar)	USDSGD	-10.4
Asia	USDTHB represents 1 USD per x THB (Thai baht)	USDTHB	-2.3
Asia	USDTWD represents 1 USD per x TWD (New Taiwan dollar)	USDTWD	
Africa	USDZAR represents 1 USD per x ZAR (South African rand)	USDZAR	-14.0

Note: The grey cells indicate data 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 (euro)				
	3M	6M	1Y	2Y
DE	0.09	0.10	0.32	0.50
ES	0.61	0.97	1.59	1.59
FR	0.13	0.21	0.57	0.80
IT	0.91	1.35	1.14	1.41
NL	0.10	0.11	0.32	0.50
Other	0.37	0.55	0.79	0.93

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

Table A.6: Shocks to RMBS (and other Asset-backed securities)

Shocks to Residential Mortgage Backed Securities Absolute changes (bps)				
Geographic Area	AAA	AA	A	BBB
European Union	240	270	278	278
North America	272	325	320	320
Asia	235	277	288	288
All	271	326	338	338



Table A.7: Shocks to credit spreads (corporate)

Shocks to general corporate credit yields [1-3 years] Absolute changes (basis points)				
	Non-financial	Financial covered	Financial	All
AAA	187	209	231	209
AA	195	235	275	235
A	249	285	321	285
BBB	307	358	410	359
BB	334	395	447	392
B	360	432	514	435
<=CCC	402	468	674	515
Investment grade	235	272	309	272
High yield	365	432	545	447
All	300	352	427	360

Shocks to CDX Absolute changes (basis points)		
Geographic Area	Index	1Y
European Union	Itraxx Overall 5y	143
	Itraxx Crossover 5y	530
	Itraxx High vol 5y	530
	Itraxx Non financial 5y	287
	Itraxx SubFinancial 5y	287
United States	Investment yield CDSI	152
	High yield CDSI	615