



Adverse macro-financial scenario for the 2018 EU-wide banking sector stress test

This document sets out the adverse macro-financial scenario that banks are required to use in the 2018 EU-wide stress test in order to estimate what the potential impact may be on profits and capital. In accordance with its mandate, the European Banking Authority (EBA), together with the European Systemic Risk Board (ESRB), initiates and coordinates EU-wide stress tests to assess the resilience of banks to adverse market developments. The ECB, in collaboration with the ESRB, has developed the narrative and methodology and has calibrated the adverse macro-financial scenario for the 2018 exercise. The scenario includes variables such as GDP, inflation, unemployment, asset prices and interest rates. It covers three years, starting from the first quarter of 2018 (when the shocks are assumed to materialise) and ending in the last quarter of 2020. The scenario has been approved by the ESRB General Board and transmitted to the EBA.

1. Main risks to stability of the EU financial sector

The narrative of the adverse scenario reflects the four systemic risks identified by the ESRB General Board as representing the most material threats to the stability of the EU financial sector:¹

1. abrupt and sizeable repricing of risk premia in global financial markets – triggered e.g. by a policy expectation shock – leading to a tightening of financial conditions;
2. adverse feedback loop between weak bank profitability and low nominal growth, amid structural challenges in the EU banking sector;
3. public and private debt sustainability concerns amid a potential repricing of risk premia and increased political fragmentation;
4. liquidity risks in the non-bank financial sector with potential spillovers to the broader financial system.

In the adverse scenario, the first systemic risk is assessed to be the most significant of the four. It could act as a trigger for the remaining risks, which are more closely related to the

¹ These threats do not represent either ESRB expectations about future economic and financial developments or any unintended consequence of future monetary policy decisions.

EU banking system. An abrupt repricing of risk premia in global financial markets triggered outside the European Union would spill over to European countries via both financial and trade channels, giving rise to domestic confidence shocks. This would adversely affect demand in the European Union, which would enter a deep recession.

Elevated valuations in major global equity and bond markets, coupled with low realised and implied levels of volatility, render financial markets susceptible to an abrupt and sizeable repricing. Political uncertainty linked to geopolitical tensions and changes in market participants' expectations regarding economic policies in major economies outside the European Union could trigger such a repricing of risk premia which would then spill over to European equity and bond markets.² This would result in a large fall in asset prices in global financial markets and an upward shift and steepening of the yield curve across all jurisdictions. The steepening of the yield curve would be more pronounced for countries with higher public debt sustainability risks. The repricing of risk premia would be amplified by the unwinding of short positioning in volatility markets and high leverage in some corporate sectors.

Political uncertainty and increased volatility in financial markets could also trigger adverse confidence shocks in developed economies at the beginning of the projection horizon.³ This could in turn result in capital outflows from those jurisdictions. At the same time, the phasing-in of more protectionist policies in some advanced economies would also exert a large negative effect on global demand in the longer term. A contraction in global demand would have a negative impact on commodity prices. Against the backdrop of global financial tensions, bilateral nominal exchange rates of the central and eastern European countries (CEECs) against the euro would depreciate significantly while the Swiss franc would appreciate against the euro.

The fall in global demand would lead to a decline in economic activity in the European Union, generating adverse feedback loops between bank profitability and low nominal growth, especially in countries facing structural challenges in their banking sectors. The economic slowdown would result in an increase in unemployment across the European Union. This would put further downward pressure on aggregate demand which would also affect real estate markets, especially in countries where prices are considered to be above fundamental valuations. An increase in the unemployment rate and an increase in long-term bond yields would also negatively affect households' creditworthiness and their ability to service their mortgages. Moreover, a prolonged period of low economic activity combined with the rise in corporate bond yields would increase the credit risk of non-financial corporations,

² Monetary policy is assumed, under the adverse scenario, to follow the expectations implied by the baseline scenario. Therefore, the increase in sovereign bond yields and interest rates does not reflect any monetary policy change compared with the baseline scenario.

³ The adverse scenario encompasses a wide range of macroeconomic risks that could be associated with Brexit. Elements of the baseline scenario already reflect the average of a range of possible outcomes from the United Kingdom's trading relationship with the European Union.



leading to higher risk premia. The resulting increase in corporate financing costs would negatively affect investment. Overall, the increase in borrower credit risk would result in banks facing higher levels of non-performing loans (NPLs) and a concomitant rise in forgone interest income. At the same time, a slowdown in aggregate demand would exert downward pressure on banks' lending rates, especially in countries characterised by structural overcapacity in the banking sector. Owing to these factors, banking sector counterparty risk would increase and, consequently, banks' funding conditions would tighten. This would be reflected in a gap between the policy rates and reference money market rates.

Developments in global financial markets and the global real economy would trigger the re-emergence of public and private debt sustainability concerns. The increase in bond yields and the weakening of foreign demand would raise public and private debt sustainability concerns in the European Union, further fuelling an increase in the average level and dispersion of government bond yields across EU countries. A rise in interest rates in some segments of the banking sector would imply a tightening of credit conditions for the private sector, especially for smaller banks which are not fully hedged against this risk. In turn, these developments would further weigh negatively on real economic growth.

Liquidity risks in the non-bank financial sector would be reflected in a sell-off of assets by non-banking financial institutions, which would amplify the decline in asset prices. While the withdrawal by non-bank financial institutions of funds from the banking sector might create pressure on the funding costs of banks, stress on pension funds, insurance and investment funds would lead to feedbacks to the real economy via wealth effects on private households.

2. Mapping of main risks into macro-financial shocks

Specific macro-financial shocks that are assumed to materialise under each of the parts of the scenario are presented in Table 1 below.

Table 1: Main financial stability risks and assumed financial and economic shocks

Source of risk	Financial and economic shocks
Abrupt and sizeable repricing of risk premia in global financial markets – triggered e.g. by a policy expectation shock – leading to a tightening of financial conditions	<ul style="list-style-type: none"> - Upward shift and steepening of the yield curve and increase in risk premia in the United States and other advanced economies - Global equity price shock - Increase in the Chicago Board Options Exchange Volatility Index (VIX) and spillover to emerging market economies - Foreign demand shocks in the European Union - Exchange rate shocks - Negative oil and commodity price shocks - Shocks to financing conditions for small and medium-sized enterprises in EU countries due to limited hedging against a rise in interest rates in some segments of the banking sector (via shocks to the user cost of capital)
Adverse feedback loop between weak bank profitability and low nominal growth, amid structural challenges in the EU banking sector	<ul style="list-style-type: none"> - Investment and consumption demand shocks in EU countries - Residential and commercial property price shocks in EU countries - EU-wide uniform shock to interbank money market rates due to higher credit risk of the banking sector
Public and private debt sustainability concerns amid potential repricing of risk premia and increased political fragmentation	<ul style="list-style-type: none"> - Country-specific shocks to sovereign credit spreads - Shocks to corporate credit spreads - Shocks to financing conditions for small and medium-sized enterprises in EU countries due to limited hedging against a rise in interest rates in some segments of the banking sector (via shocks to the user cost of capital)⁴
Liquidity risks in the non-bank financial sector with potential spillovers to the broader financial system	<ul style="list-style-type: none"> - Shocks to EU financial asset prices - Shocks to financing conditions in EU countries (via shocks to household nominal wealth) - Shock to Moody's KMV Expected Default Frequency (EDF) of the largest non-bank financial sector institutions - EU-wide uniform shock to interbank money market rates

⁴ This shock is not double counted; it is associated with the overall increase of interest rates due both to the first and third building blocks.

3. Overview of the scenario calibration⁵

The scenario is triggered by a shock to bond yields and equity prices in global financial markets. This reflects changes in market participants' expectations about economic policies in major economies outside the European Union, which triggers a repricing of risk premia. Global equity prices would decline significantly across all jurisdictions and, in particular, in the United States, where equity prices would decline by 41% in 2018. As a result, and amplified by a sell-off of assets by the non-bank financial sector, EU stock prices would also fall sharply, by about 30% in 2018 in comparison with the baseline (see Table 4.6 in the Appendix).

At the same time, the exogenous shock to risk premia would affect valuations in bond markets, where yields on long-term US Treasuries are assumed to rise sharply, deviating by 235 basis points from the baseline in 2018. The re-pricing of bond markets would spill over to the prices of European fixed-income instruments. Sovereign credit spreads in the European Union would widen, especially in countries where there are higher market concerns on debt sustainability. Overall, long-term interest rates in the European Union would be higher by 83 basis points in 2018, 85 basis points in 2019 and 80 basis points in 2020 (see Table 4.7 in the Appendix). The larger increase in long-term interest rates in the United States compared to long-term interest rates of large EU countries reflects the fact that in the narrative the shock is triggered by changes in market participants' expectations regarding economic policies in major economies outside the European Union. Within the European Union, monetary policy is assumed to follow the same expectations implied by the baseline scenario, which would also limit the spillover to EU long-term interest rates.

Against the backdrop of global financial market volatility, bilateral nominal exchange rates of the CEECs against the euro would depreciate, by between 7% and 15% in the course of 2018 (see Table 4.8 in the Appendix). Subsequently, these exchange rates would revert slowly back to their initial levels over the scenario horizon. At the same time, the Swiss franc would appreciate by 8% against the euro in 2018.

Money market rates (three-month interbank offered rates) in all EU countries would rise by about 55 basis points compared with the baseline scenario in 2018, reflecting higher credit premiums for banks. This additional credit premium would decline to 47 basis points in 2019 and 39 basis points in 2020 (see Table 4.10 in the Appendix). As, under the adverse scenario, monetary policy is assumed to follow the expectations implied by the baseline scenario, this increase should not be interpreted as being driven by monetary policy decisions.

⁵ For a review of the models used for the scenario calibration, see Henry, J. (2015), "Macrofinancial Scenarios for System-wide Stress Tests: Process and Challenges", in Quagliariello, M. (ed.), *Europe's New Supervisory Toolkit: Data, Benchmarking and Stress Testing for Banks and their Regulators*, Risk Books, London.



Increased global uncertainty and changes in market participant expectations would reduce global economic growth, notably through confidence and financial spillovers to advanced non-EU countries and emerging market economies. The spillovers give rise to a sudden re-assessment of growth expectations in these countries. In turn, a reduction in asset prices causes domestic demand in these economies to suffer from both tighter financing conditions and business and consumer confidence shocks. In the adverse scenario, GDP would fall between 2.5% and 7.4% below the baseline level by 2020 for the non-EU countries considered (see Table 4.1 in the Appendix). By 2020, as the impact of the shocks would begin to wear off, GDP growth rates would approach those projected under the baseline scenario. Among the main emerging economies, deviations from the baseline would be particularly strong for Turkey, India and Russia. This would have an impact on EU economies, as foreign demand for EU exports would be materially reduced by 9.3% in terms of deviation from baseline levels in 2019 (see Table 4.9 in the Appendix). This would affect in particular those countries that are more dependent on trade with non-EU economies. Commodity prices would also be affected by the slowdown in the global economy, responding to financial shocks and the expected weakening of global economic growth, with oil prices falling by about 9.9% in 2020.

The global shocks are also assumed to negatively affect confidence in all EU countries, resulting in country-specific reductions in private consumption and investment which take into account recent economic performance of each country. The significant decline of domestic demand, together with increased risk premia, would trigger domestic vulnerabilities in the residential and commercial real estate sectors which would result in a major slowdown in property market activity, both in the residential and commercial property segments. Residential property prices would fall by 27.7% below the baseline level by 2020 and the cumulative fall in residential property prices over the scenario horizon is about 19% at the EU aggregate level (see Table 4.4 in the Appendix). Commercial property prices would also decline substantially over the scenario horizon and, on average in the European Union, would fall about 27% below the baseline (see Table 4.5 in the Appendix). The cross-country distribution of the property price shocks reflects mainly individual countries' vulnerability to these sectors and the magnitude of (any) overvaluation or undervaluation of property prices in both market segments.

The economic slowdown would also lead to an increase in the unemployment rate of about 3.3 percentage points by 2020 (see Table 4.2 in the Appendix). The Harmonised Index of Consumer Prices (HICP) inflation rate in the European Union under the adverse scenario would fall by 1.9% below the baseline in 2020 (see Table 4.3 in the Appendix).

Overall, as a result of the combined foreign and domestic real and financial shocks, the scenario implies a deviation of EU GDP from its baseline level by 8.3% in 2020, resulting in the most severe scenario in terms of GDP deviation from baseline levels compared with the previous two EBA exercises (see Chart 1 below). The implied EU real GDP growth rates under the adverse scenario amounts to -1.2%, -2.2% and +0.7%, in 2018, 2019 and 2020 respectively. A large part of the impact on GDP is driven by the domestic confidence shocks triggered by the global turmoil, which together reduce EU real GDP by about 3.6 percentage



points compared with the baseline by 2020 (see Chart 2 below). Foreign real and financial shocks contribute a further 2.6 percentage points to the total 2020 deviation of EU GDP from the baseline, reflecting the main financial stability risks identified. The combined impact of domestic financial shocks and residential property price shocks is somewhat weaker and amounts to 2.1 percentage points.

These aggregate figures are also reflected in the cross-country distribution of GDP deviations from the baseline, whereby countries with higher trade openness and countries with vulnerabilities in the housing sector would be particularly affected by the scenario. The size of the shocks to the macroeconomic parameters varies across countries for a number of reasons. Countries with greater trade openness tend to experience larger shocks, all else being equal. Countries characterised by high vulnerabilities in real estate markets and particularly high levels of overvaluation in their residential property markets experience larger shocks. This is especially true of countries which are also more vulnerable to shocks in housing markets. In addition, countries where public debt sustainability concerns are greater would experience larger shocks to sovereign yields.

In order to ensure an adequate level of severity for the adverse scenario across all EU countries, the GDP level for each country is below the starting point in 2017 at the end of the stress test horizon in 2020 (i.e. the cumulative GDP growth under the adverse scenario is negative for all countries). To this end, additional domestic real and financial shocks have been applied to the following countries: Bulgaria, Ireland, Croatia, Cyprus, Latvia, Luxembourg, Hungary, Malta, Poland, Slovenia and Slovakia. These additional shocks increase the severity of the GDP deviation from baseline for these countries so that the cumulative GDP growth under the adverse scenario is negative. These shocks are not intended to reflect any specific imbalance or any increase in the sensitivity of those countries to a given shock.



Chart 1: EU real GDP deviation from the baseline – comparison between EBA exercises for 2014, 2016 and 2018 (percent)

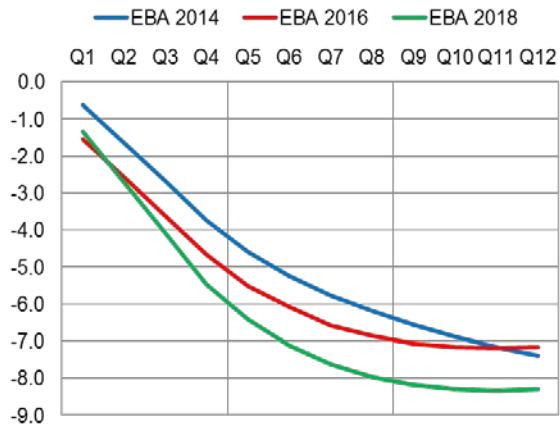
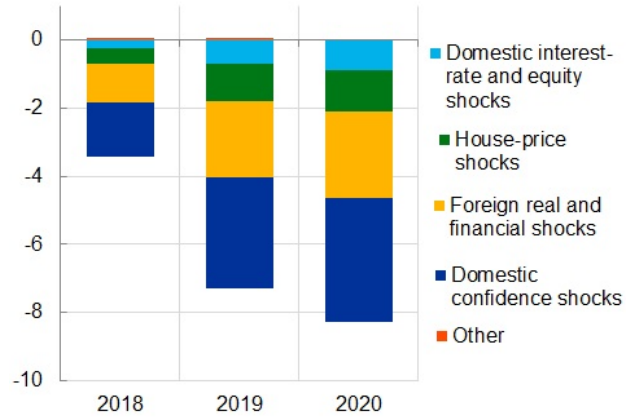


Chart 2: Contributions of individual shocks to deviation of EU real GDP from baseline (percentage points)



4. Appendix – Detailed tables⁶

4.1. GDP

	Baseline growth (%)			Growth rate deviations (percentage points)			Adverse growth (%)			Adverse cumulative growth (%)	Level deviation 2020 (%)
	2018	2019	2020	2018	2019	2020	2018	2019	2020		
Belgium	1.7	1.6	1.4	-3.2	-4.4	-1.6	-1.5	-2.8	-0.2	-4.5	-8.8
Bulgaria	3.6	3.6	3.8	-6.2	-4.4	-0.5	-2.7	-0.8	3.3	-0.2	-10.4
Czech Republic	3.4	3.1	3.1	-4.7	-6.2	-1.8	-1.2	-3.1	1.3	-3.1	-11.9
Denmark	1.8	1.7	1.7	-4.0	-4.9	-0.4	-2.2	-3.2	1.3	-4.1	-9.0
Germany	2.5	1.7	1.5	-4.4	-4.5	-0.2	-1.9	-2.8	1.4	-3.3	-8.6
Estonia	4.2	3.1	2.7	-4.7	-4.1	-2.4	-0.5	-1.0	0.3	-1.2	-10.4
Ireland	4.3	4.0	3.4	-4.7	-5.0	-2.2	-0.4	-1.0	1.3	-0.2	-11.0
Greece	2.4	2.5	2.4	-3.7	-4.6	-2.2	-1.3	-2.1	0.2	-3.3	-10.0
Spain	2.4	2.1	2.1	-2.7	-3.6	-1.0	-0.3	-1.5	1.1	-0.8	-7.0
France	1.7	1.8	1.6	-1.8	-3.2	-1.7	0.0	-1.4	-0.1	-1.5	-6.4
Croatia	3.1	3.0	3.0	-5.0	-4.2	-0.1	-1.9	-1.1	2.9	-0.2	-8.8
Italy	1.4	1.3	1.3	-2.0	-2.8	-1.9	-0.6	-1.5	-0.6	-2.7	-6.5
Cyprus	3.4	3.2	3.1	-3.1	-4.0	-2.8	0.3	-0.8	0.3	-0.2	-9.3
Latvia	4.1	3.2	3.0	-4.3	-4.3	-1.9	-0.2	-1.1	1.1	-0.2	-9.8
Lithuania	2.8	2.7	2.5	-4.3	-4.8	0.0	-1.5	-2.1	2.5	-1.1	-8.7
Luxembourg	3.7	3.6	3.5	-6.4	-5.2	-0.2	-2.7	-1.6	3.3	-1.0	-11.0
Hungary	3.7	3.2	3.2	-3.7	-5.3	-1.3	0.0	-2.1	1.9	-0.2	-9.7
Malta	5.6	4.5	4.0	-6.5	-6.7	-0.9	-0.9	-2.2	3.0	-0.2	-12.9
Netherlands	3.1	2.3	1.9	-3.2	-4.5	-1.7	-0.1	-2.2	0.2	-2.1	-8.9
Austria	2.8	1.9	1.6	-3.9	-4.4	-0.7	-1.2	-2.5	0.9	-2.7	-8.6
Poland	3.6	3.2	3.0	-2.5	-4.5	-3.0	1.1	-1.3	0.0	-0.2	-9.4
Portugal	2.3	1.9	1.7	-3.4	-4.9	-1.9	-1.1	-3.0	-0.2	-4.3	-9.7
Romania	4.4	3.4	2.7	-4.7	-5.0	-1.9	-0.3	-1.6	0.8	-1.0	-10.7
Slovenia	4.2	3.6	3.4	-4.9	-5.3	-1.2	-0.7	-1.7	2.2	-0.2	-10.5
Slovakia	4.3	4.7	3.8	-4.8	-6.2	-2.1	-0.5	-1.5	1.7	-0.4	-12.1
Finland	2.6	1.5	1.4	-3.4	-4.1	-1.3	-0.8	-2.6	0.1	-3.3	-8.4
Sweden	2.7	2.0	1.7	-5.8	-8.0	-3.3	-3.1	-6.0	-1.7	-10.4	-15.9
United Kingdom	1.6	1.7	1.7	-4.5	-3.9	0.1	-2.8	-2.2	1.8	-3.3	-8.0
Euro area	2.3	1.9	1.7	-3.1	-3.9	-1.2	-0.9	-2.0	0.5	-2.4	-7.8
European Union	2.2	1.9	1.8	-3.5	-4.1	-1.1	-1.2	-2.2	0.7	-2.7	-8.3
Norway	2.3	2.2	1.9	-3.4	-3.2	-1.1	-1.1	-1.0	0.8	-1.4	-7.4
United States	2.3	1.9	1.8	-2.7	-2.5	1.3	-0.3	-0.6	3.1	2.2	-3.8
Japan	0.7	0.8	0.2	-1.8	-1.2	0.3	-1.1	-0.4	0.5	-1.0	-2.6
Canada	2.1	1.7	1.7	-1.8	-2.1	0.9	0.3	-0.5	2.6	2.4	-3.0
Switzerland	1.3	1.6	1.7	-1.5	-1.3	0.2	-0.1	0.3	1.9	2.1	-2.5
Australia & New Zealand	2.9	2.9	2.8	-1.4	-1.4	-0.7	1.6	1.5	2.1	5.2	-3.4
Turkey	3.5	3.5	3.5	-4.3	-1.6	0.0	-0.8	1.9	3.5	4.6	-5.6
Russia	1.6	1.5	1.5	-3.5	-1.9	0.6	-1.9	-0.4	2.1	-0.2	-4.7
Emerging Asia	6.5	6.5	6.5	-3.3	-1.6	0.3	3.1	4.8	6.8	15.5	-4.3
China	6.5	6.3	6.2	-2.8	-1.6	0.4	3.7	4.7	6.6	15.7	-3.8
India	7.4	7.8	7.9	-3.8	-2.1	-0.1	3.6	5.7	7.8	18.0	-5.6
Latin America	1.9	2.4	2.6	-3.0	-1.6	1.2	-1.1	0.8	3.8	3.5	-3.4
Brazil	1.5	2.0	2.0	-3.3	-1.6	1.5	-1.8	0.4	3.5	2.0	-3.4
Mexico	1.9	2.3	2.7	-2.6	-2.0	1.2	-0.8	0.4	3.9	3.5	-3.3
Chile	2.5	2.7	2.9	-3.0	-1.5	0.9	-0.5	1.3	3.8	4.6	-3.5
Rest of the World	3.5	3.4	3.5	-3.2	-1.9	0.1	0.2	1.5	3.6	5.4	-4.8

Notes: Projections from the national central banks (NCBs) are used as baseline forecasts for EU countries. The baseline for Norway was provided by Norges Bank. For other non-EU countries the baseline projections are based on

⁶ In all tables the number reported for each year corresponds to the annual average.



projections from the October 2017 IMF World Economic Outlook (WEO).

In order to ensure an adequate level of severity for the adverse scenario across all EU countries, the GDP level for each country is below the starting point in 2017 at the end of the stress test horizon in 2020 (i.e. the cumulative GDP growth under the adverse scenario is negative for all countries). To this end, additional domestic real and financial shocks have been applied to the following countries: Bulgaria, Ireland, Croatia, Cyprus, Latvia, Luxembourg, Hungary, Malta, Poland, Slovenia and Slovakia. These additional shocks increase the severity of the GDP deviation from baseline for these countries so that the cumulative GDP growth under the adverse scenario is negative. These shocks are not intended to reflect any specific imbalance or any increase in the sensitivity of those countries to a given shock.

4.2. Unemployment rate

	Baseline rate (%)			Rate deviations (percentage points)			Adverse rate (%)			Maximum deviation (percentage points)
	2018	2019	2020	2018	2019	2020	2018	2019	2020	
Belgium	7.0	6.9	6.9	0.4	2.5	4.7	7.4	9.4	11.6	4.7
Bulgaria	5.5	5.2	5.1	1.0	2.3	2.1	6.5	7.5	7.2	2.3
Czech Republic	2.6	2.6	2.6	0.3	0.9	1.1	2.9	3.5	3.7	1.1
Denmark	5.1	5.0	4.8	1.3	4.5	6.3	6.4	9.5	11.1	6.3
Germany	3.3	3.1	2.9	0.9	2.4	3.2	4.2	5.5	6.1	3.2
Estonia	7.2	7.9	7.9	1.5	4.1	6.0	8.7	12.0	13.9	6.0
Ireland	5.4	4.9	4.8	0.9	3.1	4.6	6.4	8.0	9.4	4.6
Greece	19.9	18.3	16.6	0.7	1.7	2.5	20.6	20.0	19.1	2.5
Spain	14.8	13.1	11.4	0.6	2.8	4.0	15.4	15.9	15.4	4.0
France	9.6	9.2	8.8	0.1	0.6	1.5	9.7	9.8	10.2	1.5
Croatia	10.4	9.4	8.5	1.1	2.9	4.1	11.5	12.3	12.6	4.1
Italy	11.1	10.8	10.5	0.3	1.1	2.2	11.3	11.9	12.7	2.2
Cyprus	9.8	8.2	7.0	0.7	2.4	3.8	10.5	10.5	10.8	3.8
Latvia	8.4	8.1	7.8	1.1	2.6	3.9	9.5	10.7	11.7	3.9
Lithuania	6.8	6.7	6.6	0.7	1.9	1.9	7.5	8.6	8.4	1.9
Luxembourg	5.7	5.6	5.4	0.1	0.7	0.8	5.9	6.3	6.3	0.8
Hungary	3.9	3.9	3.9	-0.2	1.5	2.3	3.8	5.4	6.2	2.3
Malta	4.3	4.4	4.6	0.1	0.7	1.0	4.3	5.1	5.6	1.0
Netherlands	3.9	3.5	3.4	0.3	2.3	4.6	4.3	5.8	8.0	4.6
Austria	5.1	5.1	5.0	0.5	1.4	2.1	5.6	6.4	7.1	2.1
Poland	4.1	4.0	4.1	0.6	3.2	5.1	4.8	7.2	9.2	5.1
Portugal	7.8	6.7	6.1	0.6	2.5	4.2	8.4	9.2	10.3	4.2
Romania	5.1	5.1	5.2	0.3	0.7	0.8	5.3	5.8	6.1	0.8
Slovenia	6.0	5.5	5.2	1.0	3.3	4.6	7.0	8.8	9.8	4.6
Slovakia	7.5	6.8	6.2	0.8	3.1	4.4	8.3	9.9	10.6	4.4
Finland	8.1	7.8	7.6	0.5	1.9	3.1	8.6	9.8	10.6	3.1
Sweden	6.5	6.5	6.6	1.4	4.4	5.9	7.9	10.9	12.5	5.9
United Kingdom	4.2	4.2	4.3	2.0	3.9	4.5	6.2	8.1	8.8	4.5
Euro area	8.4	7.8	7.3	0.5	1.9	3.0	8.9	9.7	10.3	3.0
European Union	7.1	6.7	6.4	0.7	2.3	3.3	7.9	9.0	9.7	3.3
Norway	3.7	3.4	3.3	0.9	2.3	3.0	4.6	5.7	6.3	3.0
United States	4.1	4.2	4.4	0.3	1.4	2.9	4.3	5.6	7.3	2.9
Switzerland	3.0	3.0	2.9	0.3	0.8	1.6	3.2	3.7	4.5	1.6
Turkey	10.7	10.4	10.4	0.5	1.4	2.6	11.2	11.8	13.0	2.6
Russia	5.5	5.5	5.5	1.1	2.8	4.4	6.6	8.3	9.9	4.4
China	4.0	4.0	4.0	0.1	0.4	0.8	4.1	4.4	4.8	0.8
Brazil	11.8	11.0	10.4	0.6	2.1	4.2	12.4	13.1	14.6	4.2
Mexico	3.7	3.6	3.5	0.2	0.5	1.4	3.9	4.1	4.9	1.4
Chile	6.8	6.5	6.4	0.5	1.7	3.2	7.3	8.2	9.6	3.2

Notes: Projections from the NCBs are used as baseline forecasts for EU countries. The baseline for Norway was provided by Norges Bank. For other non-EU countries, the baseline projections are based on projections from the October 2017 IMF WEO.



4.3. HICP and other consumption price indices

	Baseline growth (%)			Growth rate deviations (percentage points)			Adverse growth (%)			Adverse cumulative growth (%)	Level deviation 2020 (%)
	2018	2019	2020	2018	2019	2020	2018	2019	2020		
Belgium	1.6	1.6	1.6	-0.4	-1.8	-1.5	1.3	-0.1	0.1	1.2	-3.6
Bulgaria	1.4	1.7	1.8	-0.5	-1.3	-0.2	0.8	0.4	1.5	2.8	-2.0
Czech Republic	2.4	1.9	1.9	-0.1	-2.1	-5.5	2.3	-0.2	-3.6	-1.6	-7.4
Denmark	1.4	1.7	1.8	-0.1	-0.7	-1.3	1.2	1.0	0.5	2.7	-2.1
Germany	1.6	1.7	1.9	-0.1	-0.8	-1.7	1.5	0.9	0.3	2.6	-2.5
Estonia	3.6	2.5	2.3	-0.3	-1.1	-1.4	3.3	1.4	1.0	5.7	-2.7
Ireland	0.7	0.9	1.4	-0.2	-1.3	-2.2	0.4	-0.4	-0.8	-0.8	-3.7
Greece	0.9	1.0	1.1	-0.8	-2.0	-3.0	0.0	-1.1	-1.8	-2.8	-5.7
Spain	1.5	1.4	1.7	-0.5	-1.4	-1.3	1.0	0.0	0.3	1.3	-3.1
France	1.4	1.2	1.6	-0.3	-1.1	-1.3	1.1	0.1	0.3	1.5	-2.7
Croatia	1.5	1.5	1.6	1.6	-0.9	-2.7	3.1	0.6	-1.1	2.5	-2.0
Italy	0.9	1.5	1.6	-0.1	-0.7	-1.7	0.8	0.8	-0.1	1.5	-2.5
Cyprus	1.3	1.3	1.6	-0.3	-1.8	-2.2	1.0	-0.4	-0.6	-0.1	-4.1
Latvia	3.3	2.7	2.5	-0.5	-1.3	-1.3	2.8	1.4	1.2	5.5	-2.9
Lithuania	2.6	2.0	2.0	-0.7	-1.7	-2.1	1.9	0.2	-0.1	2.0	-4.4
Luxembourg	1.5	1.8	2.0	-0.1	-0.4	-0.7	1.4	1.4	1.2	4.1	-1.2
Hungary	2.5	2.9	2.9	0.3	-1.1	-2.4	2.7	1.8	0.6	5.2	-3.1
Malta	1.6	1.8	2.0	-0.1	-0.9	-2.2	1.5	0.9	-0.3	2.2	-3.2
Netherlands	1.4	2.3	2.0	-0.1	-0.4	-2.0	1.3	1.9	-0.1	3.2	-2.4
Austria	2.1	1.9	1.9	-0.2	-0.9	-1.2	1.9	1.0	0.7	3.7	-2.2
Poland	2.2	2.6	2.5	0.3	-0.9	-2.5	2.6	1.7	0.0	4.4	-3.0
Portugal	1.5	1.4	1.6	-0.5	-2.2	-2.2	1.0	-0.9	-0.7	-0.5	-4.8
Romania	3.4	3.1	2.9	-0.3	-3.0	-5.8	3.1	0.1	-3.0	0.1	-8.7
Slovenia	1.4	2.0	2.2	-0.6	-2.0	-1.9	0.8	0.0	0.3	1.1	-4.4
Slovakia	2.4	2.0	2.3	-0.8	-2.1	-1.9	1.6	-0.2	0.5	1.9	-4.6
Finland	1.1	1.4	1.5	-0.2	-1.0	-1.7	0.8	0.4	-0.2	1.1	-2.9
Sweden	1.9	2.1	2.1	-3.3	-3.8	-1.9	-1.4	-1.8	0.1	-3.0	-8.7
United Kingdom	2.5	2.2	2.2	-0.6	-2.2	-2.7	1.9	0.1	-0.5	1.4	-5.3
Euro area	1.4	1.5	1.7	-0.2	-1.0	-1.6	1.2	0.5	0.1	1.8	-2.8
European Union	1.7	1.7	1.9	-0.4	-1.3	-1.9	1.3	0.4	0.0	1.7	-3.5
Norway	1.9	1.8	2.1	-0.7	-1.4	-2.0	1.2	0.4	0.1	1.7	-4.0
United States	2.1	2.6	2.4	-1.0	-1.8	-0.4	1.1	0.8	2.0	4.0	-3.1
Switzerland	0.6	0.9	0.9	-0.4	-0.6	-0.8	0.2	0.3	0.1	0.5	-1.8
Turkey	9.3	8.8	7.9	-0.5	-0.5	-0.8	8.8	8.3	7.1	26.2	-1.6
Russia	3.9	4.0	4.0	0.0	-1.0	-0.8	3.9	3.0	3.2	10.5	-1.7
China	2.4	2.5	2.6	-0.8	-1.5	-0.8	1.6	1.0	1.8	4.5	-3.0
Brazil	4.0	4.1	4.1	-0.4	-0.6	-0.6	3.6	3.5	3.5	11.0	-1.5
Mexico	3.8	3.1	3.0	-0.8	-0.6	-0.7	3.0	2.5	2.3	8.0	-2.0
Chile	2.7	3.0	3.0	-0.8	-1.9	-1.0	1.9	1.1	2.0	5.1	-3.6

Notes: Projections from the NCBs are used as baseline forecasts for EU countries. The baseline for Norway was provided by Norges Bank. For other non-EU countries, the baseline projections are based on projections from the October 2017 IMF WEO.



4.4. Residential real estate prices

	Baseline growth (%)			Growth rate deviations (percentage points)			Adverse growth (%)			Adverse cumulative growth (%)	Level deviation 2020 (%)
	2018	2019	2020	2018	2019	2020	2018	2019	2020		
Belgium	2.2	1.9	1.6	-17.0	-16.1	-4.3	-14.8	-14.2	-2.7	-28.9	-32.8
Bulgaria	8.4	10.2	10.8	-12.2	-12.4	-4.9	-3.8	-2.2	5.8	-0.5	-24.8
Czech Republic	11.1	8.7	8.7	-15.9	-14.4	-3.9	-4.7	-5.7	4.7	-5.9	-28.3
Denmark	2.9	2.8	2.4	-12.6	-19.3	-7.1	-9.8	-16.4	-4.7	-28.1	-33.6
Germany	4.8	4.0	3.8	-13.6	-13.5	-3.6	-8.8	-9.5	0.2	-17.3	-26.9
Estonia	7.6	5.5	5.8	-27.1	-25.4	-9.0	-19.5	-19.8	-3.3	-37.6	-48.0
Ireland	7.1	5.4	4.9	-8.4	-7.9	-6.3	-1.3	-2.4	-1.4	-5.1	-19.8
Greece	-0.5	0.5	1.0	-6.8	-7.2	-4.6	-7.3	-6.7	-3.6	-16.6	-17.4
Spain	5.2	4.9	4.7	-4.6	-13.2	-11.8	0.6	-8.3	-7.2	-14.3	-25.8
France	3.7	3.5	3.8	-15.3	-12.9	0.0	-11.6	-9.4	3.8	-16.9	-25.4
Croatia	3.1	1.3	1.6	-5.9	-8.2	-4.4	-2.8	-6.9	-2.8	-12.1	-17.2
Italy	1.5	2.2	2.6	-8.9	-7.1	-2.7	-7.3	-4.9	-0.1	-12.0	-17.3
Cyprus	3.0	3.5	3.5	-9.7	-8.4	-2.3	-6.7	-4.9	1.2	-10.2	-18.6
Latvia	5.9	6.2	3.0	-27.3	-24.9	-2.8	-21.4	-18.8	0.2	-36.0	-44.7
Lithuania	4.2	4.7	4.7	-19.2	-17.9	-9.7	-15.0	-13.2	-5.0	-29.9	-38.6
Luxembourg	6.3	6.4	6.1	-25.0	-23.0	-2.6	-18.7	-16.6	3.6	-29.8	-41.5
Hungary	12.6	12.6	12.6	-16.9	-18.0	-2.6	-4.3	-5.4	10.0	-0.4	-30.3
Malta	5.0	4.1	3.2	-15.1	-21.0	-16.4	-10.0	-16.9	-13.2	-35.2	-42.5
Netherlands	7.1	5.2	3.9	-9.8	-11.7	-7.7	-2.7	-6.4	-3.8	-12.5	-25.2
Austria	3.3	3.2	3.3	-22.4	-21.2	-2.8	-19.1	-18.1	0.5	-33.3	-39.4
Poland	6.5	2.2	1.0	-5.6	-6.1	-5.9	0.9	-4.0	-4.9	-7.9	-16.2
Portugal	4.4	3.8	3.8	-8.6	-9.9	-5.2	-4.2	-6.2	-1.4	-11.3	-21.2
Romania	7.4	5.9	5.9	-12.4	-9.8	-5.2	-5.1	-3.9	0.7	-8.2	-23.7
Slovenia	6.3	5.8	5.5	-13.2	-13.1	-3.1	-6.9	-7.4	2.5	-11.6	-25.5
Slovakia	3.8	3.6	3.2	-11.9	-11.3	-1.8	-8.1	-7.7	1.4	-14.0	-22.5
Finland	2.2	1.9	2.1	-11.6	-12.5	-4.0	-9.4	-10.6	-1.9	-20.5	-25.2
Sweden	6.3	4.8	4.2	-33.7	-32.8	-7.3	-27.4	-28.0	-3.1	-49.4	-56.4
United Kingdom	2.7	3.1	3.2	-18.5	-17.4	-5.2	-15.9	-14.3	-2.0	-29.3	-35.3
Euro area	4.0	3.6	3.6	-12.2	-12.2	-4.1	-8.2	-8.6	-0.5	-16.5	-25.2
European Union	4.1	3.7	3.6	-13.8	-13.5	-4.4	-9.6	-9.8	-0.8	-19.1	-27.7
Norway	-1.6	2.9	4.2	-29.5	-17.5	0.0	-31.1	-14.6	4.2	-38.7	-41.9
United States	5.4	5.4	5.4	-20.5	-15.3	0.0	-15.0	-9.9	5.4	-19.2	-31.1
Switzerland	1.1	1.1	1.1	-18.7	-13.9	0.0	-17.6	-12.8	1.1	-27.4	-29.7
Turkey	13.0	13.0	13.0	-14.5	-9.8	0.0	-1.5	3.1	13.0	14.8	-20.4
Russia	-0.9	-0.9	-0.9	-15.9	-11.2	0.0	-16.8	-12.1	-0.9	-27.5	-25.5
China	1.7	1.7	1.7	-16.3	-11.6	0.0	-14.6	-9.9	1.7	-21.8	-25.6
Brazil	0.9	0.9	0.9	-16.5	-11.8	0.0	-15.7	-10.9	0.9	-24.2	-26.2
Mexico	6.2	6.2	6.2	-14.8	-10.2	0.0	-8.6	-4.1	6.2	-6.9	-22.2
Chile	6.1	6.1	6.1	-17.4	-12.6	0.0	-11.3	-6.5	6.1	-12.1	-26.3

Notes: Projections from the NCBs are used as baseline forecasts for EU countries. The baseline for Norway was provided by Norges Bank. For other non-EU countries, the baseline projections are based on ECB staff calculations based on historical series from the OECD Economic Outlook.



4.5. Commercial real estate prices

	Baseline growth (%)			Growth rate deviations (percentage points)			Adverse growth (%)			Adverse cumulative growth (%)	Level deviation 2020 (%)
	2018	2019	2020	2018	2019	2020	2018	2019	2020		
Belgium	1.6	1.6	1.6	-16.5	-12.1	-5.5	-14.9	-10.5	-3.9	-26.9	-30.2
Bulgaria	9.6	8.8	8.1	-12.0	-10.3	-8.6	-2.4	-1.5	-0.5	-4.3	-25.8
Czech Republic	9.7	8.8	8.1	-14.9	-12.1	-9.2	-5.2	-3.3	-1.1	-9.4	-29.8
Denmark	2.5	2.4	2.4	-19.7	-14.9	-7.1	-17.2	-12.5	-4.8	-31.0	-35.8
Germany	4.0	3.8	3.7	-14.6	-11.0	-6.3	-10.6	-7.1	-2.6	-19.1	-27.8
Estonia	6.1	5.7	5.4	-25.4	-20.1	-11.0	-19.3	-14.4	-5.6	-34.8	-44.9
Ireland	5.8	5.4	5.2	-10.4	-8.3	-6.2	-4.6	-2.9	-1.0	-8.3	-21.8
Greece	0.3	0.3	0.3	-9.5	-6.4	-2.5	-9.2	-6.1	-2.2	-16.6	-17.4
Spain	4.6	4.4	4.2	-13.5	-10.2	-6.3	-8.9	-5.9	-2.1	-16.1	-26.1
France	3.4	3.3	3.2	-14.5	-10.8	-5.9	-11.1	-7.5	-2.7	-20.0	-27.5
Croatia	1.8	1.8	1.8	-9.6	-6.9	-3.5	-7.8	-5.1	-1.8	-14.0	-18.5
Italy	2.0	1.9	1.9	-9.8	-7.0	-3.7	-7.8	-5.1	-1.8	-14.1	-18.9
Cyprus	3.1	3.0	3.0	-11.7	-8.7	-4.9	-8.5	-5.6	-2.0	-15.4	-22.7
Latvia	4.8	4.6	4.4	-24.9	-19.7	-10.3	-20.1	-15.1	-5.9	-36.2	-44.2
Lithuania	4.3	4.1	4.0	-21.3	-16.4	-8.6	-17.0	-12.3	-4.7	-30.6	-38.6
Luxembourg	6.1	5.7	5.4	-19.2	-14.8	-8.8	-13.1	-9.1	-3.3	-23.7	-35.5
Hungary	11.0	9.9	9.0	-13.4	-11.4	-9.5	-2.4	-1.5	-0.5	-4.3	-28.1
Malta	3.9	3.7	3.6	-18.2	-13.8	-7.3	-14.3	-10.0	-3.7	-25.8	-33.5
Netherlands	5.3	5.0	4.8	-13.7	-10.5	-6.7	-8.4	-5.5	-1.9	-15.1	-26.7
Austria	3.1	3.0	3.0	-17.8	-13.3	-6.8	-14.6	-10.3	-3.8	-26.3	-32.7
Poland	2.9	2.9	2.8	-8.7	-6.5	-4.1	-5.8	-3.7	-1.3	-10.4	-17.6
Portugal	4.0	3.9	3.7	-12.0	-9.1	-5.6	-8.0	-5.2	-1.8	-14.3	-23.6
Romania	6.1	5.7	5.4	-12.1	-9.6	-6.8	-6.0	-3.9	-1.3	-10.9	-24.6
Slovenia	5.7	5.4	5.1	-13.5	-10.5	-6.9	-7.8	-5.1	-1.8	-14.1	-26.6
Slovakia	3.3	3.2	3.1	-13.0	-9.6	-5.4	-9.6	-6.4	-2.3	-17.3	-24.8
Finland	1.9	1.9	1.8	-16.1	-11.8	-5.5	-14.2	-9.9	-3.7	-25.6	-29.6
Sweden	4.8	4.6	4.4	-28.6	-23.3	-12.1	-23.8	-18.7	-7.7	-42.8	-50.0
United Kingdom	2.8	2.7	2.6	-19.2	-14.5	-7.1	-16.4	-11.8	-4.5	-29.5	-35.0
Euro area	3.0	2.9	2.9	-12.9	-9.5	-5.2	-9.8	-6.5	-2.3	-17.7	-24.5
European Union	3.2	3.1	3.0	-14.4	-10.7	-5.8	-11.1	-7.5	-2.7	-20.0	-27.1
Norway	-1.4	2.6	3.8	-26.5	-15.7	0.0	-27.9	-13.1	3.8	-35.0	-38.0
United States	5.1	4.9	4.7	-14.2	-13.9	-4.7	-9.1	-9.0	0.0	-17.3	-28.3
Switzerland	1.0	1.0	0.9	-14.1	-14.2	-0.9	-13.2	-13.2	0.0	-24.6	-26.7
Turkey	13.2	11.7	10.5	-6.7	-5.4	-10.5	6.5	6.3	0.0	13.3	-18.9
Russia	-0.8	-0.8	-0.8	-12.3	-12.5	0.8	-13.1	-13.3	0.0	-24.7	-22.8
China	1.5	1.5	1.5	-11.8	-11.8	-1.5	-10.3	-10.3	0.0	-19.5	-23.1
Brazil	0.8	0.8	0.8	-12.3	-12.4	-0.8	-11.5	-11.6	0.0	-21.8	-23.6
Mexico	5.9	5.6	5.3	-9.0	-8.7	-5.3	-3.1	-3.1	0.0	-6.2	-20.3
Chile	5.8	5.5	5.2	-11.4	-11.0	-5.2	-5.6	-5.5	0.0	-10.8	-24.0

Note: The baseline for all countries has been projected by ECB staff. Both baseline and adverse have been derived using the same satellite model (see reference in footnote 6).



4.6. Stock prices

	Deviation from the baseline (%)		
	2018	2019	2020
Belgium	-27.8	-25.4	-20.1
Bulgaria	-24.2	-22.1	-17.5
Czech Republic	-23.5	-21.4	-17.0
Denmark	-24.9	-22.7	-18.0
Germany	-30.6	-27.9	-22.1
Estonia	-22.3	-20.4	-16.2
Ireland	-29.7	-27.1	-21.4
Greece	-30.9	-28.2	-22.2
Spain	-33.8	-30.8	-24.3
France	-32.2	-29.4	-23.2
Croatia	-23.5	-21.4	-17.0
Italy	-34.6	-31.5	-24.9
Cyprus	-29.6	-27.0	-21.3
Latvia	-23.6	-21.5	-17.1
Lithuania	-11.0	-10.1	-8.1
Luxembourg	-25.8	-23.6	-18.7
Hungary	-28.3	-25.8	-20.4
Malta	-21.5	-19.7	-15.6
Netherlands	-29.6	-27.0	-21.3
Austria	-32.2	-29.4	-23.2
Poland	-23.6	-21.6	-17.1
Portugal	-29.0	-26.5	-20.9
Romania	-18.4	-16.8	-13.4
Slovenia	-22.1	-20.2	-16.0
Slovakia	-21.2	-19.3	-15.3
Finland	-27.5	-25.1	-19.9
Sweden	-26.4	-24.1	-19.0
United Kingdom	-27.0	-24.6	-19.5
Euro area	-31.4	-28.7	-22.6
European Union	-29.9	-27.2	-21.5
Norway	-27.7	-25.1	-19.7
United States	-41.4	-33.9	-23.4
Switzerland	-21.0	-17.2	-11.9
Turkey	-28.5	-23.3	-16.1
Russia	-36.9	-30.2	-20.9
China	-32.3	-26.4	-18.3
Brazil	-29.1	-23.8	-16.5
Mexico	-21.0	-17.2	-11.9
Chile	-17.8	-14.6	-10.1

Note: Under the baseline, stock prices are assumed to remain unchanged.



4.7. Long-term rates

	Starting point rates (%)	Baseline rates (%)			Deviation from the baseline (basis points)			Adverse rates (%)		
	2017	2018	2019	2020	2018	2019	2020	2018	2019	2020
Belgium	0.7	0.8	1.0	1.3	73	74	70	1.5	1.8	2.0
Bulgaria	1.8	1.8	1.9	2.1	58	60	56	2.3	2.5	2.7
Czech Republic	1.0	1.3	1.7	2.2	67	68	64	2.0	2.4	2.8
Denmark	0.6	0.6	0.9	1.2	53	55	52	1.2	1.4	1.7
Germany	0.4	0.5	0.7	0.9	62	64	60	1.1	1.4	1.5
Estonia					0	0	0	0.0	0.0	0.0
Ireland	0.8	1.0	1.3	1.5	82	84	79	1.8	2.1	2.3
Greece	6.1	5.5	5.7	6.0	131	133	126	6.8	7.1	7.2
Spain	1.6	1.7	2.1	2.4	115	118	111	2.9	3.3	3.5
France	0.8	0.7	1.0	1.3	76	78	73	1.5	1.8	2.0
Croatia	2.8	2.7	2.9	3.2	58	60	56	3.3	3.5	3.8
Italy	2.1	2.1	2.5	2.8	121	124	117	3.3	3.7	4.0
Cyprus	1.9	1.2	1.4	1.6	77	79	74	2.0	2.2	2.3
Latvia	0.8	0.8	1.1	1.3	59	60	56	1.4	1.7	1.9
Lithuania	0.8	1.2	1.8	2.3	78	80	75	1.9	2.6	3.1
Luxembourg	0.6	0.7	0.9	1.1	84	86	81	1.5	1.8	1.9
Hungary	3.1	3.8	4.1	4.4	62	64	61	4.4	4.8	5.0
Malta	1.4	1.5	1.7	1.9	63	64	60	2.1	2.3	2.6
Netherlands	0.5	0.6	0.9	1.1	65	66	63	1.3	1.5	1.7
Austria	0.6	0.7	0.9	1.1	79	81	76	1.5	1.7	1.9
Poland	3.4	4.0	3.7	3.9	76	78	74	4.8	4.5	4.6
Portugal	3.2	2.3	2.8	3.2	137	140	132	3.7	4.2	4.5
Romania	3.9	4.4	5.1	6.1	57	58	55	5.0	5.7	6.7
Slovenia	1.0	1.0	1.3	1.6	64	65	62	1.6	2.0	2.2
Slovakia	1.0	0.9	1.2	1.4	77	79	74	1.7	2.0	2.2
Finland	0.5	0.6	0.9	1.1	74	76	72	1.4	1.6	1.8
Sweden	0.6	1.1	1.7	2.2	71	73	69	1.8	2.4	2.9
United Kingdom	1.2	1.4	1.6	1.8	87	89	84	2.3	2.5	2.6
Euro area	1.1	1.1	1.4	1.6	84	86	81	1.9	2.2	2.5
European Union	1.2	1.3	1.6	1.8	83	85	80	2.1	2.4	2.6
Norway	1.6	1.6	1.6	1.9	62	81	77	2.2	2.4	2.7
United States	2.3	2.8	3.3	3.4	235	145	30	5.1	4.7	3.7
Switzerland	-0.1	-0.1	0.0	0.2	29	18	4	0.2	0.2	0.2
Turkey	11.0	9.7	9.2	8.4	76	47	10	10.5	9.7	8.5
Russia	7.9	4.5	4.5	4.5	45	28	6	4.9	4.7	4.5
China	4.2	6.5	5.0	5.0	6	4	1	6.6	5.1	5.0
Brazil	10.3	10.4	11.0	11.3	42	26	5	10.8	11.2	11.4
Mexico	7.1	7.2	7.3	7.3	62	38	8	7.8	7.6	7.3
Chile	4.2	4.6	4.9	4.9	18	11	2	4.7	5.1	5.0

Notes: Due to absence of liquid benchmark bonds issued by Estonia, paths of long-term interest rates are not provided for this country. The baseline projections for the EU countries are based on market data and on ECB staff computations and, in the case of the non-euro area EU countries, on NCBs' technical assumptions as well. Given different cut-off dates, these projections may differ in some cases from the rate assumptions underpinning the projections of the macroeconomic variables. The starting point rates in 2017 are based on market data and, thereafter, the path of the technical assumptions has been applied. The baseline forecasts for other countries are ECB staff calculations based on market data.



4.8. Exchange rates

	Deviations from baseline (%)		
	2018	2019	2020
EURCZK	8.0	6.7	4.7
EURHRK	14.6	12.2	8.6
EURHUF	11.6	9.8	6.8
EURPLN	10.7	9.0	6.3
EURRON	7.4	6.2	4.4
EURCHF	-8.0	-6.7	-4.7
EURUSD	0.0	0.0	0.0

Notes: Under the baseline, exchange rates are assumed to remain unchanged. Positive shocks imply an appreciation of the euro.

4.9. Foreign demand and commodity prices

	Level deviation from baseline (%)		
	2018	2019	2020
Oil prices	-0.6	-4.3	-9.9
Non-oil commodity prices	-1.6	-4.9	-8.7
Global metal prices	-0.2	-2.6	-8.0
EU foreign demand	-6.6	-9.3	-7.6
Euro area foreign demand	-5.7	-8.1	-6.4
Non-euro area competitor's export prices	-0.4	-3.5	-8.1

Note: Under the baseline, commodity prices are assumed to remain unchanged.



4.10. SWAP rates

	Starting point rates (%)	Baseline rates (%)			Deviations from baseline (basis points)			Adverse rates (%)			
		2017	2018	2019	2020	2018	2019	2020	2018	2019	2020
EUR	1M	-0.37	-0.35	-0.15	0.17	44	37	31	0.09	0.22	0.48
	3M	-0.33	-0.31	-0.13	0.15	55	47	39	0.24	0.34	0.54
	1Y	-0.24	-0.17	0.02	0.30	56	48	40	0.39	0.50	0.70
	2Y	-0.16	-0.03	0.17	0.45	56	49	41	0.53	0.66	0.86
	3Y	0.02	0.11	0.32	0.60	57	49	42	0.68	0.82	1.02
	5Y	0.20	0.39	0.63	0.91	58	51	44	0.97	1.14	1.34
	7Y	0.50	0.67	0.93	1.21	59	52	46	1.26	1.45	1.67
	10Y	0.81	1.09	1.39	1.66	59	54	48	1.68	1.92	2.14
	20Y	1.08	1.45	1.85	2.21	60	54	48	2.04	2.39	2.70
	30Y	1.45	1.93	2.46	2.95	60	54	48	2.53	3.00	3.44
CZK	1M	0.29	0.74	0.97	1.12	44	37	31	1.18	1.34	1.43
	3M	0.38	0.98	1.28	1.48	55	47	39	1.53	1.75	1.87
	1Y	0.52	1.04	1.34	1.56	55	47	39	1.59	1.81	1.95
	2Y	0.72	1.10	1.41	1.64	54	47	39	1.64	1.87	2.03
	3Y	0.84	1.17	1.47	1.72	53	46	39	1.70	1.94	2.11
	5Y	1.02	1.29	1.60	1.88	52	46	39	1.81	2.06	2.27
	7Y	1.15	1.42	1.73	2.04	51	45	40	1.93	2.18	2.44
	10Y	1.33	1.60	1.92	2.28	49	44	39	2.09	2.36	2.68
	20Y	1.64	1.92	2.29	2.73	49	44	39	2.40	2.73	3.12
	30Y	2.03	2.37	2.84	3.37	49	44	39	2.86	3.28	3.77
DKK	1M	-0.33	-0.31	-0.10	0.22	44	37	31	0.13	0.27	0.52
	3M	-0.26	-0.25	-0.08	0.17	55	47	39	0.30	0.39	0.56
	1Y	-0.08	-0.08	0.10	0.37	56	48	40	0.47	0.58	0.77
	2Y	0.00	0.08	0.29	0.57	56	49	41	0.64	0.77	0.98
	3Y	0.12	0.24	0.47	0.76	57	49	42	0.81	0.97	1.18
	5Y	0.39	0.57	0.84	1.16	58	51	44	1.15	1.35	1.60
	7Y	0.67	0.90	1.21	1.55	59	53	46	1.49	1.73	2.01
	10Y	1.05	1.39	1.76	2.14	60	54	48	1.99	2.30	2.63
	20Y	1.42	1.76	2.24	2.72	60	54	48	2.36	2.78	3.21
	30Y	1.80	2.23	2.83	3.44	60	54	48	2.83	3.37	3.93
HRK	1M	0.46	0.44	0.47	0.53	44	37	31	0.87	0.84	0.84
	3M	0.61	0.58	0.62	0.70	55	47	39	1.13	1.09	1.09
	1Y	0.78	0.83	1.01	1.13	57	49	41	1.40	1.50	1.54
	2Y	0.98	1.07	1.40	1.56	59	52	44	1.66	1.92	2.00
	3Y	1.39	1.31	1.79	2.00	62	54	46	1.93	2.33	2.46
	5Y	2.05	1.80	2.57	2.86	66	58	51	2.46	3.15	3.37
	7Y	2.49	2.29	3.35	3.73	70	63	55	2.99	3.98	4.28
	10Y	3.02	3.02	4.52	5.02	76	69	61	3.78	5.21	5.64
	20Y	3.93	3.93	5.88	6.53	76	69	61	4.69	6.57	7.15
	30Y	5.11	5.11	7.65	8.49	76	69	62	5.87	8.34	9.11
HUF	1M	0.13	0.15	0.18	0.22	44	37	31	0.59	0.55	0.53
	3M	0.16	0.19	0.22	0.27	55	47	39	0.74	0.69	0.66
	1Y	0.25	0.46	0.52	0.58	59	51	43	1.04	1.03	1.01
	2Y	0.43	0.72	0.81	0.89	63	55	47	1.35	1.36	1.36
	3Y	0.64	0.99	1.11	1.20	66	58	50	1.66	1.69	1.70
	5Y	1.16	1.53	1.70	1.82	74	66	58	2.27	2.36	2.40
	7Y	1.70	2.07	2.29	2.44	82	74	65	2.89	3.03	3.09
	10Y	2.38	2.88	3.18	3.38	93	84	75	3.81	4.02	4.13
	20Y	3.06	3.56	3.93	4.17	93	84	75	4.49	4.77	4.93
	30Y	3.74	4.35	4.80	5.10	93	85	76	5.28	5.65	5.86

Notes: One-month and three-month rates refer to interbank money market rates. The baseline projections for the 3-month rates for the EU countries are based on market data and ECB staff computations and, in the case of the non-euro area EU countries, on NCBs' technical assumptions as well. Given different cut-off dates, these projections may differ in some cases from the rate assumptions underpinning the projections of the macroeconomic variables. The starting point rates in 2017 are based on market data and, thereafter, the path of the technical assumptions has been



applied. The baseline forecasts for other countries and maturities are ECB calculations based on market data, and short-term and long-term rates projections. In particular, the 10-year SWAP rates projections are aligned to the path of the 10-year government bond yields projections. Projections of other maturities are derived using interpolation and extrapolation methods based on the 3-month and 10-year SWAP rates projections.

		Starting point rates (%)	Baseline rates (%)			Deviations from baseline (basis points)			Adverse rates (%)		
		2017	2018	2019	2020	2018	2019	2020	2018	2019	2020
PLN	1M	1.56	1.66	1.85	2.09	44	37	31	2.10	2.22	2.40
	3M	1.63	1.74	1.93	2.19	55	47	39	2.29	2.40	2.58
	1Y	1.78	1.85	2.03	2.26	59	51	43	2.44	2.54	2.69
	2Y	1.96	1.97	2.12	2.33	63	55	47	2.60	2.67	2.79
	3Y	2.12	2.08	2.22	2.40	67	59	50	2.75	2.80	2.90
	5Y	2.41	2.31	2.41	2.53	75	66	58	3.06	3.07	3.11
	7Y	2.63	2.54	2.60	2.67	82	74	65	3.36	3.33	3.32
	10Y	2.88	2.88	2.88	2.88	93	84	75	3.81	3.72	3.64
	30Y	3.15	3.15	3.15	3.15	94	85	75	4.08	3.99	3.90
	30Y	3.43	3.43	3.43	3.43	94	85	76	4.37	4.28	4.19
RON	1M	0.70	1.50	2.28	3.36	44	37	31	1.93	2.66	3.67
	3M	0.86	1.84	2.81	4.14	55	47	39	2.39	3.28	4.53
	1Y	1.53	2.06	2.93	4.13	54	47	39	2.60	3.39	4.51
	2Y	1.94	2.27	3.04	4.11	54	46	39	2.80	3.51	4.50
	3Y	2.31	2.48	3.16	4.09	53	46	39	3.01	3.62	4.48
	5Y	2.92	2.91	3.39	4.06	51	45	39	3.42	3.84	4.44
	7Y	3.41	3.33	3.62	4.02	50	44	38	3.83	4.06	4.41
	10Y	3.97	3.97	3.97	3.97	46	42	38	4.43	4.39	4.35
	30Y	4.53	4.53	4.53	4.53	47	42	38	5.00	4.96	4.91
	30Y	5.10	5.10	5.10	5.10	47	42	38	5.56	5.52	5.48
SEK	1M	-0.54	-0.28	0.32	0.89	44	37	31	0.16	0.69	1.20
	3M	-0.50	-0.26	0.30	0.83	55	47	39	0.29	0.77	1.22
	1Y	-0.44	-0.10	0.45	0.97	54	47	39	0.45	0.92	1.36
	2Y	-0.26	0.07	0.61	1.11	54	46	39	0.61	1.07	1.51
	3Y	-0.06	0.24	0.76	1.26	53	46	39	0.77	1.22	1.65
	5Y	0.35	0.57	1.07	1.54	52	45	39	1.08	1.52	1.94
	7Y	0.73	0.90	1.38	1.83	50	44	39	1.40	1.82	2.22
	10Y	1.16	1.40	1.84	2.26	47	43	38	1.87	2.27	2.64
	30Y	1.23	1.49	1.97	2.42	47	43	38	1.97	2.39	2.80
	30Y	1.32	1.60	2.10	2.58	48	43	38	2.07	2.53	2.97
GBP	1M	0.28	0.56	0.72	0.82	44	37	31	1.00	1.10	1.13
	3M	0.35	0.69	0.88	1.00	55	47	39	1.24	1.35	1.39
	1Y	0.55	0.77	0.96	1.09	55	48	40	1.32	1.44	1.49
	2Y	0.65	0.85	1.05	1.18	56	48	41	1.41	1.53	1.59
	3Y	0.74	0.93	1.13	1.27	56	49	42	1.49	1.62	1.69
	5Y	0.91	1.09	1.30	1.45	57	50	43	1.66	1.80	1.89
	7Y	1.06	1.25	1.46	1.63	57	51	45	1.82	1.97	2.08
	10Y	1.25	1.49	1.71	1.91	58	52	47	2.06	2.23	2.37
	30Y	1.48	1.76	2.02	2.25	58	52	47	2.34	2.54	2.72
	30Y	1.75	2.07	2.38	2.66	58	52	47	2.66	2.91	3.13
NOK	1M	0.76	0.76	0.76	0.90	44	37	31	1.19	1.13	1.21
	3M	0.91	0.91	0.91	1.07	55	47	39	1.46	1.38	1.46
	1Y	1.06	1.01	1.01	1.19	54	46	39	1.55	1.47	1.57
	2Y	1.14	1.11	1.11	1.30	53	45	38	1.63	1.56	1.68
	3Y	1.25	1.21	1.21	1.42	51	45	38	1.72	1.66	1.79
	5Y	1.48	1.41	1.41	1.65	49	43	37	1.90	1.84	2.01
	7Y	1.69	1.62	1.62	1.88	46	41	36	2.08	2.03	2.23
	10Y	1.92	1.92	1.92	2.22	41	37	33	2.33	2.29	2.56
	30Y	2.16	2.16	2.16	2.50	42	38	33	2.58	2.53	2.83
	30Y	2.43	2.43	2.43	2.80	42	38	34	2.85	2.80	3.14



	Starting point rates (%)	Baseline rates (%)			Deviations from baseline (basis points)			Adverse rates (%)			
		2017	2018	2019	2020	2018	2019	2020	2018	2019	2020
USD	1M	1.08	1.29	1.53	1.60	63	88	118	1.92	2.41	2.79
	3M	1.24	1.47	1.75	1.83	68	90	116	2.15	2.65	2.99
	1Y	1.42	1.59	1.90	1.98	68	86	105	2.27	2.75	3.03
	2Y	1.60	1.72	2.04	2.14	103	123	144	2.74	3.28	3.58
	3Y	1.74	1.84	2.19	2.29	123	141	156	3.07	3.60	3.86
	5Y	1.94	2.09	2.49	2.61	163	178	188	3.72	4.27	4.49
	7Y	2.09	2.33	2.79	2.92	174	181	183	4.08	4.60	4.74
	10Y	2.25	2.70	3.23	3.38	209	206	198	4.79	5.29	5.37
	20Y	2.46	2.94	3.52	3.69	209	197	180	5.03	5.49	5.49
	30Y	2.68	3.21	3.84	4.02	209	187	163	5.30	5.71	5.65
CHF	1M	-0.79	-0.79	-0.52	-0.52	16	14	11	-0.63	-0.38	-0.40
	3M	-0.73	-0.73	-0.48	-0.48	20	17	14	-0.53	-0.31	-0.34
	1Y	-0.66	-0.63	-0.35	-0.29	21	19	16	-0.41	-0.16	-0.13
	2Y	-0.60	-0.53	-0.21	-0.10	23	20	17	-0.30	-0.01	0.07
	3Y	-0.50	-0.43	-0.08	0.09	25	22	19	-0.18	0.13	0.28
	5Y	-0.28	-0.23	0.18	0.47	28	25	22	0.05	0.43	0.68
	7Y	-0.07	-0.03	0.45	0.85	31	28	24	0.28	0.72	1.09
	10Y	0.20	0.27	0.84	1.41	35	31	28	0.62	1.16	1.70
	20Y	0.29	0.39	1.22	2.05	35	31	28	0.74	1.54	2.33
	30Y	0.42	0.57	1.77	2.98	35	32	28	0.92	2.09	3.26
TRY	1M	12.22	10.73	10.20	9.27	20	17	15	10.94	10.37	9.41
	3M	12.41	10.90	10.35	9.41	26	22	18	11.16	10.57	9.59
	1Y	12.33	10.80	10.26	9.32	28	24	20	11.08	10.50	9.52
	2Y	12.15	10.71	10.17	9.22	30	26	22	11.01	10.42	9.44
	3Y	11.96	10.62	10.07	9.13	31	28	24	10.93	10.35	9.37
	5Y	11.76	10.43	9.89	8.94	35	31	27	10.78	10.20	9.22
	7Y	11.61	10.24	9.70	8.76	39	35	31	10.63	10.05	9.06
	10Y	11.47	9.96	9.42	8.48	44	39	35	10.40	9.81	8.83
	20Y	11.33	9.84	9.30	8.37	44	40	35	10.28	9.70	8.73
	30Y	11.19	9.72	9.19	8.27	44	40	35	10.16	9.59	8.62
RUB	1M	8.89	5.00	5.00	5.00	37	32	27	5.38	5.32	5.27
	3M	8.66	4.87	4.87	4.87	47	40	34	5.34	5.28	5.21
	1Y	8.19	4.88	4.88	4.88	46	40	33	5.35	5.28	5.21
	2Y	7.61	4.89	4.89	4.89	45	39	33	5.35	5.28	5.22
	3Y	7.29	4.90	4.90	4.90	45	38	33	5.35	5.29	5.23
	5Y	6.95	4.92	4.92	4.92	43	37	32	5.35	5.29	5.24
	7Y	6.72	4.94	4.94	4.94	40	36	31	5.35	5.30	5.26
	10Y	6.48	4.98	4.98	4.98	37	33	30	5.34	5.31	5.27
	20Y	6.18	4.74	4.74	4.74	37	33	30	5.11	5.08	5.04
	30Y	5.89	4.52	4.52	4.52	37	33	30	4.89	4.85	4.82
BRL	1M	9.30	9.37	9.91	10.25	8	7	6	9.44	9.98	10.30
	3M	9.30	9.37	9.91	10.25	10	8	7	9.47	10.00	10.32
	1Y	9.30	9.46	10.01	10.35	12	10	9	9.58	10.12	10.44
	2Y	9.30	9.56	10.12	10.46	13	12	10	9.70	10.23	10.56
	3Y	9.79	9.66	10.22	10.56	15	13	12	9.81	10.35	10.68
	5Y	10.28	9.86	10.42	10.77	19	17	15	10.04	10.59	10.92
	7Y	10.28	10.05	10.63	10.98	22	20	18	10.27	10.82	11.16
	10Y	10.28	10.35	10.93	11.29	26	24	21	10.61	11.17	11.51
	20Y	10.28	10.35	10.93	11.29	27	24	21	10.61	11.17	11.51
	30Y	10.28	10.35	10.93	11.29	27	24	22	10.61	11.18	11.51



		Starting point rates (%)	Baseline rates (%)			Deviations from baseline (basis points)			Adverse rates (%)		
		2017	2018	2019	2020	2018	2019	2020	2018	2019	2020
MXN	1M	6.68	6.91	6.42	6.42	20	17	14	7.11	6.59	6.56
	3M	6.84	7.08	6.58	6.58	25	22	18	7.33	6.80	6.76
	1Y	7.27	7.12	6.63	6.63	29	25	21	7.41	6.88	6.84
	2Y	7.20	7.17	6.69	6.69	32	28	24	7.49	6.97	6.93
	3Y	7.21	7.21	6.74	6.74	36	31	27	7.57	7.05	7.01
	5Y	7.27	7.30	6.84	6.84	42	38	33	7.72	7.22	7.17
	7Y	7.40	7.38	6.95	6.95	49	44	39	7.87	7.39	7.34
	10Y	7.46	7.51	7.11	7.11	58	53	47	8.09	7.64	7.58
	20Y	7.58	7.63	7.22	7.22	59	53	47	8.22	7.75	7.70
	30Y	7.70	7.75	7.34	7.34	59	53	48	8.34	7.87	7.81
CLP	1M	2.71	2.66	3.18	3.18	3	3	2	2.69	3.21	3.20
	3M	2.65	2.60	3.11	3.11	4	4	3	2.64	3.15	3.14
	1Y	2.60	2.79	3.26	3.26	6	6	5	2.85	3.32	3.31
	2Y	2.78	2.98	3.41	3.41	9	8	7	3.06	3.49	3.48
	3Y	3.04	3.16	3.57	3.57	11	10	9	3.27	3.66	3.65
	5Y	3.49	3.54	3.87	3.87	15	14	12	3.69	4.01	3.99
	7Y	3.83	3.91	4.17	4.17	20	18	16	4.11	4.35	4.33
	10Y	4.13	4.47	4.63	4.63	26	23	21	4.73	4.86	4.84
	20Y	4.39	4.76	4.92	4.92	26	23	21	5.02	5.16	5.13
	30Y	4.67	5.06	5.23	5.23	26	24	21	5.32	5.47	5.44
AUD	1M	1.62	1.91	1.99	2.20	18	16	13	2.10	2.14	2.33
	3M	1.74	2.06	2.13	2.37	23	20	16	2.28	2.33	2.53
	1Y	1.96	2.19	2.27	2.52	28	24	20	2.46	2.51	2.72
	2Y	2.09	2.32	2.41	2.67	32	28	24	2.64	2.69	2.91
	3Y	2.23	2.45	2.55	2.82	37	33	28	2.82	2.87	3.10
	5Y	2.47	2.72	2.82	3.12	46	41	36	3.18	3.24	3.49
	7Y	2.66	2.99	3.10	3.43	55	50	44	3.54	3.60	3.87
	10Y	2.88	3.39	3.51	3.88	68	62	55	4.07	4.13	4.43
	20Y	3.12	3.67	3.81	4.21	69	62	55	4.36	4.43	4.76
	30Y	3.38	3.98	4.13	4.56	69	62	55	4.67	4.75	5.12
CAD	1M	1.07	1.26	1.53	1.94	7	6	5	1.33	1.59	1.99
	3M	1.13	1.34	1.61	2.05	8	7	6	1.42	1.69	2.11
	1Y	1.26	1.44	1.73	2.18	13	12	10	1.57	1.84	2.28
	2Y	1.39	1.54	1.84	2.32	18	16	14	1.72	2.00	2.45
	3Y	1.51	1.64	1.96	2.45	23	20	18	1.87	2.16	2.63
	5Y	1.69	1.84	2.18	2.71	32	29	26	2.17	2.47	2.97
	7Y	1.83	2.05	2.41	2.98	42	37	34	2.46	2.78	3.31
	10Y	2.05	2.35	2.75	3.38	55	50	45	2.90	3.25	3.82
	20Y	2.26	2.59	3.03	3.72	55	50	45	3.15	3.53	4.17
	30Y	2.49	2.86	3.34	4.10	55	50	45	3.41	3.85	4.55
HKD	1M	0.51	0.59	0.75	0.81	3	2	2	0.62	0.77	0.83
	3M	0.87	1.01	1.27	1.37	3	3	2	1.04	1.30	1.39
	1Y	1.13	1.17	1.51	1.63	5	5	4	1.22	1.55	1.67
	2Y	1.38	1.34	1.74	1.88	7	7	6	1.41	1.80	1.94
	3Y	1.57	1.50	1.97	2.14	10	8	7	1.60	2.05	2.21
	5Y	1.83	1.83	2.43	2.65	14	12	11	1.97	2.55	2.76
	7Y	1.99	2.16	2.89	3.16	18	16	14	2.34	3.05	3.31
	10Y	2.16	2.65	3.59	3.93	23	21	19	2.88	3.80	4.12
	20Y	2.38	2.92	3.96	4.34	23	21	19	3.16	4.17	4.53
	30Y	2.63	3.23	4.37	4.79	24	21	19	3.46	4.58	4.98



	Starting point rates (%)	Baseline rates (%)				Deviations from baseline (basis points)			Adverse rates (%)		
		2017	2018	2019	2020	2018	2019	2020	2018	2019	2020
ZAR	1M	6.99	6.99	6.99	6.99	6	5	5	7.05	7.04	7.03
	3M	7.22	7.22	7.22	7.22	8	7	6	7.30	7.29	7.28
	1Y	7.14	7.30	7.30	7.30	10	9	7	7.40	7.39	7.38
	2Y	7.13	7.38	7.38	7.38	12	11	9	7.51	7.49	7.47
	3Y	7.22	7.46	7.46	7.46	14	13	11	7.61	7.59	7.57
	5Y	7.49	7.62	7.62	7.62	18	17	14	7.81	7.79	7.77
	7Y	7.74	7.78	7.78	7.78	23	21	18	8.01	7.99	7.96
	10Y	8.02	8.02	8.02	8.02	28	25	22	8.30	8.27	8.25
	20Y	8.13	8.13	8.13	8.13	28	25	23	8.41	8.39	8.36
	30Y	8.25	8.25	8.25	8.25	28	25	23	8.53	8.50	8.48

4.11. EU corporate credit spread indices

	Deviation from the baseline (basis points)		
	2018	2019	2020
iTraxx Overall 5y	80	82	77
iTraxx Crossover 5y	315	321	303
iTraxx HiVol 5y	114	116	110
iTraxx Non-financials 5y	78	80	76
iTraxx Sub-financials 5y	199	203	192

Notes: Under the baseline, iTraxx indices are assumed to remain unchanged. These index projections should not be interpreted as replacing relevant credit risk benchmarks.