



2023 Stress Test Scenarios

February 2023





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The Federal Reserve

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- **promotes the stability of the financial system** and seeks to minimize and contain systemic risks through active monitoring and engagement in the U.S. and abroad;
- **promotes the safety and soundness of individual financial institutions** and monitors their impact on the financial system as a whole;
- **fosters payment and settlement system safety and efficiency** through services to the banking industry and U.S. government that facilitate U.S.-dollar transactions and payments; and
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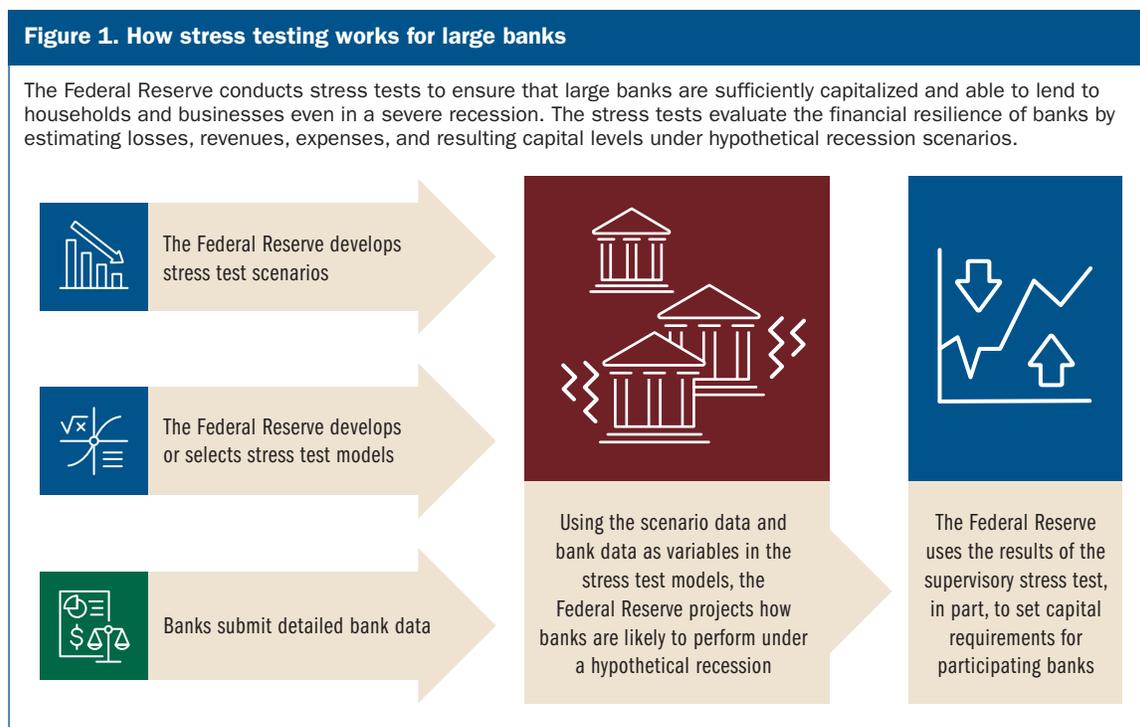
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Preface

The Federal Reserve promotes a safe, sound, and efficient banking system that supports the U.S. economy through its supervision and regulation of domestic and foreign banks.

As part of its supervision efforts, the Federal Reserve conducts annually a stress test. The stress test assesses how large domestic and foreign banks, as well as savings and loan holding companies, are likely to perform under hypothetical recessions.¹ Figure 1 summarizes the stress test cycle.



As part of this cycle, the Federal Reserve publishes four documents, in the following chronological order:

- *Stress Test Scenarios* describes the hypothetical recessions used in the Federal Reserve's stress test. *Stress Test Scenarios* is typically published by mid-February.

¹ See 12 C.F.R. pt. 238, subpart O; 12 C.F.R. pt. 252, subpart E.

U.S. intermediate holding companies with \$100 billion or more in total consolidated assets are also subject to the stress test.

- *Stress Test Methodology* provides comprehensive details about the models and methodologies used in the stress test. *Stress Test Methodology* is typically published at the end of the first quarter.
- *Stress Test Results* reports the aggregate and individual bank results of the stress test, which assesses whether banks are sufficiently capitalized to absorb losses during a severe recession. *Stress Test Results* is typically published at the end of the second quarter.
- *Large Bank Capital Requirements* announces the individual capital requirement for all large banks, which are partially determined by the results of the stress test. *Large Bank Capital Requirements* is typically published during the third quarter.

These publications can be found on the Stress Test Publications page (<https://www.federalreserve.gov/publications/dodd-frank-act-stress-test-publications.htm>).

For information on the Federal Reserve's supervision of large financial institutions, see <https://www.federalreserve.gov/supervisionreg/large-financial-institutions.htm>. For information on the Federal Reserve's supervision of capital-planning processes of banks, see <https://www.federalreserve.gov/supervisionreg/stress-tests-capital-planning.htm>.

For more information on how the Board promotes the safety and soundness of the banking system, see <https://www.federalreserve.gov/supervisionreg.htm>.

Executive Summary

The Federal Reserve's stress tests help ensure that large banks are able to lend to households and businesses even in a severe recession. The stress tests evaluate the financial resilience of large banks by estimating bank losses, revenues, expenses, and resulting capital levels—which provide a cushion against losses—under hypothetical recession scenarios into the future.² The Federal Reserve uses the results of the stress test to set large bank capital requirements.

The [severely adverse scenario](#) is characterized by a severe global recession accompanied by a period of heightened stress in both commercial and residential real estate markets, as well as in corporate debt markets. The U.S. unemployment rate rises nearly 6½ percentage points from the starting point of the scenario in the fourth quarter of 2022 to its peak of 10 percent in the third quarter of 2024. The sharp decline in economic activity is also accompanied by an increase in market volatility, widening corporate bond spreads, and a collapse in asset prices, including a 38 percent decline in house prices and a 40 percent decline in commercial real estate prices. The international portion of the scenario features recessions in four countries or country blocs, with heightened stress in advanced economies, followed by declines in inflation and an appreciation in the value of the U.S. dollar against all countries and country bloc's currencies, except for the Japanese yen.

Banks with large trading operations are tested against a [global market shock component](#) that stresses their trading, private equity, and certain other fair-valued positions. Furthermore, banks with substantial trading or custodial operations are tested against the [default of their largest counterparty](#) (see [table 1](#)).

This year, for the first time, the Federal Reserve is publishing an additional, exploratory market shock component (the exploratory market shock) that will be applied only to U.S. global systemically important banks (G-SIBs).³ The purpose of the stress test is to understand a firm's resilience to a range of severe but plausible events, and the exploratory component furthers that purpose by posing a different set of risks than is probed in this year's global market shock component.

² U.S. bank holding companies (BHCs), savings and loan holding companies (SLHCs), and intermediate holding companies of foreign banking organizations (IHCs) with \$100 billion or more in assets are subject to the Board's supervisory stress test rule (12 C.F.R. pt. 238, subpart O; 12 C.F.R. pt. 252, subpart E) and capital planning requirements (12 C.F.R. § 225.8; 12 C.F.R. § 238.170). In addition, certain BHCs, SLHCs, U.S. IHCs, and state member banks must comply with the Board's company-run stress test rules (12 C.F.R. pt. 238, subpart P; and 12 C.F.R. pt. 252, subparts B and F).

³ The U.S. G-SIBs are Bank of America Corporation, The Bank of New York Mellon Corporation, Citigroup Inc., The Goldman Sachs Group, Inc., JPMorgan Chase & Co., Morgan Stanley, State Street Corporation, and Wells Fargo & Company.

For instance, while this year’s global market shock is characterized by a severe recession with fading inflation expectations, the exploratory market shock is characterized by a less severe recession with greater inflationary pressures induced by higher inflation expectations. Such differences in scenarios could reveal different losses across banks, depending on the positions held in their portfolios.

Consistent with the nature of an exploratory exercise, the exploratory market shock will not contribute to the capital requirements set by this year’s stress test. Instead, it will be used to assess the potential of multiple scenarios to capture a wider array of risks in future stress test exercises. (See [box 1](#) in the “Supervisory Stress Test Scenarios” section.)

The hypothetical scenarios are described in additional detail in this publication.

Table 1. 2023 Stress test banks			
Bank	Subject to global market shock	Subject to counterparty default	Subject to exploratory market shock¹
Bank of America Corporation	X	X	X
The Bank of New York Mellon Corporation		X	X
Barclays US LLC	X	X	
BMO Financial Corp.			
Capital One Financial Corporation			
The Charles Schwab Corporation			
Citigroup Inc.	X	X	X
Citizens Financial Group, Inc.			
Credit Suisse Holdings (USA), Inc.	X	X	
DB USA Corporation	X	X	
The Goldman Sachs Group, Inc.	X	X	X
JPMorgan Chase & Co.	X	X	X
M&T Bank Corporation			
Morgan Stanley	X	X	X
Northern Trust Corporation			
The PNC Financial Services Group, Inc.			
RBC US Group Holdings LLC ²			
State Street Corporation		X	X
TD Group US Holdings LLC			
Truist Financial Corporation			
UBS Americas Holding LLC			
U.S. Bancorp			
Wells Fargo & Company	X	X	X

Note: The information listed in this table is based on third quarter 2022 data. BMO Financial Corp., Citizens Financial Group, Inc., and M&T Bank Corporation are on a two-year stress test cycle; therefore, they were included in last year’s stress test and would normally be included next in 2024. In connection with their recent applications, the Board required these firms to receive a new capital requirement this year based on the 2023 stress test. The 2023 stress test and capital requirement will include the effects of the recent acquisitions by Citizens Financial Group, Inc. and M&T Bank Corporation.

¹ As in the supervisory stress test, the exploratory market shock for The Bank of New York Mellon Corporation and State Street Corporation will only include the counterparty default component. Their exploratory market shock component will not include mark-to-market losses on their trading or credit valuation adjustments exposures.

² RBC US Group Holdings LLC elected to opt into the 2023 stress test.

Supervisory Stress Test Scenarios

The severely adverse scenario describes a hypothetical set of conditions designed to assess the strength and resilience of banks in an adverse economic environment.⁴ The baseline scenario follows a profile similar to that of average projections from a survey of economic forecasters. These scenarios are not Federal Reserve forecasts.

The scenarios start in the first quarter of 2023 and extend through the first quarter of 2026. Each scenario includes 28 variables; this set of variables is the same as the set provided in last year's supervisory stress test scenarios. The variables describing economic developments within the United States include:

- **Six measures of economic activity and prices:** quarterly percent changes (at an annual rate) in real and nominal gross domestic product (GDP), real and nominal disposable personal income, the Consumer Price Index for All Urban Consumers (CPI), and the level of the unemployment rate of the civilian non-institutional population aged 16 years and over.
- **Four aggregate measures of asset prices or financial conditions:** indexes of house prices, commercial real estate prices, equity prices, and stock market volatility.
- **Six measures of interest rates:** the rate on 3-month Treasury securities; the yield on 5-year Treasury securities; the yield on 10-year Treasury securities; the yield on 10-year BBB-rated corporate securities; the interest rate associated with conforming, conventional, 30-year fixed-rate mortgages; and the prime rate.

The variables describing international economic conditions in each scenario include three variables in four countries or country blocs:

- **The three variables for each country or country bloc:** quarterly percent changes (at an annual rate) in real GDP and in consumer price indexes or local equivalents, and the level of the U.S. dollar exchange rate.
- **Four countries or country blocs:** the euro area (the 20 European Union member states that have adopted the euro as their common currency); the United Kingdom; developing Asia (the nominal GDP-weighted aggregate of China, India, South Korea, Hong Kong Special Administrative Region, and Taiwan); and Japan.

⁴ For more information about the Federal Reserve's framework for designing stress test scenarios, see "Policy Statement on the Scenario Design Framework for Stress Testing" (12 C.F.R. pt. 252, appendix A).

Baseline and Severely Adverse Scenarios

The following sections describe this year's baseline and severely adverse scenarios. The variables included in these scenarios are provided in tables at the end of this document.⁵ Historical data for the domestic and the international variables are reported in [tables 2.A](#) and [2.B](#), respectively.

Baseline Scenario

The baseline scenario for U.S. real activity, inflation, and interest rates (see [table 3.A](#)) is similar to the consensus projections from *2023 Blue Chip Financial Forecasts* and *2023 Blue Chip Economic Indicators*.⁶ The near-term component of the baseline scenario is similar to the January 2023 release of the *Blue Chip* publications, while the long-term component of the baseline scenario is similar to the October 2022 release. It is important to emphasize that this scenario is not a Federal Reserve forecast.

The baseline scenario for the United States features an initial slowdown and then a gradual recovery. The unemployment rate rises steadily from just over 3½ percent at the end of 2022 to near 5 percent by the first quarter of 2024, before declining to just over 4½ percent by the end of the scenario. Real GDP growth declines from about 1¾ percent at the end of 2022 to around negative ¾ percent by the middle of 2023 before gradually increasing to about 2¼ percent by the second half of 2024 and then settling near 2 percent at the end of the scenario. Inflation, measured as the quarterly change in the CPI and reported as an annualized rate, declines from a little less than 3¼ percent to a trough of about 2 percent in the second quarter of 2024 and remains near 2¼ percent in the rest of the scenario. The 3-month Treasury rate increases from around 4 percent at the end of 2022 to about 4¾ percent in the second quarter of 2023, then declines to about 3 percent by the end of the scenario. Ten-year Treasury yields decline steadily from a bit below 4 percent to around 3¼ percent at the end of the scenario. The prime rate follows a path similar to short-term interest rates, while yields on BBB-rated corporate bonds and mortgage rates follow a path similar to long-term interest rates.

Equity prices remain at their level for the fourth quarter of 2022 throughout the scenario. Equity market volatility, as measured by the U.S. Market Volatility Index (VIX), falls modestly in the first three quarters of the scenario before increasing to around 28½, where it stays for the remainder of the scenario. Nominal house prices increase gradually by 2 percent per year and commercial real estate prices increase by 3 percent per year over the scenario.

⁵ The scenarios can also be downloaded (together with the historical time series of the variables) from the Board's website, at <https://www.federalreserve.gov/supervisionreg/dfa-stress-tests.htm>.

⁶ See Wolters Kluwer Legal and Regulatory Solutions, *Blue Chip Economic Indicators* and *Blue Chip Financial Forecasts*.

The baseline paths for the international variables (see [table 3.B](#)) are similar to the trajectories reported in the January 2023 *Blue Chip Economic Indicators* and the International Monetary Fund's October 2022 *World Economic Outlook*.⁷ In the baseline scenario, real GDP growth in developing Asia rises from about 4 percent at the end of 2022 to a peak of just under 5 percent by the end of 2023 and declines to around 4¾ percent at the end of the scenario. Real GDP growth in the euro area increases from about negative ¾ percent to a high of just above 2 percent in the third quarter of 2024, before declining to about 1½ percent by the end of the scenario. Real GDP growth in the United Kingdom declines early in the scenario, from around negative ¼ percent to a bit below negative 2 percent in the second quarter of 2023, before climbing to 2¾ percent in the third quarter of 2024 and then falling back to around 2 percent in the second quarter of 2025 and thereafter. GDP growth in Japan starts around 2¾ percent and declines to about negative ¼ percent in the third quarter of 2023 and then grows at an average annualized rate of about ¾ percent in the remainder of the scenario.

Consumer price inflation in the euro area declines rapidly from about 10¼ percent at the end of 2022 to about 1¾ percent in the third quarter of 2024 before rising and then settling around 2 percent. Consumer price inflation declines rapidly in the United Kingdom as well, falling from above 8½ percent at the end of 2022 to about 1¼ percent in the third quarter of 2024, and then stays below 1 percent for the remainder of the scenario. Inflation in Japan starts near 2½ percent before declining to 1¼ percent by the fourth quarter of 2023 and hovers below 1½ percent throughout the remainder of the scenario. Inflation rates in developing Asia start near 3 percent before declining to about 2¼ percent in the second quarter of 2025 and remain there for the rest of the scenario.

Severely Adverse Scenario

The severely adverse scenario follows the Board's Policy Statement on the Scenario Design Framework for Stress Testing ("Scenario Design Framework").⁸ This scenario is characterized by a severe global recession, with prolonged declines in both residential and commercial real estate prices, which spill over into the corporate sector and affect investment sentiment. The developments in foreign economies involve greater stress in advanced foreign economies. This is a hypothetical scenario designed to assess the strength and resilience of banks and does not represent a Federal Reserve forecast.

⁷ See International Monetary Fund, *World Economic Outlook* (October 2022), <https://www.imf.org/en/Publications/WEO/Issues/2022/10/11/world-economic-outlook-october-2022>. The January 2023 update to the *World Economic Outlook* was released after the finalization of the scenarios.

⁸ 12 C.F.R. pt. 252, appendix A.

Consistent with the Scenario Design Framework, under the severely adverse scenario the U.S. unemployment rate climbs to a peak of 10 percent in the third quarter of 2024 (see [table 4.A](#)), a roughly 6½ percentage point increase relative to its fourth-quarter 2022 level. Real GDP declines nearly 8¾ percent from the fourth quarter of 2022 to its trough in the first quarter of 2024, before recovering. The rising unemployment rate and the rapid decline in aggregate demand for goods and services significantly reduce inflationary pressures. Inflation, measured as the quarterly change in the CPI and reported as an annualized rate, falls from below 3¼ percent at the end of 2022 to about 1¼ percent in the third quarter of 2023 and then gradually increases to above 1½ percent by the end of the scenario.

Short-term interest rates, as measured by the 3-month Treasury rate, fall significantly to near zero by the third quarter of 2023 and remain there for the remainder of the scenario. Long-term interest rates, as measured by the 10-year Treasury yield, fall by nearly 3¼ percentage points by the second quarter of 2023, and then gradually rise in late 2023 to about 1½ percent by the end of the scenario. These interest rate paths imply that the yield curve remains inverted through the second quarter of 2023. Thereafter, the slope of the yield curve becomes positive and steepens over the remainder of the scenario.

Conditions in corporate bond markets deteriorate markedly. The spread between yields on BBB-rated bonds and yields on 10-year Treasury securities widens to 5¾ percentage points by the third quarter of 2023, an increase of more than 3½ percentage points relative to the fourth quarter of 2022. Corporate bond spreads then gradually decline to 2¼ percentage points by the end of the scenario. The spread between mortgage rates and 10-year Treasury yields widens to 3 percentage points by the third quarter of 2023 before narrowing to about 1½ percentage points at the end of the scenario.

Asset prices drop sharply in the severely adverse scenario. Equity prices fall 45 percent from the fourth quarter of 2022 through the fourth quarter of 2023, and do not return to their initial level until the end of the scenario. The maximum quarterly value of the VIX reaches a peak value of 75 in the second quarter of 2023, then declines to about 32½ at the end of the scenario. House prices and commercial real estate prices also experience large declines. House prices fall sharply through the third quarter of 2024, reaching a trough that is about 38 percent below their level in the fourth quarter of 2022. Commercial real estate prices experience a slightly larger decline, reaching a trough in the fourth quarter of 2024 that is 40 percent below their level at the end of 2022. House prices and commercial real estate prices recover slowly and are well below their fourth quarter of 2022 values at the end of the scenario.

The international component of the severely adverse scenario involves sharp declines in real GDP in three of the four countries or country blocs at the start of the scenario. Japan experiences the most severe contraction, followed by the euro area and United Kingdom, while developing Asia experiences only a moderate decline. In Japan, the euro area, and the United Kingdom, GDP levels surpass their 2022 fourth-quarter levels by the end of the scenario. By contrast, in developing Asia, where output fell less, the level of GDP surpasses its fourth quarter of 2022 level by the end of 2023.

Inflation declines significantly in all four countries or country blocs. All areas experience a period of deflation at various points in the scenario, although deflation is more severe and protracted in Japan and developing Asia. The U.S. dollar appreciates against the euro, the pound sterling, and the currencies of developing Asia, but depreciates against the yen.

Additional Key Features of the Severely Adverse Scenario

Stress on corporate borrower balance sheets and resulting credit losses on corporate loans should be assumed to be higher for lower-rated nonfinancial corporate borrowers. Declines in aggregate U.S. house prices should be assumed to be concentrated in regions that have experienced rapid price gains over the past two years. Declines in commercial real estate prices should be assumed to be concentrated in properties most at risk of a sustained drop in income and asset values: offices that may be affected by remote work or hospitality sectors that continue to be affected by reduced business travel. Declines in U.S. house prices and U.S. commercial real estate prices should also be assumed to be representative of the declines in house prices and commercial real estate prices in foreign regions and economies, especially those that experienced rapid price gains before the pandemic and were significantly affected by the event.

The weakness in euro area economic conditions reflects a broad-based contraction due to geopolitical risks, in part due to the conflict in Ukraine. Conditions across Latin American economies should be assumed to feature a slowdown comparable to the average slowdown in the global economy. Conditions in other emerging economies outside of Latin America should be assumed to feature a slowdown similar to the one in developing Asia.

Comparison of the Severely Adverse Scenario and 2022 Severely Adverse Scenario

The current severely adverse scenario features a greater increase in the unemployment rate in the United States as compared to the 2022 severely adverse scenario. This difference reflects the Scenario Design Framework, which calls for a higher increase in the unemployment rate when the starting level of the unemployment rate is lower.

The current scenario features a significantly higher starting level of interest rates compared to the previous year's scenario, which allows interest rates to decline more forcefully in response to the hypothetical drop in economic activity and inflation. The scenario also features a larger and more rapid decline in house prices as compared to their declines in the previous year's scenario. This larger decline reflects the Scenario Design Framework's response to the significantly higher housing valuations at the end of 2022. The potential for spillover effects in asset markets and sharp revisions in investor sentiment are captured by a decline in equity prices and an increase in corporate bond spreads, although these changes are somewhat less severe relative to last year's scenario. These less severe changes reflect the moves in those markets over the course of 2022 and limits procyclicality in the scenario.

Global Market Shock Component for the Supervisory Severely Adverse Scenario

The global market shock component for the severely adverse scenario (global market shock) is a set of hypothetical shocks to a large set of risk factors reflecting general market distress and heightened uncertainty. Banks with significant trading activity must consider the global market shock as part of their supervisory severely adverse scenario.⁹ The losses associated with the global market shock are recognized in the first quarter of the scenario and are carried through all subsequent quarters. In addition, certain large and highly interconnected firms must apply the same global market shock to project losses under the counterparty default scenario component. The global market shock is applied to positions held by the banks on a given as-of date, which is October 14, 2022, for the 2023 supervisory stress test.¹⁰ These shocks do not represent a forecast of the Federal Reserve.

⁹ The global market shock component for the severely adverse scenario applies to a firm that is subject to the stress test and that has aggregate trading assets and liabilities of \$50 billion or more, or aggregate trading assets and liabilities equal to 10 percent or more of total consolidated assets, and that is not a Category IV firm under the Board's tailoring framework. See 12 C.F.R. § 252.54(b)(2)(i).

¹⁰ A firm may use data as of the date that corresponds to its weekly internal risk reporting cycle as long as it falls during the business week of the as-of date for the global market shock (i.e., October 10–14, 2022).

The design and specification of the global market shock differs from the macroeconomic scenarios for several reasons. First, profits and losses from trading and counterparty credit are measured in mark-to-market terms, while revenues and losses from traditional banking are generally measured using the accrual method. Another key difference is the timing of loss recognition. The global market shock affects the mark-to-market value of trading positions and counterparty credit losses in the first quarter of the scenario. This timing is based on an observation that market dislocations can happen rapidly and unpredictably at any time under stressed conditions. Applying the global market shock in the first quarter ensures that potential losses from trading and counterparty exposures are incorporated into banks' capital ratios in each quarter of the scenario.

The global market shock is specified by a large set of risk factors that include, but are not limited to

- equity prices of key advanced economies and developing and emerging market economies along with selected points along term structures of option-implied volatilities;
- foreign exchange rates of most major and some minor currencies, along with selected points along term structures of option-implied volatilities;
- selected-maturity government yields (e.g., for 10-year U.S. Treasuries), swap rates, and other important interest rates for key advanced economies and developing and emerging market economies;
- selected maturities and expiries of implied volatilities that are key inputs to the pricing of interest rate derivatives;
- selected expiries of futures prices for energy products including crude oil (differentiated by country of origin), natural gas, and power;
- selected expiries of futures prices for metals and agricultural commodities; and
- credit spreads or prices for selected credit-sensitive products, including corporate bonds, credit default swaps (CDS), and loans; non-agency residential mortgage-backed securities (RMBS) and commercial mortgage-backed securities (CMBS); sovereign debt; and municipal bonds.

The Board considers emerging and ongoing areas of financial market vulnerabilities in the development of the global market shock. This assessment of potential vulnerabilities is informed by financial stability reports, supervisory information, and internal and external assessments of potential sources of distress such as geopolitical, economic, and financial market events.

The global market shock includes a standardized set of risk factor shocks to financial market variables that apply to all banks with significant trading activity. Depending on the type of financial market vulnerability that the global market shock is intended to assess, the risk factor shocks could be based on a single historical episode, multiple historical periods, hypothetical events that are based on salient risks, or a hybrid approach comprising some combination of historical episodes and hypothetical events. A market shock based on hypothetical events may result in changes in risk factors that were not observed over history.¹¹

Risk factor shocks are calibrated based on assumed time horizons. The calibration horizons reflect several considerations related to the scenario being modeled. One important consideration is the liquidity characteristics of different risk factors. These characteristics may vary depending on the specified market shock narrative. More specifically, the calibration horizons reflect the variation in the speed at which banks could reasonably close out, or effectively hedge, risk exposures in the event of market stress. The calibration horizons are generally longer than the typical times needed to liquidate exposures under normal conditions because they are designed to capture the unpredictable liquidity conditions that prevail in times of stress.¹² In addition, shocks to risk factors in more-liquid markets, such as those for government securities, foreign exchange, or public equities, are calibrated to shorter horizons (such as three months), while shocks to risk factors in less-liquid markets, such as those for non-agency securitized products or private equities, have longer calibration horizons (such as 12 months).

2023 Global Market Shock Component for the Supervisory Severely Adverse Scenario

The global market shock component is characterized by market expectations of severe recessions in the United States and other countries. Financial conditions tighten and inflation expectations decline.

Treasury rates fall as short-term rates decline sharply. Longer-term rates also decrease, although to a lesser extent, reflecting flight-to-safety considerations. Most government interest rates in Europe and other advanced economies fall less than U.S. Treasury rates, contributing to the U.S. dollar depreciating against the euro and other advanced country currencies. The U.S. dollar appreciates against most emerging market currencies, reflecting expectations for more acute recessions in those countries.

¹¹ For example, credit spread changes in the municipal credit markets during March and April of 2020 would have been considered unprecedented had they been used in earlier global market shock scenarios.

¹² The liquidity of previously well-functioning financial markets can undergo abrupt changes in times of financial stress. For example, prior to the Global Financial Crisis, AAA-rated private-label RMBS would likely have been considered highly liquid, but their liquidity deteriorated drastically during the crisis period.

Generally, commodity prices fall as demand declines from the expected economic slowdown, though precious metals see price increases. Most emerging market sovereign CDS spreads widen severely reflecting expectations of severe recessions in those countries.

The expected decline in economic activity leads to large public equity price declines across global markets, while financial market uncertainty drives an increase in public equity volatility. Private equity values experience sizable declines as well, in response to a weak economic outlook.

An increase in expected defaults leads to a large widening in corporate credit spreads. A decline in expected demand and falling real estate prices lead to large disruptions in the residential and commercial real estate sectors. As a result, non-agency RMBS and CMBS market values fall significantly.

Comparison of the 2023 Global Market Shock Component and the 2022 Global Market Shock Component

The 2023 global market shock features fading inflationary pressures, while last year's component was characterized by worsening supply chain disruptions that put upward pressure on inflation. Accordingly, the current global market shock mainly differs from the 2022 component in the behavior of interest rates, foreign exchange rates, and commodities prices.

Treasury rates fall in the current component, with large declines specified for shorter tenors and milder declines specified for longer tenors. In the 2022 component, Treasury rates increased across the term structure, resulting in an upward shift in the yield curve. Similarly, inflation breakeven rates decrease in the current component, while they increased in the 2022 component.

The U.S. dollar depreciates against the currencies of advanced countries in the 2023 component, while it mostly appreciated against advanced country currencies in the 2022 component. Non-precious metals and other commodities, such as oil and natural gas, face large price declines in the current component, while commodity prices increased in the 2022 component due to supply chain disruptions.

Box 1. Exploratory Market Shock Component

This year, for the first time, the Federal Reserve is publishing an additional, exploratory market shock component (the exploratory market shock) that will be applied only to U.S. G-SIBs.¹ The purpose of the stress test is to understand a firm's resilience to a range of severe but plausible events, and the exploratory component furthers that purpose by posing a different set of risks than is probed in this year's global market shock component.

For instance, while this year's global market shock is characterized by a severe recession with fading inflation expectations, the exploratory market shock is characterized by a less severe recession with greater inflationary pressures induced by higher inflation expectations. Such differences in scenarios could reveal different losses across banks, depending on the positions held in their portfolios.

Consistent with the nature of an exploratory exercise, the exploratory market shock will not contribute to the capital requirements set by this year's stress test. Instead, it will be used to assess the potential of multiple scenarios to capture a wider array of risks in future stress test exercises.

Firm-specific results from the exploratory market shock will be published along with those from the severely adverse scenario in June 2023.

Exploratory Market Shock Description

The exploratory market shock is characterized by a recession with inflationary pressures induced by higher inflation expectations.

Treasury rates increase as short-term rates rise sharply, while longer-term rates increase to a lesser extent. Longer-term government bond rates increase more in Europe compared to the United States, driven by higher inflationary expectations for that region.

The U.S. dollar appreciates against the euro, Swiss franc, and pound sterling as stresses in Europe and its surrounding areas are expected to be particularly intense.

The expected fall in economic activity leads to public equity price declines across global markets, and financial market uncertainty drives increases in public equity volatility. Private equity values experience sizeable declines driven by a weak economic outlook.

Market expectations for reduced economic activity combined with higher funding costs cause corporate credit spreads to widen. Non-agency RMBS market values suffer as home prices decline from lower demand due to higher interest rates.

Commodity prices rise from the threat of worsening supply chain disruptions, with European natural gas prices trending higher.

¹ The U.S. G-SIBs are Bank of America Corporation, The Bank of New York Mellon Corporation, Citigroup Inc., The Goldman Sachs Group, Inc., JPMorgan Chase & Co., Morgan Stanley, State Street Corporation, and Wells Fargo & Company. As in the supervisory stress test, The Bank of New York Mellon Corporation and State Street Corporation are only required to incorporate an additional counterparty default component into their exploratory market shock component. The Bank of New York Mellon Corporation and State Street Corporation will not be required to apply the exploratory market shock component to calculate mark-to-market losses on their trading or credit valuation adjustments exposures.

Counterparty Default Component for the Supervisory Severely Adverse Scenario

Large banks with substantial trading or custodial operations are required to incorporate a counterparty default scenario component into their supervisory severely adverse scenario for 2023 and recognize associated losses in the first quarter of the scenario.¹³ This component involves the unexpected default of the firm's largest counterparty.¹⁴

In connection with the counterparty default scenario component, these banks are required to estimate and report the potential losses and related effects on capital associated with the unexpected default of the counterparty that would generate the largest losses across their derivatives and securities financing transactions, including securities lending or borrowing and repurchase or reverse repurchase agreement activities. The counterparty default scenario component is an add-on to the Federal Reserve's severely adverse scenario.

The largest counterparty of each bank will be determined by net stressed losses. Net stressed losses are estimated by applying the global market shock to revalue securities financing transactions and derivatives, including collateral posted or received. The as-of date for the counterparty default scenario component is October 14, 2022, which is the same as-of date for the global market shock component.¹⁵

¹³ The Board may require a company to include one or more additional components in its severely adverse scenario in the annual stress test based on the company's financial condition, size, complexity, risk profile, scope of operations, or activities, or based on risks to the U.S. economy. See 12 C.F.R. § 252.54(b)(2)(ii).

¹⁴ In selecting its largest counterparty, a firm subject to the counterparty default component will not consider certain sovereign entities (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) or qualifying central counterparties (QCCPs). See definition of a QCCP at 12 C.F.R. § 217.2.

U.S. IHCs are not required to include any affiliate as a counterparty. As in the U.S. final rule pursuant to the Dodd-Frank Act for Single Counterparty Credit Limits, an affiliate of the company includes a parent of the company, as well as any other firm that is consolidated with the company under applicable accounting standards, including U.S. generally accepted accounting principles or International Financial Reporting Standards.

¹⁵ As with the global market shock, a firm subject to the counterparty default component may use data as of the date that corresponds to its weekly internal risk reporting cycle as long as it falls during the business week of the as-of date for the counterparty default scenario component (i.e., October 10–14, 2022).

Variables for the Supervisory Stress Test Scenarios

Table 2.A. Historical data: Domestic variables, Q1:2000–Q4:2022

Percent, unless otherwise indicated

Date	Real GDP growth	Nominal GDP growth	Real disposable income growth	Nominal disposable income growth	Unemployment rate	CPI inflation rate	3-month Treasury rate	5-year Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Prime rate	Level			
													Dow Jones Total Stock Market Index	House Price Index	Commercial Real Estate Price Index	Market Volatility Index
Q1 2000	1.5	4.2	7.2	10.7	4.0	4.0	5.5	6.6	6.7	8.3	8.3	8.7	14,296	102	125	27.0
Q2 2000	7.5	10.2	4.9	6.9	3.9	3.2	5.7	6.5	6.4	8.6	8.3	9.2	13,619	105	134	33.5
Q3 2000	0.4	2.8	5.3	8.0	4.0	3.7	6.0	6.1	6.1	8.2	8.0	9.5	13,613	107	143	21.9
Q4 2000	2.4	4.6	2.5	4.9	3.9	2.9	6.0	5.6	5.8	8.0	7.6	9.5	12,176	110	146	31.7
Q1 2001	-1.3	1.3	3.3	6.4	4.2	3.9	4.8	4.9	5.3	7.5	7.0	8.6	10,646	112	144	32.8
Q2 2001	2.5	5.0	-1.0	0.8	4.4	2.8	3.7	4.9	5.5	7.5	7.1	7.3	11,407	114	144	34.7
Q3 2001	-1.6	0.0	9.0	9.2	4.8	1.1	3.2	4.6	5.3	7.2	7.0	6.6	9,563	116	146	43.7
Q4 2001	1.1	2.4	-6.5	-6.3	5.5	-0.3	1.9	4.2	5.1	7.1	6.8	5.2	10,708	118	139	35.3
Q1 2002	3.4	4.7	9.7	10.6	5.7	1.3	1.7	4.5	5.4	7.4	7.0	4.8	10,776	121	143	26.1
Q2 2002	2.5	3.9	3.3	6.4	5.8	3.2	1.7	4.5	5.4	7.5	6.8	4.8	9,384	124	142	28.4
Q3 2002	1.6	3.6	0.6	2.7	5.7	2.2	1.6	3.4	4.5	7.2	6.3	4.8	7,774	127	144	45.1
Q4 2002	0.5	2.8	2.6	4.5	5.9	2.4	1.3	3.1	4.3	6.9	6.1	4.5	8,343	129	150	42.6
Q1 2003	2.1	4.1	-0.2	2.9	5.9	4.2	1.2	2.9	4.2	6.2	5.8	4.3	8,052	132	155	34.7
Q2 2003	3.6	5.1	5.1	5.5	6.1	-0.7	1.0	2.6	3.8	5.3	5.5	4.2	9,342	135	154	29.1
Q3 2003	6.8	9.3	7.2	10.0	6.1	3.0	0.9	3.1	4.4	5.6	6.0	4.0	9,650	139	150	22.7
Q4 2003	4.7	7.3	1.1	3.1	5.8	1.5	0.9	3.2	4.4	5.4	5.9	4.0	10,800	143	152	21.1
Q1 2004	2.3	5.2	1.8	5.0	5.7	3.4	0.9	3.0	4.1	5.0	5.6	4.0	11,039	148	161	21.6
Q2 2004	3.2	6.5	4.2	7.1	5.6	3.2	1.1	3.7	4.7	5.7	6.1	4.0	11,145	154	169	20.0
Q3 2004	3.8	6.5	2.9	4.9	5.4	2.6	1.5	3.5	4.4	5.4	5.9	4.4	10,894	159	180	19.3
Q4 2004	4.2	7.4	5.2	8.8	5.4	4.4	2.0	3.5	4.3	5.1	5.7	4.9	11,952	165	180	16.6
Q1 2005	4.5	7.9	-4.8	-2.5	5.3	2.0	2.5	3.9	4.4	5.2	5.8	5.4	11,637	172	185	14.7
Q2 2005	2.0	5.0	3.9	6.6	5.1	2.7	2.9	3.9	4.2	5.4	5.7	5.9	11,857	179	189	17.7
Q3 2005	3.2	7.0	1.7	6.1	5.0	6.2	3.4	4.0	4.3	5.4	5.8	6.4	12,283	185	198	14.2
Q4 2005	2.3	5.6	3.4	6.7	5.0	3.8	3.8	4.4	4.6	5.8	6.2	7.0	12,497	190	204	16.5
Q1 2006	5.5	8.5	8.3	10.6	4.7	2.1	4.4	4.6	4.7	5.8	6.2	7.4	13,122	193	211	14.6
Q2 2006	1.0	4.6	1.5	5.1	4.6	3.7	4.7	5.0	5.2	6.3	6.6	7.9	12,809	193	219	23.8
Q3 2006	0.6	3.4	0.8	3.7	4.6	3.8	4.9	4.8	5.0	6.3	6.6	8.3	13,323	191	225	18.6
Q4 2006	3.4	5.0	5.2	4.5	4.4	-1.6	4.9	4.6	4.7	6.0	6.2	8.3	14,216	191	230	12.7
Q1 2007	1.2	5.1	3.0	6.8	4.5	4.0	5.0	4.6	4.8	6.0	6.2	8.3	14,354	189	237	19.6
Q2 2007	2.6	5.3	1.8	5.3	4.5	4.6	4.7	4.7	4.9	6.2	6.4	8.3	15,163	184	246	18.9

(continued)

Table 2.A—continued

Date	Real GDP growth	Nominal GDP growth	Real disposable income growth	Nominal disposable income growth	Unemployment rate	CPI inflation rate	3-month Treasury rate	5-year Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Prime rate	Level			
													Dow Jones Total Stock Market Index	House Price Index	Commercial Real Estate Price Index	Market Volatility Index
Q3 2007	2.4	4.6	0.7	3.0	4.7	2.6	4.3	4.5	4.8	6.5	6.6	8.2	15,318	178	251	30.8
Q4 2007	2.5	4.2	0.6	4.8	4.8	5.0	3.4	3.8	4.4	6.3	6.2	7.5	14,754	173	250	31.1
Q1 2008	-1.6	-0.2	0.7	4.0	5.0	4.4	2.1	2.8	3.9	6.4	5.9	6.2	13,284	166	230	32.2
Q2 2008	2.3	4.4	8.0	12.3	5.3	5.3	1.6	3.2	4.1	6.7	6.1	5.1	13,016	158	234	24.1
Q3 2008	-2.1	0.9	-7.8	-3.8	6.0	6.3	1.5	3.1	4.1	7.1	6.3	5.0	11,826	151	228	46.7
Q4 2008	-8.5	-7.6	4.4	-2.1	6.9	-8.9	0.3	2.2	3.7	9.7	5.8	4.1	9,057	144	221	80.9
Q1 2009	-4.6	-4.8	-0.9	-3.5	8.3	-2.7	0.2	1.9	3.2	9.1	5.1	3.3	8,044	139	208	56.7
Q2 2009	-0.7	-1.4	2.2	3.8	9.3	2.1	0.2	2.3	3.7	8.1	5.0	3.3	9,343	139	171	42.3
Q3 2009	1.5	1.9	-4.8	-2.1	9.6	3.5	0.2	2.5	3.8	6.5	5.2	3.3	10,813	140	166	31.3
Q4 2009	4.3	5.7	0.8	3.9	9.9	3.2	0.1	2.3	3.7	5.8	4.9	3.3	11,385	140	154	30.7
Q1 2010	2.0	3.1	3.1	4.7	9.8	0.6	0.1	2.4	3.9	5.6	5.0	3.3	12,033	140	160	27.3
Q2 2010	3.9	6.0	6.8	7.5	9.6	-0.1	0.1	2.3	3.6	5.4	4.9	3.3	10,646	139	172	45.8
Q3 2010	3.1	4.4	2.6	3.4	9.5	1.2	0.2	1.6	2.9	4.8	4.4	3.3	11,814	137	171	32.9
Q4 2010	2.1	4.5	1.5	4.1	9.5	3.3	0.1	1.5	3.0	4.7	4.4	3.3	13,132	135	172	23.5
Q1 2011	-1.0	1.1	3.9	7.4	9.0	4.3	0.1	2.1	3.5	5.0	4.8	3.3	13,909	134	178	29.4
Q2 2011	2.7	5.5	-1.0	2.9	9.1	4.6	0.0	1.8	3.3	4.8	4.7	3.3	13,844	134	175	22.7
Q3 2011	-0.2	2.3	1.8	3.7	9.0	2.6	0.0	1.1	2.5	4.5	4.3	3.3	11,677	134	173	48.0
Q4 2011	4.6	5.1	1.1	2.5	8.6	1.8	0.0	1.0	2.1	4.8	4.0	3.3	13,019	134	183	45.5
Q1 2012	3.3	5.8	7.6	10.4	8.3	2.3	0.1	0.9	2.1	4.4	3.9	3.3	14,628	136	183	23.0
Q2 2012	1.8	3.5	3.6	4.6	8.2	0.8	0.1	0.8	1.8	4.3	3.8	3.3	14,100	139	182	26.7
Q3 2012	0.7	2.8	-2.6	-1.5	8.0	1.8	0.1	0.7	1.6	3.9	3.6	3.3	14,895	142	185	20.5
Q4 2012	0.4	2.5	11.6	14.2	7.8	2.7	0.1	0.7	1.7	3.6	3.4	3.3	14,835	145	188	22.7
Q1 2013	3.5	5.2	-14.9	-13.6	7.7	1.6	0.1	0.8	1.9	3.7	3.5	3.3	16,396	148	191	19.0
Q2 2013	0.6	1.7	3.0	3.3	7.5	-0.4	0.1	0.9	2.0	3.8	3.7	3.3	16,771	152	202	20.5
Q3 2013	3.2	5.2	1.5	3.2	7.2	2.2	0.0	1.5	2.7	4.7	4.4	3.3	17,718	156	213	17.0
Q4 2013	2.9	5.4	1.2	2.9	6.9	1.5	0.1	1.4	2.8	4.5	4.3	3.3	19,413	159	213	20.3
Q1 2014	-1.4	0.3	5.1	7.1	6.7	2.5	0.0	1.6	2.8	4.4	4.4	3.3	19,711	161	210	21.4
Q2 2014	5.2	7.6	5.4	7.5	6.2	2.1	0.0	1.7	2.7	4.0	4.2	3.3	20,569	162	219	17.0
Q3 2014	4.7	6.6	4.6	5.8	6.1	1.0	0.0	1.7	2.5	3.9	4.1	3.3	20,459	164	223	17.0
Q4 2014	1.8	2.5	5.7	5.2	5.7	-1.0	0.0	1.6	2.3	4.0	4.0	3.3	21,425	167	231	26.3
Q1 2015	3.3	3.1	5.4	3.7	5.5	-2.6	0.0	1.5	2.0	3.9	3.7	3.3	21,708	169	241	22.4
Q2 2015	2.3	4.6	1.1	3.1	5.4	2.8	0.0	1.5	2.2	3.9	3.8	3.3	21,631	171	246	18.9
Q3 2015	1.3	2.5	2.3	3.3	5.1	1.5	0.0	1.6	2.3	4.3	4.0	3.3	19,959	174	246	40.7
Q4 2015	0.6	0.5	2.5	2.1	5.0	0.0	0.1	1.6	2.2	4.4	3.9	3.3	21,101	176	244	24.4
Q1 2016	2.4	2.0	3.1	3.3	4.9	-0.2	0.3	1.4	2.0	4.5	3.7	3.5	21,179	178	240	28.1
Q2 2016	1.2	4.1	-0.7	1.9	4.9	3.2	0.3	1.3	1.8	3.9	3.6	3.5	21,622	180	248	25.8
Q3 2016	2.4	3.6	1.9	3.5	4.9	1.7	0.3	1.2	1.6	3.5	3.4	3.5	22,469	183	257	18.1

(continued)

Table 2.A—continued

Date	Real GDP growth	Nominal GDP growth	Real disposable income growth	Nominal disposable income growth	Unemployment rate	CPI inflation rate	3-month Treasury rate	5-year Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Prime rate	Level			
													Dow Jones Total Stock Market Index	House Price Index	Commercial Real Estate Price Index	Market Volatility Index
Q4 2016	2.0	4.2	2.1	4.1	4.8	2.6	0.4	1.7	2.2	3.9	3.8	3.5	23,277	186	257	22.5
Q1 2017	1.7	3.9	4.0	6.4	4.6	2.8	0.6	2.0	2.5	4.0	4.2	3.8	24,508	188	253	13.1
Q2 2017	2.0	3.3	4.0	5.1	4.4	0.5	0.9	1.8	2.3	3.8	4.0	4.0	25,125	191	266	16.0
Q3 2017	3.4	5.4	2.3	3.8	4.3	1.9	1.0	1.8	2.3	3.7	3.9	4.3	26,149	194	269	16.0
Q4 2017	4.1	7.0	1.6	4.2	4.2	3.2	1.2	2.1	2.4	3.7	3.9	4.3	27,673	197	273	13.1
Q1 2018	2.8	5.3	4.1	7.1	4.0	3.3	1.6	2.5	2.8	4.1	4.3	4.5	27,383	200	275	37.3
Q2 2018	2.8	6.4	3.4	5.6	3.9	2.3	1.8	2.8	2.9	4.5	4.5	4.8	28,314	202	276	23.6
Q3 2018	2.9	4.3	4.3	5.8	3.8	1.7	2.0	2.8	2.9	4.5	4.6	5.0	30,190	204	276	16.1
Q4 2018	0.7	2.6	4.4	6.0	3.8	1.5	2.3	2.9	3.0	4.8	4.8	5.3	25,725	206	273	36.1
Q1 2019	2.2	3.8	5.3	6.1	3.9	1.0	2.4	2.5	2.7	4.5	4.4	5.5	29,194	208	285	25.5
Q2 2019	2.7	5.0	0.0	2.4	3.6	3.2	2.3	2.1	2.4	4.0	4.0	5.5	30,244	210	299	20.6
Q3 2019	3.6	5.0	3.3	4.4	3.6	1.5	2.0	1.7	1.8	3.4	3.7	5.3	30,442	212	296	24.6
Q4 2019	1.8	3.3	2.6	4.1	3.6	2.5	1.6	1.6	1.8	3.3	3.7	4.8	33,035	215	294	20.6
Q1 2020	-4.6	-3.1	2.4	3.9	3.8	1.3	1.1	1.2	1.4	3.4	3.5	4.4	25,985	218	299	82.7
Q2 2020	-29.9	-30.9	46.5	43.8	13.0	-3.4	0.1	0.4	0.7	3.4	3.2	3.3	31,577	220	295	57.1
Q3 2020	35.3	40.1	-15.3	-12.4	8.8	4.8	0.1	0.3	0.6	2.4	3.0	3.3	34,306	227	301	33.6
Q4 2020	3.9	6.6	-9.0	-7.5	6.8	2.2	0.1	0.4	0.9	2.3	2.8	3.3	39,220	235	313	40.3
Q1 2021	6.3	11.7	52.4	59.2	6.2	4.1	0.1	0.6	1.4	2.4	2.9	3.3	41,603	243	314	37.2
Q2 2021	7.0	13.8	-28.8	-24.2	5.9	8.2	0.0	0.8	1.6	2.6	3.0	3.3	44,904	255	322	27.6
Q3 2021	2.7	9.0	-4.6	0.8	5.1	6.7	0.0	0.8	1.4	2.4	2.9	3.3	44,706	266	346	25.7
Q4 2021	7.0	14.3	-4.9	1.0	4.2	7.9	0.1	1.2	1.6	2.7	3.1	3.3	48,634	277	358	31.1
Q1 2022	-1.6	6.6	-10.6	-3.9	3.8	9.2	0.3	1.9	2.0	3.5	3.8	3.3	45,847	290	350	36.5
Q2 2022	-0.6	8.5	-2.3	4.8	3.6	10.5	1.1	3.0	3.0	4.9	5.3	3.9	37,977	298	349	34.8
Q3 2022	3.2	7.7	1.0	5.4	3.6	5.7	2.7	3.3	3.2	5.3	5.6	5.4	36,098	298	358	32.6
Q4 2022	1.7	5.7	2.1	6.0	3.6	3.1	4.0	4.1	3.9	6.1	6.7	6.8	38,521	300	358	33.6

Note: Refer to [Notes Regarding Scenario Variables](#) for more information on the definitions and sources of historical observations of the variables in the table.

Table 2.B. Historical data: International variables, Q1:2000–Q4:2022

Percent, unless otherwise indicated

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate (USD/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index) ¹	Japan real GDP growth	Japan inflation	Japan bilateral dollar exchange rate (yen/USD)	U.K. real GDP growth	U.K. inflation	U.K. bilateral dollar exchange rate (USD/pound)
Q1 2000	5.1	2.6	0.957	7.3	1.5	100.0	7.0	-0.5	102.7	4.7	0.3	1.592
Q2 2000	3.7	0.9	0.955	6.9	-0.3	100.7	1.9	-1.1	106.1	2.6	0.5	1.513
Q3 2000	2.3	3.4	0.884	7.8	2.2	101.4	0.1	-0.4	107.9	2.1	1.0	1.479
Q4 2000	2.8	2.8	0.939	3.6	2.5	105.2	4.0	-1.0	114.4	1.7	1.9	1.496

(continued)

Table 2.B—continued

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate (USD/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index) ¹	Japan real GDP growth	Japan inflation	Japan bilateral dollar exchange rate (yen/USD)	U.K. real GDP growth	U.K. inflation	U.K. bilateral dollar exchange rate (USD/pound)
Q1 2001	4.1	1.2	0.879	4.8	1.7	106.1	3.0	0.7	125.5	3.5	-0.1	1.419
Q2 2001	0.4	4.0	0.847	5.3	2.1	106.2	-3.0	-1.9	124.7	1.5	3.2	1.408
Q3 2001	0.3	1.5	0.910	4.9	1.3	106.5	-4.3	-0.7	119.2	1.9	1.0	1.469
Q4 2001	0.4	1.7	0.890	8.4	0.0	106.9	-1.4	-1.8	131.0	0.7	-0.1	1.454
Q1 2002	0.6	3.1	0.872	7.8	0.5	107.4	0.7	-1.2	132.7	1.4	2.0	1.425
Q2 2002	2.1	2.0	0.986	8.1	1.1	104.8	3.3	0.3	119.9	2.1	0.9	1.525
Q3 2002	1.5	1.6	0.988	7.3	1.5	105.5	1.3	-0.4	121.7	2.9	1.3	1.570
Q4 2002	1.0	2.3	1.049	6.7	0.7	104.5	1.1	-0.8	118.8	3.4	1.9	1.610
Q1 2003	-1.3	3.3	1.090	6.6	3.6	105.5	0.3	0.0	118.1	2.6	1.7	1.579
Q2 2003	0.4	0.5	1.150	1.9	1.1	104.0	2.8	0.3	119.9	3.5	0.2	1.653
Q3 2003	2.1	2.1	1.165	14.6	0.1	102.6	1.2	-0.7	111.4	4.0	1.7	1.662
Q4 2003	3.0	2.3	1.260	12.8	5.5	103.4	4.4	-0.7	107.1	3.1	1.7	1.784
Q1 2004	2.0	2.2	1.229	5.8	4.0	101.4	3.0	0.6	104.2	1.8	1.4	1.840
Q2 2004	2.5	2.6	1.218	7.1	4.1	102.8	0.0	-0.3	109.4	2.1	0.8	1.813
Q3 2004	0.9	2.0	1.242	8.3	4.1	102.7	2.5	-0.1	110.2	1.0	1.1	1.809
Q4 2004	1.6	2.4	1.354	6.3	0.8	98.9	-0.7	2.0	102.7	1.3	2.4	1.916
Q1 2005	0.8	1.4	1.297	10.6	2.9	98.5	2.1	-1.2	107.2	3.0	2.6	1.889
Q2 2005	2.5	2.2	1.210	8.7	1.5	98.9	3.1	-1.0	110.9	3.8	1.8	1.793
Q3 2005	3.0	3.1	1.206	9.4	2.4	98.5	4.1	-1.1	113.3	3.5	2.8	1.770
Q4 2005	2.6	2.5	1.184	11.6	1.6	98.1	0.7	0.4	117.9	4.2	1.4	1.719
Q1 2006	3.5	1.7	1.214	10.8	2.4	96.7	0.6	1.1	117.5	1.4	1.9	1.739
Q2 2006	4.5	2.5	1.278	7.2	3.2	96.6	0.6	0.4	114.5	0.9	3.0	1.849
Q3 2006	2.4	2.0	1.269	10.2	2.2	96.3	-0.8	0.4	118.0	0.6	3.3	1.872
Q4 2006	4.8	0.9	1.320	11.4	3.6	94.5	5.5	-0.6	119.0	1.8	2.6	1.959
Q1 2007	2.4	2.3	1.337	13.8	3.6	93.9	2.7	-0.7	117.6	4.2	2.5	1.969
Q2 2007	2.9	2.3	1.352	10.5	4.9	91.8	0.1	0.4	123.4	2.7	1.8	2.006
Q3 2007	1.8	2.1	1.422	8.6	7.6	90.5	-2.1	0.3	115.0	3.1	0.3	2.039
Q4 2007	2.1	4.9	1.460	13.1	5.9	89.4	1.8	2.0	111.7	2.7	4.0	1.984
Q1 2008	2.1	4.2	1.581	7.0	8.1	88.0	1.4	1.4	99.9	2.0	3.4	1.986
Q2 2008	-1.3	3.2	1.575	6.0	6.3	88.7	-2.4	1.7	106.2	-1.9	5.8	1.991
Q3 2008	-2.1	3.2	1.408	2.9	3.0	91.6	-4.8	3.8	105.9	-5.9	5.9	1.780
Q4 2008	-7.1	-1.4	1.392	0.6	-1.1	92.3	-9.5	-2.4	90.8	-8.6	0.4	1.462
Q1 2009	-11.8	-1.0	1.326	4.2	-1.4	94.3	-17.9	-3.5	99.2	-7.5	-0.2	1.430
Q2 2009	-0.1	0.0	1.402	15.0	2.3	92.3	8.0	-1.5	96.4	-1.1	2.3	1.645
Q3 2009	1.6	1.1	1.463	12.6	4.1	91.3	-0.2	-1.5	89.5	0.5	3.6	1.600
Q4 2009	1.7	1.6	1.433	9.7	5.0	90.7	5.1	-1.4	93.1	1.4	2.8	1.617
Q1 2010	1.8	1.8	1.353	9.6	4.4	89.8	4.3	1.0	93.4	3.9	4.2	1.519
Q2 2010	3.9	1.9	1.229	9.5	3.4	91.1	4.8	-1.4	88.5	4.7	3.3	1.495

(continued)

Table 2.B—continued

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate (USD/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index) ¹	Japan real GDP growth	Japan inflation	Japan bilateral dollar exchange rate (yen/USD)	U.K. real GDP growth	U.K. inflation	U.K. bilateral dollar exchange rate (USD/pound)
Q3 2010	1.7	1.6	1.360	8.8	4.2	88.4	7.5	-2.0	83.5	2.6	2.2	1.573
Q4 2010	2.4	2.6	1.327	9.6	7.5	87.4	-3.2	1.4	81.7	0.6	3.9	1.539
Q1 2011	3.7	3.7	1.418	9.6	6.2	86.5	-4.1	-0.4	82.8	1.0	7.0	1.605
Q2 2011	-0.1	3.1	1.452	6.8	5.4	85.3	-3.5	-0.7	80.6	0.2	4.6	1.607
Q3 2011	0.6	1.3	1.345	5.6	5.3	87.4	10.1	0.4	77.0	0.6	3.5	1.562
Q4 2011	-1.7	3.5	1.297	6.5	3.0	87.3	-0.5	-0.6	77.0	-0.2	3.4	1.554
Q1 2012	-0.9	2.9	1.333	7.6	3.2	86.3	5.7	2.3	82.4	3.4	2.3	1.599
Q2 2012	-1.1	2.2	1.267	5.8	3.9	88.1	-3.6	-1.4	79.8	-0.2	1.9	1.569
Q3 2012	-0.4	1.5	1.286	6.6	2.2	86.3	-1.5	-2.0	77.9	5.1	2.1	1.613
Q4 2012	-1.8	2.6	1.319	7.2	3.5	86.0	-0.3	0.1	86.6	-0.4	4.2	1.626
Q1 2013	-1.3	1.3	1.282	6.7	4.6	86.3	5.7	0.6	94.2	0.9	3.0	1.519
Q2 2013	2.1	0.2	1.301	6.2	2.8	87.2	3.6	0.0	99.2	2.7	1.5	1.521
Q3 2013	1.2	1.1	1.354	7.7	3.6	86.6	3.9	2.7	98.3	3.0	2.1	1.618
Q4 2013	1.2	0.5	1.378	6.8	3.8	85.8	-0.5	2.4	105.3	2.6	1.7	1.657
Q1 2014	1.7	0.9	1.378	6.1	1.4	86.9	3.3	1.0	103.0	3.8	1.8	1.668
Q2 2014	0.8	-0.4	1.369	7.4	2.6	86.7	-7.0	8.3	101.3	3.5	1.4	1.711
Q3 2014	2.0	0.1	1.263	6.6	2.5	87.0	0.3	1.9	109.7	3.1	0.8	1.622
Q4 2014	1.4	0.0	1.210	5.8	0.9	88.1	1.9	-0.8	119.9	2.6	-0.3	1.558
Q1 2015	2.6	-0.8	1.074	6.3	0.9	88.1	6.4	0.1	120.0	1.7	-1.3	1.485
Q2 2015	1.9	2.4	1.115	6.9	2.8	88.5	0.5	1.1	122.1	2.6	0.8	1.573
Q3 2015	1.7	-0.2	1.116	6.5	2.8	91.1	0.4	0.3	119.8	1.7	0.7	1.512
Q4 2015	1.9	-0.4	1.086	5.7	1.1	92.3	-0.7	-0.8	120.3	3.0	0.0	1.475
Q1 2016	2.2	-1.4	1.139	7.0	3.0	91.8	3.0	-0.5	112.4	1.5	0.0	1.438
Q2 2016	0.9	1.5	1.103	6.9	3.0	94.2	-0.6	0.0	102.8	2.5	0.7	1.324
Q3 2016	1.9	1.3	1.124	6.6	1.2	93.7	0.8	-0.4	101.2	1.8	2.0	1.302
Q4 2016	3.1	1.7	1.055	5.8	1.6	97.6	0.6	2.1	116.8	2.6	2.1	1.234
Q1 2017	2.8	2.6	1.070	6.2	1.3	95.2	3.3	-0.5	111.4	3.0	3.8	1.254
Q2 2017	3.2	0.5	1.141	6.7	2.3	94.8	1.3	0.7	112.4	2.2	3.1	1.300
Q3 2017	3.1	1.1	1.181	5.8	2.3	93.7	3.4	0.4	112.6	2.1	2.2	1.340
Q4 2017	3.3	1.7	1.202	6.0	2.4	91.1	0.5	1.6	112.7	2.5	3.1	1.353
Q1 2018	0.0	1.8	1.232	8.5	2.5	89.1	0.4	2.2	106.2	0.6	2.5	1.403
Q2 2018	2.2	2.2	1.168	6.4	1.9	93.5	1.1	-1.1	110.7	1.8	1.9	1.320
Q3 2018	0.0	2.8	1.162	2.9	3.0	97.3	-2.0	1.8	113.5	2.2	2.5	1.305
Q4 2018	2.6	1.0	1.146	5.3	1.0	96.3	-0.5	0.7	109.7	1.0	2.1	1.276
Q1 2019	2.5	-0.5	1.123	8.4	1.1	94.4	0.9	-0.5	110.7	2.5	0.9	1.303
Q2 2019	1.3	2.2	1.137	6.3	5.0	96.5	1.2	1.2	107.8	0.4	2.6	1.270
Q3 2019	0.8	1.2	1.091	0.5	3.5	99.9	0.9	0.0	108.1	2.5	1.7	1.231
Q4 2019	0.1	1.3	1.123	3.9	6.4	97.9	-10.4	1.3	108.7	-0.1	0.4	1.327

(continued)

Table 2.B—continued

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate (USD/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index) ¹	Japan real GDP growth	Japan inflation	Japan bilateral dollar exchange rate (yen/USD)	U.K. real GDP growth	U.K. inflation	U.K. bilateral dollar exchange rate (USD/pound)
Q1 2020	-12.8	-0.5	1.102	-23.4	3.7	101.5	1.8	0.1	107.5	-10.2	2.0	1.245
Q2 2020	-38.5	-1.2	1.124	35.0	-1.9	97.5	-28.2	-0.8	107.8	-61.0	-1.7	1.237
Q3 2020	59.3	0.4	1.172	20.0	2.1	95.8	24.2	-0.5	105.6	84.9	1.7	1.292
Q4 2020	-1.0	0.4	1.223	12.7	-0.4	92.8	7.9	-2.5	103.2	4.9	0.1	1.366
Q1 2021	-0.2	4.6	1.174	5.6	3.2	93.5	-0.6	1.8	110.6	-4.1	2.4	1.380
Q2 2021	8.2	1.9	1.185	4.3	2.4	91.7	1.3	-1.6	111.1	28.8	4.0	1.381
Q3 2021	9.3	4.6	1.158	0.6	1.2	93.0	-1.8	1.6	111.5	7.1	4.7	1.347
Q4 2021	2.2	7.6	1.132	7.7	2.7	92.5	4.9	0.4	115.2	6.2	8.6	1.350
Q1 2022	2.5	10.6	1.109	6.1	2.0	92.9	-1.8	3.0	121.4	2.5	7.7	1.315
Q2 2022	3.2	9.5	1.047	-2.8	6.9	98.5	4.5	4.7	135.7	0.2	16.0	1.216
Q3 2022	1.3	9.7	0.978	6.3	2.5	104.1	-0.8	3.4	144.7	-1.2	8.0	1.113
Q4 2022	-0.7	10.1	1.070	4.0	3.0	101.4	2.7	2.5	131.8	-0.2	8.5	1.208

Note: Refer to [Notes Regarding Scenario Variables](#) for more information on the definitions and sources of historical observations of the variables in the table.

¹ F/USD denotes foreign currency index, relative to the U.S. dollar, obtained as a weighted average of the exchange rates of the countries in the developing Asia bloc.

Table 3.A. Supervisory baseline scenario: Domestic variables, Q1:2023–Q1:2026

Percent, unless otherwise indicated

Date	Real GDP growth	Nominal GDP growth	Real disposable income growth	Nominal disposable income growth	Unemployment rate	CPI inflation rate	3-month Treasury rate	5-year Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Prime rate	Level			
													Dow Jones Total Stock Market Index	House Price Index	Commercial Real Estate Price Index	Market Volatility Index
Q1 2023	-0.5	2.9	1.8	5.1	3.9	3.2	4.7	4.0	3.9	5.9	6.2	7.4	38,521	301	361	30.7
Q2 2023	-0.9	2.1	0.7	3.5	4.3	2.9	4.8	4.0	3.8	5.8	5.9	7.6	38,521	303	364	29.0
Q3 2023	0.0	2.6	1.5	4.0	4.6	2.7	4.6	3.9	3.7	5.6	5.6	7.4	38,521	304	366	27.2
Q4 2023	0.9	3.4	2.0	4.3	4.8	2.4	4.4	3.7	3.6	5.5	5.4	7.2	38,521	306	369	28.4
Q1 2024	1.5	3.9	2.4	4.6	4.9	2.2	4.0	3.6	3.5	5.4	5.2	6.8	38,521	307	372	28.5
Q2 2024	1.9	4.1	2.4	4.5	4.9	2.1	3.7	3.5	3.4	5.3	5.0	6.5	38,521	309	375	28.6
Q3 2024	2.2	4.3	2.4	4.3	4.8	2.2	3.3	3.4	3.3	5.3	4.9	6.2	38,521	310	377	28.4
Q4 2024	2.3	4.4	2.4	4.4	4.7	2.1	3.1	3.3	3.3	5.2	4.9	6.0	38,521	312	380	28.4
Q1 2025	2.2	4.4	2.1	4.2	4.6	2.2	3.0	3.2	3.3	5.2	4.8	5.9	38,521	314	383	28.5
Q2 2025	2.1	3.9	2.0	4.1	4.6	2.2	3.0	3.1	3.3	5.2	4.8	5.9	38,521	315	386	28.5
Q3 2025	2.1	3.8	2.0	4.0	4.6	2.2	3.0	3.0	3.3	5.2	4.8	5.9	38,521	317	389	28.5
Q4 2025	2.1	3.8	2.0	4.0	4.6	2.2	3.0	3.0	3.2	5.2	4.8	5.9	38,521	318	392	28.5
Q1 2026	2.0	3.9	2.0	4.0	4.6	2.2	3.0	2.9	3.2	5.2	4.8	5.9	38,521	320	395	28.4

Note: Refer to [Notes Regarding Scenario Variables](#) for more information on the definitions and sources of historical observations of the variables in the table.**Table 3.B. Supervisory baseline scenario: International variables, Q1:2023–Q1:2026**

Percent, unless otherwise indicated

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate (USD/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index) ¹	Japan real GDP growth	Japan inflation	Japan bilateral dollar exchange rate (yen/USD)	U.K. real GDP growth	U.K. inflation	U.K. bilateral dollar exchange rate (USD/pound)
Q1 2023	-0.6	6.1	1.069	4.3	2.8	101.5	1.2	2.1	130.9	-1.3	7.2	1.215
Q2 2023	-0.2	4.8	1.067	4.6	2.6	101.6	0.1	1.7	130.1	-2.1	6.0	1.222
Q3 2023	0.3	3.8	1.066	4.8	2.6	101.7	-0.2	1.4	129.3	-2.0	4.7	1.230
Q4 2023	0.8	2.9	1.065	4.9	2.6	101.8	0.3	1.2	128.4	-0.9	3.6	1.237
Q1 2024	1.6	2.3	1.065	4.9	2.7	101.8	1.4	1.2	128.4	1.1	2.5	1.237
Q2 2024	2.0	1.9	1.065	4.9	2.7	101.8	2.1	1.2	128.4	2.3	1.7	1.237
Q3 2024	2.1	1.7	1.065	4.8	2.7	101.8	2.1	1.2	128.4	2.7	1.1	1.237
Q4 2024	1.9	1.8	1.065	4.8	2.6	101.8	1.6	1.3	128.4	2.6	0.8	1.237
Q1 2025	1.6	2.0	1.065	4.8	2.5	101.8	0.5	1.3	128.4	2.2	0.6	1.237
Q2 2025	1.4	2.1	1.065	4.8	2.3	101.8	-0.1	1.4	128.4	2.0	0.6	1.237
Q3 2025	1.4	2.2	1.065	4.8	2.3	101.8	-0.3	1.4	128.4	1.9	0.6	1.237
Q4 2025	1.4	2.1	1.065	4.7	2.3	101.8	-0.1	1.4	128.4	2.0	0.7	1.237
Q1 2026	1.4	1.9	1.065	4.7	2.4	101.8	0.2	1.4	128.4	2.1	0.9	1.237

Note: Refer to [Notes Regarding Scenario Variables](#) for more information on the definitions and sources of historical observations of the variables in the table.¹ F/USD denotes foreign currency index, relative to the U.S. dollar, obtained as a weighted average of the exchange rates of the countries in the developing Asia bloc.

Table 4.A. Supervisory severely adverse scenario: Domestic variables, Q1:2023–Q1:2026

Percent, unless otherwise indicated

Date	Real GDP growth	Nominal GDP growth	Real disposable income growth	Nominal disposable income growth	Unemployment rate	CPI inflation rate	3-month Treasury rate	5-year Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Prime rate	Level			
													Dow Jones Total Stock Market Index	House Price Index	Commercial Real Estate Price Index	Market Volatility Index
Q1 2023	-12.5	-10.1	-7.9	-5.8	5.6	2.3	1.7	1.2	1.1	5.8	4.0	4.7	24,338	249	348	70.0
Q2 2023	-6.7	-5.3	-3.0	-1.8	6.8	1.5	1.0	0.9	0.8	6.3	3.7	4.0	22,132	229	337	75.0
Q3 2023	-8.0	-7.0	-3.4	-2.4	8.1	1.3	0.1	0.8	0.8	6.5	3.8	3.1	21,502	213	323	65.4
Q4 2023	-5.9	-4.9	-2.1	-0.9	9.2	1.3	0.1	0.8	0.8	6.6	3.8	3.1	21,186	202	301	58.0
Q1 2024	-1.8	-0.7	0.3	1.6	9.7	1.4	0.1	0.9	0.9	6.4	3.8	3.1	21,817	194	277	52.1
Q2 2024	0.6	1.9	1.5	2.8	9.9	1.4	0.1	0.9	1.0	6.1	3.7	3.1	22,762	190	255	47.4
Q3 2024	0.9	2.2	1.7	2.9	10.0	1.4	0.1	1.0	1.1	5.8	3.5	3.1	24,023	186	234	43.6
Q4 2024	6.3	7.6	5.3	6.6	9.5	1.5	0.1	1.0	1.2	5.5	3.4	3.1	25,599	191	215	40.6
Q1 2025	5.9	7.2	5.3	6.7	9.0	1.5	0.1	1.0	1.3	5.1	3.3	3.1	27,490	196	218	38.2
Q2 2025	5.6	6.4	5.1	6.5	8.6	1.5	0.1	1.0	1.3	4.8	3.2	3.1	29,381	202	220	36.2
Q3 2025	5.3	6.3	4.8	6.3	8.2	1.6	0.1	1.0	1.4	4.5	3.1	3.1	32,217	207	223	34.7
Q4 2025	5.0	6.1	4.5	6.0	7.8	1.6	0.1	1.0	1.5	4.1	3.1	3.1	35,369	212	226	33.4
Q1 2026	4.7	6.0	4.2	5.7	7.5	1.6	0.1	1.1	1.5	3.8	3.1	3.1	38,521	216	228	32.4

Note: Refer to [Notes Regarding Scenario Variables](#) for more information on the definitions and sources of historical observations of the variables in the table.**Table 4.B. Supervisory severely adverse scenario: International variables, Q1:2023–Q1:2026**

Percent, unless otherwise indicated

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate (USD/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index) ¹	Japan real GDP growth	Japan inflation	Japan bilateral dollar exchange rate (yen/USD)	U.K. real GDP growth	U.K. inflation	U.K. bilateral dollar exchange rate (USD/pound)
Q1 2023	-5.8	5.3	1.061	-1.7	0.8	102.2	-8.9	0.6	128.7	-4.2	6.8	1.198
Q2 2023	-5.2	3.4	1.053	-0.4	-0.7	103.1	-6.5	-0.3	127.9	-4.6	5.2	1.188
Q3 2023	-4.3	2.4	1.032	1.9	-0.6	105.2	-4.7	-0.8	127.6	-3.8	4.0	1.165
Q4 2023	-4.1	1.2	1.015	2.5	-1.2	106.9	-4.2	-1.2	127.1	-3.6	2.7	1.146
Q1 2024	-3.9	0.3	1.011	4.4	-1.0	107.3	-3.8	-1.5	126.5	-3.4	1.3	1.141
Q2 2024	-3.7	-0.3	1.007	5.4	-1.0	107.7	-3.3	-1.7	126.3	-3.2	0.2	1.137
Q3 2024	1.0	-0.5	1.009	3.8	-1.1	107.5	1.0	-1.4	126.5	1.0	-0.4	1.139
Q4 2024	4.2	0.2	1.011	6.7	0.2	107.3	4.5	-0.6	126.6	3.5	-0.3	1.141
Q1 2025	5.3	0.7	1.019	7.1	0.6	106.4	5.5	0.1	127.1	4.4	-0.2	1.151
Q2 2025	6.3	1.2	1.036	7.6	1.4	104.7	6.5	0.9	127.3	5.3	0.1	1.169
Q3 2025	7.4	1.9	1.044	8.0	2.5	103.9	7.0	1.6	127.6	6.2	0.6	1.179
Q4 2025	8.4	2.5	1.053	8.5	3.6	103.1	7.5	2.2	127.7	7.0	1.2	1.188
Q1 2026	9.5	3.0	1.061	8.4	4.5	102.2	8.5	2.7	128.0	7.9	1.8	1.198

Note: Refer to [Notes Regarding Scenario Variables](#) for more information on the definitions and sources of historical observations of the variables in the table.¹ F/USD denotes foreign currency index, relative to the U.S. dollar, obtained as a weighted average of the exchange rates of the countries in the developing Asia bloc.

Notes Regarding Scenario Variables

The following are descriptions of data through 2022:Q4 (as released through January 12, 2023). The 2022:Q4 values of variables marked with an asterisk (*) are estimates.

***U.S. real GDP growth:** Quarterly percent change in real gross domestic product (chained 2012 dollars), expressed at an annualized rate, Bureau of Economic Analysis (NIPA table 1.1.6, line 1).

***U.S. nominal GDP growth:** Quarterly percent change in gross domestic product (current dollars), expressed at an annualized rate, Bureau of Economic Analysis (NIPA table 1.1.5, line 1).

***U.S. real disposable income growth:** Quarterly percent change in real disposable personal income (current-dollar values divided by the price index for personal consumption expenditures), expressed at an annualized rate, Bureau of Economic Analysis (NIPA table 2.1, line 27, and NIPA table 1.1.4, line 2).

***U.S. nominal disposable income growth:** Quarterly percent change in disposable personal income (current dollars), expressed at an annualized rate, Bureau of Economic Analysis (NIPA table 2.1, line 27).

U.S. unemployment rate: Quarterly average of seasonally adjusted monthly unemployment rates for the civilian, non-institutional population aged 16 years and older, Bureau of Labor Statistics (series LNS14000000).

U.S. CPI inflation: Percent change in the quarterly average of seasonally adjusted monthly levels of the all-items CPI for all urban consumers (CPI-U), expressed at an annualized rate, Bureau of Labor Statistics (series CUSR0000SA0).

U.S. 3-month Treasury rate: Quarterly average of 3-month Treasury bill secondary market rate on a discount basis, H.15 Release, Selected Interest Rates, Federal Reserve Board (series RIFSGFSM03_N.B).

U.S. 5-year Treasury yield: Quarterly average of the yield on 5-year U.S. Treasury notes, constructed for the FRB/US model by Federal Reserve staff based on the Svensson smoothed term structure model (see Lars E. O. Svensson, 1995, "Estimating Forward Interest Rates with the Extended Nelson–Siegel Method," *Quarterly Review*, no. 3, Sveriges Riksbank, pp. 13–26).

U.S. 10-year Treasury yield: Quarterly average of the yield on 10-year U.S. Treasury notes, constructed for the FRB/US model by Federal Reserve staff based on the Svensson smoothed term structure model; (see Svensson, "Estimating Forward Interest Rates").

U.S. BBB corporate yield: Quarterly average of ICE BofAML U.S. Corporate 7-10 Year Yield-to-Maturity Index, ICE Data Indices, LLC, used with permission. (C4A4 series.)

U.S. mortgage rate: Quarterly average of weekly series for the interest rate of a conventional, conforming, 30-year fixed-rate mortgage, obtained from the Primary Mortgage Market Survey of the Federal Home Loan Mortgage Corporation.

U.S. prime rate: Quarterly average of monthly series, H.15 Release (Selected Interest Rates), Federal Reserve Board (series RIFSPBLP_N.M).

U.S. Dow Jones Total Stock Market (Float Cap) Index: End-of-quarter value via Bloomberg Finance LP

***U.S. House Price Index:** Price Index for Owner-Occupied Real Estate, Z.1 Release (Financial Accounts of the United States), Federal Reserve Board (series FL075035243.Q divided by 1000).

***U.S. Commercial Real Estate Price Index:** Commercial Real Estate Price Index, Z.1 Release (Financial Accounts of the United States), Federal Reserve Board (series FL075035503.Q divided by 1000).

U.S. Market Volatility Index (VIX): VIX converted to quarterly frequency using the maximum close-of-day value in any quarter, Chicago Board Options Exchange via Bloomberg Finance LP

***Euro area real GDP growth:** Quarterly percent change in real gross domestic product at an annualized rate, staff calculations based on Statistical Office of the European Communities via Haver, extended back using ECB Area Wide Model dataset (ECB Working Paper series no. 42).

Euro area inflation: Percent change in the quarterly average of the harmonized index of consumer prices at an annualized rate, staff calculations based on Statistical Office of the European Communities via Haver.

***Developing Asia real GDP growth:** Quarterly percent change in real gross domestic product at an annualized rate, staff calculations based on data from Bank of Korea via Haver; National Bureau of Statistics of China via Haver; Indian Central Statistics Office via Haver; Census and Statistics Department of Hong Kong via Haver; and Taiwan Directorate-General of Budget, Accounting and Statistics via Haver.

***Developing Asia inflation:** Percent change in the quarterly average of the consumer price index, or local equivalent, at an annualized rate, staff calculations based on data from National Bureau of

Statistics of China via Haver; Indian Ministry of Statistics and Programme Implementation via Haver; Labour Bureau of India via Haver; Statistics Korea (KOSTAT) via Haver; Census and Statistics Department of Hong Kong via Haver; and Taiwan Directorate-General of Budget, Accounting and Statistics via Haver.

***Japan real GDP growth:** Quarterly percent change in gross domestic product at an annualized rate from 1980 to present and percent change in gross domestic expenditure at an annualized rate prior to 1980, Cabinet Office of Japan via Haver.

***Japan inflation:** Percent change in the quarterly average of the consumer price index at an annualized rate, based on data from the Ministry of Internal Affairs and Communications via Haver.

***U.K. real GDP growth:** Quarterly percent change in gross domestic product at an annualized rate, U.K. Office for National Statistics via Haver.

***U.K. inflation:** Percent change in the quarterly average of the consumer price index at an annualized rate from 1988 to present and percent change in the quarterly average of the retail prices index prior to 1988, staff calculations based on data from the U.K. Office for National Statistics via Haver.

Exchange rates: End-of-quarter exchange rates, H.10 Release (Foreign Exchange Rates), Federal Reserve Board.



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