Dodd-Frank Act Stress Test Baseline and Severely Adverse Scenarios

February 12, 2021

Brief Description of the Scenarios

In the ***baseline scenario*** for the United States, real Gross Domestic Product (GDP) growth averages 4 percent in 2021, slows to 2½ percent by the end of 2022, and slows further to 2¼ percent at the end of the scenario period. The unemployment rate declines gradually from 6¾ percent at the end of 2020 to 4½ percent at the end of the scenario period, and CPI inflation averages between 1¾ to 2¼ percent each year. Accompanying this moderate expansion, short-term Treasury yields are assumed to rise gradually while longer-term yields rise modestly over time, consistent with some steepening of the yield curve over the scenario period. Equity prices rise 3¼ percent in 2021 and about 3½ percent per year thereafter, and equity market volatility falls gradually from 32¾ in early 2021 to 26½ by the end of the scenario period. The baseline scenario for international economic activity and inflation features a relatively steady expansion in activity, albeit one that proceeds at different rates across countries.

The ***severely adverse scenario*** is characterized by a severe global recession accompanied by a period of heightened stress in commercial real estate and corporate debt markets. U.S. real GDP falls 4 percent from its pre-recession peak, with unemployment reaching 10¾ percent and CPI inflation falling as low as 1 percent at an annual rate. Asset prices drop sharply in this scenario. The international component of this scenario features severe recessions in the euro area, the United Kingdom, and Japan, and a significant deceleration in activity in developing Asia.

It is important to recognize that these scenarios are not forecasts. Rather, they are designed to assess the strength and resilience of covered institutions in varying economic environments.

Introduction

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (DFA),[1] as implemented in the stress testing rule issued by the Office of the Comptroller of the Currency (OCC), requires certain national banks and federal savings associations to conduct periodic stress tests using scenarios provided by the OCC.[2] This note provides a narrative on the two scenarios to be used for this year's stress test. The OCC developed these scenarios in coordination with the Federal Reserve Board and the Federal Deposit Insurance Corporation.[3]

Supervisory Scenarios

Scenario timing and variables: The scenarios start in the first quarter of 2021 and extend through the first quarter of 2024. Each scenario includes 28 variables; this set of variables is the same as the set provided in last year's supervisory 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 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; and,
- **Six measures of interest rates:** the rate on 3-month Treasury securities; the yield for 5-year Treasury securities; the yield for 10-year Treasury securities; the yield for 10-year BBB 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 block:** quarterly percent changes (at an annual rate) in real GDP and in consumer price indexes or local equivalent, and the level of the U.S. dollar exchange rate.
- **Four countries or country blocs:** the euro area (the 19 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.

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[1] Public Law 111-203, 124 Stat. 1376 (2010), codified at 12 U.S.C. 5365, as amended by the Economic Growth, Regulatory Relief, and Consumer Protection Act, Pub. L. 115-174, 132 Stat. 1296-1368 (2018).
[2] 12 CFR part 46. *See also* 77 Fed. Reg. 195 (Oct. 9, 2012); 84 FR 54472 (Oct. 10, 2019).
[3] *See* 78 FR 64153 (October 28, 2013) (Policy Statement on the Principles for Development and Distribution of Annual Stress Test Scenarios).

Baseline and Severely Adverse Scenarios

The following sections describe the baseline and severely adverse scenarios. The specific values for all variables included in the scenarios are provided as an Excel spreadsheet on the OCC's website at http://www.occ.treas.gov/tools-forms/forms/bank-operations/stress-test-reporting.html. Further, this document provides a qualitative summary of the global market shock that certain banks with significant trading activity will be required to apply to their trading and counterparty positions as of October 9, 2020.

Baseline Scenario

The baseline outlook for U.S. real activity, inflation, and interest rates is similar to the October 2020 and January 2021 consensus projections from *Blue Chip Economic Indicators* and *Blue Chip Financial Forecasts*.[4] This scenario does not represent a forecast of the OCC.

The baseline scenario for the United States is a moderate economic expansion over the 13-quarter scenario period. Quarterly real GDP growth averages 4 percent (annual rate) in 2021, slows to 2½ percent by the end of 2022, and slows further to about 2¼ percent at the end of the scenario period. The unemployment rate declines gradually from 6¾ percent at the end of 2020 to 4½ percent at the end of the scenario period. Quarterly CPI inflation is relatively steady over the 13-quarter period, ranging from 1¾ to 2¼ percent at an annual rate.

Accompanying the moderate economic expansion, short-term Treasury rates are assumed to gradually rise from 0 percent to ¾ percent by the end of the scenario period. Longer-dated Treasury yields also are assumed to rise modestly over time consistent with some steepening of the yield curve over most of the scenario period. Yields on 10-year Treasury securities rise from 1 percent in early 2021 to almost 1½ percent in early 2022, and continue rising gradually to reach almost 2 percent by the end of the scenario period. The prime rate moves in line with short-term Treasury rates, while both corporate bond yields and mortgage rates rise in line with long-term Treasury yields. Equity prices rise 3¼ percent in 2021 and about 3½ percent per year thereafter. Equity market volatility, as measured by the VIX, falls gradually from 32¾ in early 2021 to 26½ by the end of the scenario period. Nominal house prices rise 3½ percent in 2021, 3¾ percent in 2022, and 4 percent in 2023. Commercial real estate prices fall 4 percent from the fourth quarter of 2020 through the third quarter of 2021, and then rise 5 percent through the fourth quarter of 2022 and another 4 percent in 2023.

The baseline paths for the international variables are similar to the trajectories reported in the January 2021 *Blue Chip Economic Indicators* and the International Monetary Fund's October 2020 *World Economic Outlook*.[5] The baseline scenario features a relatively steady expansion in international economic activity, albeit at different rates across the four country blocs: Annualized

[4] The near-term forecast is similar to the January 2021 release, while the long-range forecast is similar to the October 2020 release. See Wolters Kluwer Legal and Regulatory Solutions, *Blue Chip Economic Indicators* and *Blue Chip Financial Forecasts*.

[5] See International Monetary Fund, *World Economic Outlook* (October 2020), https://www.imf.org/en/Publications/WEO/Issues/2020/09/30/world-economic-outlook-october-2020. The January 2021 update to the *World Economic Outlook* was released after the finalization of the scenarios.

quarterly real GDP growth in developing Asia averages about 5 percent through the scenario period, 3¾ percent in the euro area, 2 percent in Japan, and 4¼ percent in the United Kingdom.

Severely Adverse Scenario

The severely adverse scenario is characterized by a severe global recession accompanied by a period of heightened stress in commercial real estate and corporate debt markets. This is a hypothetical scenario designed to assess the strength and resilience of banking organizations and does not represent a forecast of the OCC.

The U.S. unemployment rate climbs to a peak of 10¾ percent in the third quarter of 2022, a 4 percentage point increase relative to its fourth quarter 2020 level. Real GDP falls 4 percent from the fourth quarter of 2020 to its trough in the third quarter of 2022. The decline in activity is accompanied by lower CPI inflation, which quickly falls to an annual rate of about 1 percent in the second quarter of 2021 and stays at that level for another quarter before gradually rising to 2¼ percent by the end of the scenario period.

In line with the sharp decline in real activity, the 3-month Treasury rate remains near zero throughout the scenario. The 10-year Treasury yield immediately falls to ¼ percent during the first quarter of 2021 and stays there through the first quarter of 2022, after which it gradually rises, reaching 1½ percent by the end of the scenario period. The result is a gradual steepening of the yield curve over much of the scenario period.

Conditions in corporate and real estate lending markets deteriorate markedly. The spread between yields on investment-grade corporate bonds and yields on 10-year Treasury securities widens to almost 5¾ percentage points by the third quarter of 2021, an increase of 4¼ percentage points relative to the fourth quarter of 2020. The spread between mortgage rates and 10-year Treasury yields widens to 3½ percentage points over the same period.

Asset prices drop sharply in this scenario. Equity prices fall 55 percent through the third quarter of 2021, accompanied by a rise in the VIX, which reaches a peak of 70. House prices and commercial real estate prices also experience large overall declines. House prices decline 23½ percent through the end of 2022, while commercial real estate prices fall 40 percent through the first quarter of 2023.

The international component of this scenario features severe recessions in the euro area, the United Kingdom, and Japan, and a significant deceleration of activity (though still with positive growth for most of the scenario period) in developing Asia. The U.S. dollar appreciates against the euro, the pound sterling, and the currencies of developing Asia, but depreciates modestly against the yen, reflecting flight-to-safety capital flows.

Additional Key Features of the Severely Adverse Scenario

Stresses in the corporate loan market should be assumed to be more intense for lower-rated nonfinancial firms. 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 representative of risks to certain industries and property types that are being significantly affected by adjustments related to the COVID-19 event in the United States. Declines in U.S. house prices and U.S. commercial real estate prices should also be assumed to be representative of risks to house prices and commercial real estate prices in foreign regions and economies that experienced rapid price gains before the COVID-19 event and were significantly affected by the event. Moreover, although the weakness in euro area economic conditions reflects a broad-based contraction in euro area demand, this contraction should be assumed to be more protracted in countries with less ability to use fiscal policy to lean against the slowdown in economic activity. Conditions across Latin American economies should be assumed to be comparable to the sharp slowdown in the United States. The growth slowdown in developing Asia should be assumed to be representative of conditions across many emerging market economies.

Comparison of the Current Severely Adverse Scenario and the September 2020 Severely Adverse Scenario

The current severely adverse scenario features a slightly greater increase in the unemployment rate in the United States (but a lower peak unemployment rate) compared with the September 2020 severely adverse scenario that was published by the Federal Reserve Board. The path of interest rates in the current scenario is largely unchanged from the path in the September 2020 severely adverse scenario. The decline in house prices is somewhat smaller than the decline in the September 2020 severely adverse scenario, while the decline in equity prices is larger to account for the increases seen since September. The decline in commercial real estate prices is also larger, which is in line with the scenario’s emphasis on heightened risks in this sector.

Global Market Shock Component for the Severely Adverse Scenario

The OCC will provide to certain banks a global market shock component for the severely adverse scenario to be used in the current stress test.[6] Under the DFA stress testing rules, large, complex institutions with significant trading activity must apply these components to their trading and counterparty exposures as of a specific date (October 9, 2020,[7] for the current stress testing cycle) to project mark-to-market losses.[8]

The global market shock is a set of instantaneous, hypothetical shocks to a large set of risk factors reflecting general market distress and heightened uncertainty. Generally, these shocks involve large and sudden changes in asset prices, interest rates, and spreads, reflecting general market distress and heightened uncertainty. It is important to note that global market shocks included in the severely adverse scenario are not forecasts, but rather are hypothetical scenarios

[6] The global market shock component consists of hypothetical shocks to a large set of risk factors that include a wide range of financial market variables that affect asset prices, such as credit spread or the yield on a bond, and also include, in some cases, shocks to the value of a position itself (for example, the market value of private-equity positions). *See* 12 CFR 46.5(c).
[7] A bank 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 5-9, 2020). Losses from the global market shock will be assumed to occur in the first quarter of the planning horizon.
[8] Currently, four national banks are subject to global market shocks: Bank of America, N.A.; Citibank, N.A.; JPMorgan Chase Bank, N.A.; and Wells Fargo Bank, N.A.

designed to assess the strength and resilience of banking organizations in the event of sudden and significant deterioration in market environments.

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

• Equity prices of key developed markets and developing and emerging market economies along with selected points along term structures of 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 developed 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, and loans; non-agency residential mortgage-backed securities (RMBS) and commercial mortgage-backed securities (CMBS); sovereign debt; and municipal bonds.

Please note:

- The global market shock is a separate and additional component of the scenario applied only to the largest banks with complex trading portfolios.
- Changes to risk factors comprising the global trading shock are assumed to occur instantaneously, while the macro scenario describes the evolution of variables over time.[9]

Global Market Shock – 2021 Severely Adverse Scenario

The 2021 global market shock component for the severely adverse scenario is characterized by a sharp curtailment in global economic activity as financial conditions tighten. In particular, with ratings agencies downgrading large swaths of outstanding debt, corporate bond spreads widen sharply as ratings-sensitive investors sell assets. The effect on investment-grade debt is somewhat mitigated by safe-haven flows, but non-investment-grade debt experiences high default rates and record low recovery rates. Price declines in the leveraged loan market are exacerbated by selling from open-end mutual funds and exchange-traded funds.

[9] The global market shock is a component of the macro scenario but is not necessarily directionally consistent with the macro scenario.

With fiscal conditions that are already stretched, U.S. state, and local governments face additional stress. Revenue declines combined with significant spending increases lead to a widening in municipal bond spreads and increased risk of defaults. Mutual funds holding municipal debt face redemptions and outflows exceeding historical experience.

Commercial real estate prices—particularly for the retail and hospitality sectors—fall sharply in this scenario. Rapid selling of CMBS by nonbank commercial real estate lenders to meet margin calls puts considerable downward pressure on CMBS prices. Private-equity asset values experience sizable declines as leveraged firms face lower earnings and a weak economic outlook.

Short-term Treasury rates decrease only slightly given the current low level of short-term interest rates. Longer-term Treasury yields fall modestly, consistent with lower expected short-term rates and flight-to-safety considerations. Short-term U.S. interbank lending rates rise sharply, reflecting a pullback in overnight lending. At the same time, longer-term swap rates fall in line with the decreases in long-term Treasury yields.

Flight-to-safety considerations result in U.S. public equity price declines that are relatively mild compared to other developed markets and cause the U.S. dollar to appreciate somewhat against the currencies of most developed economies. The yen appreciates against the U.S. dollar as investors unwind positions. Safe-haven considerations cause precious metal prices to increase while prices for non-precious metals and oil decline as a result of the broader economic weakness.

Comparison of the Current Severely Adverse Scenario and the September 2020 Severely Adverse Scenario

The global market shock for the current severely adverse scenario is generally similar to the global market shock for the September 2020 severely adverse scenario that was published by the Federal Reserve Board. Corporate credit still experiences a great deal of stress, but to a slightly lesser degree than in the earlier scenario. Stress in the municipal bond market is slightly greater, while U.S. public equity shocks are milder. In addition, the shocks to interest rates and sovereign credit spreads in the euro area periphery are larger, in general.

Counterparty Default Component for the Supervisory Severely Adverse Scenario

For DFAST 2021, banks that are completing the global market shock must incorporate a counterparty default scenario component in the severely adverse scenario.[10] The counterparty default scenario component involves the unexpected default of the bank's largest counterparty.[11]

In connection with the counterparty default scenario component, these banks will be required to estimate and report the potential losses and related effects on capital associated with the

[10] These are the same national banks that are subject to the global market shocks, see footnote 8 above.
[11] In selecting its largest counterparty, a bank will not consider certain sovereign entities (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) or designated central clearing counterparties or the bank's own affiliates.

unexpected default of the counterparty that would generate the largest losses across their derivatives and securities financing activities, including securities lending and repurchase or reverse repurchase agreement activities. The counterparty default scenario component is an add-on to the 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 9, 2020—the same date as the global market shock.[12]

[12] As with the global market shock, a bank 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 5-9, 2020). Losses will be assumed to occur in the first quarter of the projection horizon.