Western Alliance Bancorporation

Dodd-Frank Act 2017 Annual Stress Test

Public Disclosure of Results

October 27, 2017

Planning Cycle

Q1 2017 through Q1 2019

Overview

Western Alliance Bancorporation ("WAL" or "Company") is a bank holding company headquartered in Phoenix, Arizona, and is incorporated under the laws of the state of Delaware. WAL provides a full spectrum of deposit, lending, treasury management, international banking, and online banking products and services through wholly-owned banking subsidiary Western Alliance Bank ("WAB"). WAB operates the following full-service banking divisions: Alliance Bank of Arizona, Bank of Nevada, Bridge Bank, First Independent Bank and Torrey Pines Bank. The Company also serves business customers through a national platform of specialized financial services including Alliance Association Bank, Corporate Finance, Equity Fund Resources, Hotel Franchise Finance, Life Sciences Group, Mortgage Warehouse Lending, Public and Nonprofit Finance, Renewable Resource Group, Resort Finance, and Technology Finance. In addition, the Company has one non-bank subsidiary, Las Vegas Sunset Properties, which holds and manages certain non-performing loans and other real estate owned.

Bank holding companies with totals assets between $10 billion and $50 billion are required to conduct annual stress tests pursuant to the rules promulgated under the Dodd-Frank Wall Street Reform and Consumer Protection Act ("DFA"). The Company completed its Dodd-Frank Act Stress Test ("DFAST") process this year in conjunction with fulfilling the Federal Reserve Board's ("FRB") DFA process requirements. The Company submitted these results to the FRB, as required, prior to July 31, 2017. This document outlines the approach the Company utilized in this annual DFAST process, as well as certain summary results. This document provides the results of the Company's DFAST company-run stress test under a hypothetical macroeconomic scenario determined by bank regulators.

For the DFAST process, the Company utilized three hypothetical economic scenarios developed by the FRB: Baseline, Adverse, and Severely Adverse. The Company then estimated the impact to its financial performance and capital position under the economic conditions prescribed in those three scenarios. The forecast time horizon of the stress tests covered the nine-quarter period beginning in the first quarter of 2017 and continued through the end of the first quarter of 2019. In accordance with regulatory guidance, this document presents a summary of results of the Company-run annual stress test conducted under the Severely Adverse scenario.

The results of the Company's annual Dodd-Frank Act Stress Test indicate that the Company will have the financial resources at its disposal to successfully navigate a severe and protracted economic downturn (Severely Adverse Scenario) and will maintain capital levels that exceed regulatory minimums throughout the course of the hypothetical scenario.

Federal Reserve Bank Severely Adverse Scenario Design

The Severely Adverse scenario is characterized by a severe global recession that is accompanied by a period of heightened stress in corporate loan markets and commercial real estate markets. It is important to note that this is a hypothetical scenario designed to assess the strength of banking organizations and their resilience to unfavorable economic conditions. This scenario does not represent a forecast of the Federal Reserve.

In this scenario, the level of U.S. real GDP begins to decline in the first quarter of 2017 and reaches a trough in the second quarter of 2018 that is about 6½ percent below the pre-recession peak. The unemployment rate increases by about 5¼ percentage points, to 10 percent, by the third quarter of 2018. Headline consumer price inflation falls to about 1¼ percent at an annual rate by the second quarter of 2017 and then rises to about 1¾ percent at an annual rate by the middle of 2018.

As a result of the severe decline in real activity, short-term Treasury rates fall and remain near zero through the end of the scenario period. The 10-year Treasury yield drops to ¾ percent in the first quarter of 2017, rising gradually thereafter to around 1½ percent by the first quarter of 2019 and to about 1¾ percent by the first quarter of 2020. Financial conditions in corporate and real estate lending markets are stressed severely. The spread between yields on investment-grade corporate bonds and yields on long-term Treasury securities widens to about 5½ percentage points by the end of 2017, an increase of 3½ percentage points relative to the fourth quarter of 2016. The spread between mortgage rates and 10-year Treasury yields widens to over 3½ percentage points over the same time period.

Asset prices drop sharply in this scenario. Equity prices fall by 50 percent through the end of 2017, accompanied by a surge in equity market volatility, which approaches the levels attained in 2008. House prices and commercial real estate prices also experience large declines, with house prices and commercial real estate prices falling by 25 percent and 35 percent, respectively, through the first quarter of 2019.

The international component of this scenario features severe recessions in the euro area, the United Kingdom, and Japan and a marked growth slowdown in developing Asia. As a result of the sharp contraction in economic activity, all foreign economies included in the scenario experience a decline in consumer prices. As in this year's Adverse scenario, the U.S. dollar appreciates against the euro, the pound sterling, and the currencies of developing Asia but depreciates modestly against the yen because of flight-to-safety capital flows.

Risk Management Framework

The Enterprise Risk Management Framework is designed to enable the Company to maintain a clear view and understanding of its overall risk levels. The framework is a way of normalizing the events and activities across the Bank and associated business lines and is comprised of 4 core elements; Identify, Measure, Monitor, and Control. The elements of the framework are described below:

Identify – Risk identification is the understanding and capturing of the Bank's risk and vulnerabilities and raising the awareness of these risks within the Bank. The risk identification process should cover bottom up and top down assessments of existing risk, determination of materiality of each identified risk, mapping into the taxonomy, and treatment of emerging risk across new and existing products, regulation/legislation, and the business environment. The identification of risk should also rely upon forward looking scenarios and enterprise wide stress testing activities. Some examples of the methods the Bank utilizes include:

- annual risk reviews across the business lines,
- well defined new product procedures and mechanisms to identify and analyze risks,
- reviews of tolerances and thresholds of risk metrics,
- consistent risk reporting by business units,
- policies, procedures, and controls that implement risk management strategy consistent with the Company's Risk Appetite,
- and systems technology support to monitor and control risks.

Measure – In order to control and manage risks, the risks need to be measured and assessed. Measurements of risks can be either quantitative, qualitative, or a combination of both. The measurements of risks begin with metrics established through the risk appetite process. This process selects measures and thresholds to provide a complete view of the material risk tolerances of the Bank to allow for responses to risk both individual measures as well as collective risk within and across risk silos. These metrics are captured by the first line business and process owners and are reported at least quarterly. The first line assists the second line in managing, setting the measurements definitions, performing the measurement calculations, and in defining the threshold of operating acceptability.

Monitor – Monitoring is an essential component of the framework to ensure risks levels are within appropriate levels as established by the Risk Appetite Statement. The monitoring reporting framework provides great breadth and depth across various risk management committees. Monitoring of risk occurs via management reporting of risk measures and through the appropriate governance structures as outlined in the Risk Appetite Procedure document. Risks are monitored in detail within risk silos in the first level management risk committees, and in aggregate to capture inter-risk correlations by management at the ERMC, and by the Board at the DRC. Monitoring of risks metrics are used as a mechanism to notify management of activities, changes in risks or exposures, any data anomalies or repository changes that may cause risks, breaches to established thresholds, sensitivities, and tracking to risk appetite and strategic direction. All risk metrics have identified thresholds with risk elevation levels, as well as go to green strategies as defined in the Risk Appetite procedure document.

Control – Controls are used to monitor processes and procedures to counter and contain any threats, inaccuracies, system or tool inefficiencies, or variability in resulting metric reporting. Key processes are reviewed, documented, and tested to ensure controls are adequate to identify and prevent failures. This process must be continuous and always evolving. Some examples of the controls in place to ensure proper risk management practices at the Bank include: well defined policies and procedures documentation, second line review and approvals, governance committees, annual reviews of risks and breach thresholds, model validations for models used in measurements, and internal controls. Audit should also be used as the third line of defense for controls.

Governance and oversight of each risk begins with designated risk managers working closely with risk originators in each business. Each risk type leads to a risk oversight committee, with detailed analysis and forecasting of the current and potential risk profile compared to expectations, and with any significant deviation analyzed in relation to established contingency plans. Risk governance is overseen at the Enterprise Risk Management Committee at the management level, and risk plays a central role in executive management for business planning. At the Board level, the Directors Risk Committee oversees overall risk management activities at WAL.

Methodologies

The Company has developed an overall capital planning and stress testing framework in order to accomplish stress testing and capital planning objectives. The process is designed for repeatability, scalability, and sustainability. The following discusses the primary methodologies utilized in the DFAST process.

<u>Loan Balance</u>

The Company developed its loan balance forecast for each scenario by assessing each major loan segment. After performing statistical analysis on historical trends in loan commitment balances and utilization rates, the Company segmented the loan portfolio into the following categories: commercial and industrial ("C&I"), syndicated corporate lending, mortgage warehouse lending, and consumer loans ("CCC"), construction ("Construction"), revolving home equity lines of credit ("HELOC"), and term commercial real estate including public, non-profit, and residential closed-end lending ("CRE").

The Company used statistical models to link projected explanatory variables with total commitments made to borrowers for the CRE, C&I, CCC, and HELOC loan segments. Furthermore, the Company also used statistical models to determine the associated utilizations of the commitments for the C&I, CCC, and HELOC loan portfolios to produce ending loan balances over the planning horizon under a set of predetermined macroeconomic scenarios provided by the FRB. The Company leveraged the annual budgeting process in the Baseline scenario for the Construction segment. For the Adverse and Severely Adverse scenarios, subject matter professional judgment was used to determine balance forecasts for the Construction segment.

Deposit Balance

The Company leveraged the 2017 budget projections in determining deposit balance projections for the Baseline and Adverse scenarios. When analyzing future growth, the Company considered three main sources of deposits: the divisional branch network, the Alliance Association Bank national business line, and deposits from the technology lending national business line.

After discussion with business line subject matter professionals, the Company assumed a portion of its current deposit relationships would leave in the event the Bank was downgraded. Given the severity of the Severely Adverse scenario, the Company felt a downgrade in their perceived creditworthiness possible. The Company identified specific relationships across its divisional, wholesale, and Alliance Association Bank accounts for relationships likely to exit the Company. In total, the Company identified approximately $1 billion in deposits at risk (or 7.3% of total deposits as of December 31, 2016). For conservative purposes, the Company assumed these relationships would leave 25% in Q1 2017, 25% in Q2 2017, and 50% in Q3 2017. Furthermore, the Company assumed there would be no further growth in the existing deposit base with balances remaining flat through the planning horizon.

Loan Losses

The Company segmented the loan portfolio in a more granular fashion, modeling losses for the C&I, CRE Owner-Occupied, CRE Investor, Construction, Residential, and Nonprofit loan portfolios using multiple techniques for credit loss modeling. A non-modeled approach was selected for the C&I, CRE owner-occupied, and Construction segments. The Company developed the credit loss projections for the C&I, CRE owner-occupied, and Construction by using a combination of business judgment and relationships established in the 2016 DFAST submission. An enhancement over last year's submission includes loan level probability of default estimation for CRE Investor loans. Statistical models were used to project credit losses in the Residential segment. The Nonprofit loan portfolio utilized a transition matrix approach based on published municipal credit rating changes and defaults. The Company believes that this approach is reasonable and commensurate with the overall size, complexity, and sophistication of the bank along with the individual portfolios and that it fully captures the Company's risk profile. These techniques produce net charge-off rates per portfolio segment over the planning horizon under a set of predetermined macroeconomic scenarios as provided by the FRB.

Non-Interest Income and Non-Interest Expense

The approach for predicting non-interest income and expense is to rely upon loan and deposit volumes, as discussed above. This method is consistent with industry practice and is the same methodology that the Company uses to calculate the annual budget. Since the majority of non-interest revenues and expenses can be attributed to the size and composition of the balance sheet, either directly or indirectly, it is reasonable to assume that these will move congruently with volume changes in all DFAST regulatory scenarios: Baseline, Adverse, and Severely Adverse, thus capturing by inclusion all of the macroeconomic assumptions used in modeling volumes.

These methodologies and resulting forecasts discussed above were supplemented, as appropriate, with management's judgments to ensure appropriate consideration of Company-specific factors and to mitigate modeling limitations in estimations. To promote robust scenario and forecast development, the Company established thorough and heavily-governed processes, including an effective challenge process. Challenges are designed to foster candid, informed, and effective discussion regarding forecast methodologies, drivers, and results. They occur throughout the forecast development process and at multiple organizational levels, including the Capital Planning and Stress Testing Committee. The challenge process may result in adjustments to output. As a result, certain adjustments have been made to the forecasts.

Severely Adverse Scenario Results

Throughout the nine-quarter horizon of the Severely Adverse scenario, the Company's capital levels exceeded regulatory minimums. For each quarter within the stress test horizon, equity capital estimates are generated by incorporating after-tax net income. The following table illustrates the results for key regulatory capital ratios in the Severely Adverse scenario for WAL:

	4Q 2016 Actual	1Q 2019 Stressed Result	Lowest 9 Quarter Stressed Result
Common Equity Tier 1 Capital Ratio (CET1) (%)	10.02%	8.70%	8.70%
Tier 1 Risk-Based Capital Ratio (%)	10.49%	9.22%	9.22%
Total Risk-Based Capital Ratio (%)	13.19%	12.53%	12.49%
Tier 1 Leverage Ratio (%)	9.93%	8.53%	8.53%

Significant Drivers of Change from 4Q 2016 over the hypothetical stress horizon

The capital ratio calculations are derived from the relationships between regulatory capital and risk weighted assets (average assets in the case of the Tier 1 Leverage Ratio). Changes in the regulatory capital component of the ratios are primarily explained by changes in credit losses, pre-provision net revenue ("PPNR"), and higher provision expense, while changes in risk weighted assets are primarily explained by changes in loan volumes. As shown in the table below, PPNR declines in the Severely Adverse scenario to $731 million over the 9 quarter planning period. Provision expense significantly increases to $1billion over the planning period to maintain an elevated allowance for loan and lease losses. Overall, the Severely Adverse scenario results in a net loss of $225 million over the planning period with no breach of any regulatory capital minimums.

($ Millions)	Cumulative Hypothetical Results over 9 Quarters
Pre-Provision Net Revenue	$731
Provision for Loan and Lease Losses	$1,035
Net Income	$(225)

Loan losses during the nine-quarter Severely Adverse scenario were estimated to be $723 million. This level represents a significant increase from the levels the Company is currently experiencing, and has experienced in its history.

($ Millions)	Cumulative Hypothetical Results over 9 Quarters
Aggregate Stress Losses	$723

The Company does not generate capital through core earnings in the Severely Adverse scenario characterized as a severe recession. The Company experiences a net loss in each quarter in the planning horizon as provision expense rises significantly to prepare the Company for future losses. Regulatory capital ratios fall in this scenario primarily due to credit losses and net interest margin compression. Since the Company structures many of its credits with loan floors, the net interest margin compression was somewhat mitigated. Common Equity Tier 1 capital decreases approximately 20.8% and risk weighted assets fall approximately 8.8%. The Company loses approximately $225 million in net losses while provisioning $1billion to build the ALLL to 3.77% of total loans over the nine quarter planning horizon. Despite charging off approximately $723 million and losing nearly 72 basis points in net interest margin during the nine quarter planning horizon, the Company still does not breach any regulatory minimums.

Western Alliance Bank and its consolidated subsidiaries account for approximately 99% of WAL's total assets. The process used for Western Alliance Bank, including methodology, forecasting frameworks, governance and controls, is consistent with those used for WAL. Given the proportional size of Western Alliance Bank in relation to the consolidated entity, the impact of the Severely Adverse Scenario on Western Alliance Bank very closely tracks that of WAL. The following table illustrates the results for key regulatory capital ratios in the Severely Adverse scenario for WAB:

	4Q 2016 Actual	1Q 2019 Stressed	Lowest 9 Quarter Stressed Result
Common Equity Tier 1 Capital Ratio (CET1) (%)	10.83%	8.71%	8.71%
Tier 1 Risk-Based Capital Ratio (%)	10.83%	8.71%	8.71%
Total Risk-Based Capital Ratio (%)	12.59%	10.99%	10.99%
Tier 1 Leverage Ratio (%)	10.26%	8.11%	8.11%

Summary

The results of the Company's annual DFAST indicate the Company will have sufficient capital to successfully navigate a severe and protracted economic downturn and will maintain regulatory capital levels that exceed regulatory capital minimums throughout the course of the Severely Adverse scenario and no capital actions were required. The Company considers the possible emergence of the FRB's Severely Adverse scenario to be unlikely, and it expects the economic scenario that does materialize over the course of the forecast horizon to be more positive than the Severely Adverse scenario that was modeled. In the event regulatory capital ratios do deviate from Board expectations, senior management has developed strategies to raise regulatory capital ratios levels back within Board approved limits. Potential actions include, but are not limited to, down streaming capital from WAL to WAB, reducing balance sheet growth, the sale of liquid assets, stricter underwriting standards, and the issuance of additional equity.

Forward Looking Statements

Pursuant to the regulations issued by the Federal Reserve Board (FRB) under the Dodd-Frank Act, WAL and WAB are required to conduct a forward-looking company-run stress test exercise and to publicly disclose the results of that exercise. This release contains certain forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995, including projections of financial condition, results of operations, plans, objectives, future performance or business under a hypothetical Supervisory Severely Adverse Scenario that incorporates a set of assumed economic and financial conditions prescribed by the FRB.

These statements may address issues that involve significant risks, uncertainties, estimates, expectations, and assumptions made by management. Investors should not rely on these results as the projections are not intended to be a forecast of expected future economic or financial conditions or a forecast of WAL's expected future financial results or condition and actual results may differ materially from the projections and will be influenced by actual economic and financial conditions and various other factors as described in WAL's periodic and current reports filed with the Securities and Exchange Commission which are available at http://www.sec.gov. The regulations establishing DFAST require us to disclose certain projected financial measures that have not been prepared under U.S. Generally Accepted Accounting Principles ("GAAP"). WAL's actual financial information, prepared under GAAP, is available in reports filed with the SEC. WAL undertakes no obligation to revise these statements following the date of this release.