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Overview and Cautionary Notice

Section 165 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and related regulations require bank holding companies and insured depository institutions with total consolidated assets of more than $10 billion—such as UMB Financial Corporation (the Company) and UMB Bank, National Association (the Bank)—to conduct annual stress tests and to disclose specified results from those tests.

The annual stress tests are forward-looking exercises that require the Company and the Bank to estimate the impact of hypothetical macroeconomic scenarios on their financial conditions and regulatory capital ratios over a nine quarter stress period.

This disclosure relates to the annual stress tests (the 2016 Stress Test) that were conducted by the Company and the Bank using (1) their balance sheets as of Dec. 31, 2015, and their actual financial performance through only that date, (2) a stress period lasting from Jan. 1, 2016, through Mar. 31, 2018 (the Stress Period), and (3) the supervisory severely adverse scenario (the 2016 Severely Adverse Scenario) that was developed and supplied by the Board of Governors of the Federal Reserve System (the FRB)[1] and the Office of the Comptroller of the Currency (the OCC). The Company and the Bank submitted the final results of the 2016 Stress Test to the FRB and the OCC on July 29, 2016.

The final results of the 2016 Stress Test indicate that, in every ratio in every quarter of the Stress Period, the Bank's capital ratios remain above regulatory well-capitalized levels and the Company's capital ratios remain in excess of the minimum capital standards required by the FRB.

It should be noted that, when supplied, the 2016 Severely Adverse Scenario was expressly disclaimed by the FRB and the OCC as a forecast. Rather, according to the FRB and the OCC, the 2016 Severely Adverse Scenario described a hypothetical set of conditions that were designed to assess the strength of banking organizations and their resilience to a severely adverse economic environment characterized by a deep recession.

Accordingly, the 2016 Stress Test and its results do not represent forecasts by, or reflect the current expectations or plans of, the Company or the Bank in connection with future businesses, revenues, expenses, gains, losses, assets, liabilities or capital ratios. The assumptions in the 2016 Stress Test, moreover, may not reflect the actions, decisions not to act or other responses of the Company or the Bank if severely adverse economic conditions were to arise.

[1] The macroeconomic scenarios can be found at www.occ.treas.gov/tools-forms/forms/bank-operations/stress-test-reporting.html.

Still, this disclosure may be considered to contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements can be identified by the fact that they do not relate strictly to historical or current facts—such as statements that describe the assumptions in the 2016 Stress Test or its results. Reliance should not be placed on the 2016 Stress Test, its results or any other statement of a forward-looking nature in this disclosure as a forecast by the Company or the Bank or as a prediction or guarantee about the future. Actual future objectives, strategies, plans, prospects, performance, condition or results of the Company or the Bank may differ materially from those set forth in any forward-looking statement. Some of the factors that may cause actual results or other future events, circumstances or aspirations to differ from those in forward-looking statements are described in the Company's Annual Report on Form 10-K for the year ended Dec. 31, 2015, subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K or other applicable documents that are filed or furnished with the U.S. Securities and Exchange Commission (the SEC). Any forward-looking statement speaks only as of the date that it was made. Neither the Company nor the Bank undertakes to update any forward-looking statement to reflect the impact of events, circumstances or results that arise after the date that the statement was made.

Background on the Company and the Bank

The Company is a diversified financial holding company that is headquartered in Kansas City, Mo. Together with its subsidiaries, the Company supplies banking services, institutional investment management, asset servicing and payment solutions to its customers in the U.S. and around the globe. The Company's common stock is listed with The NASDAQ Stock Market LLC (NASDAQ: UMBF).

The Bank, which is a subsidiary of the Company, has its principal office in Missouri and also has branches in Arizona, Colorado, Illinois, Kansas, Nebraska, Oklahoma and Texas. The Bank offers a full complement of banking services to commercial, retail, government and correspondent bank customers, including a wide range of asset management, trust, bank card and cash management services.

The Company's significant nonbank subsidiaries include the following:

- Scout Investments, Inc. (Scout) is an institutional asset-management company that is headquartered in Kansas City, Mo. Scout offers domestic and international equity strategies through its Scout Asset Management Division and fixed income strategies through its Reams Asset Management Division.

- UMB Fund Services, Inc. (UMBFS) is located in Milwaukee, Wis.; Chadds Ford, Pa.; and Ogden, Utah. It provides fund accounting, transfer agency and other services to mutual fund and alternative-investment groups.

Additional information about the Company and its business can be found in its 2015 Annual Report on Form 10-K, subsequent Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, and other documents that are filed or furnished with the SEC.

Stress Test Methodology

For each quarter of the Stress Period, the Company and the Bank estimated losses, pre-provision net revenue (PPNR)[2], provision for loan and lease losses and net income, based on the impact of the considerations included in the FRB's and the OCC's 2016 Severely Adverse Scenario. The primary losses that the Company and the Bank experienced in the 2016 Severely Adverse Scenario are credit losses in the loan portfolio. Other estimated losses include operational losses and credit losses in the investment portfolio.

The Company and the Bank utilized a mix of quantitative and qualitative approaches in the 2016 Stress Test. The approach varied depending on the risk and the exposure being analyzed.

Where practical, a quantitative approach was utilized, most often using econometric models. Other statistical approaches, such as historical trend analysis, were used when econometric modeling was not practical.

Qualitative approaches were employed when appropriate to supplement modeled results or when a quantitative approach was not practical—for example, when historical data was inadequate to support an estimate. All qualitative inputs were based on conservative assumptions and subject matter expertise.

The Company and the Bank have a robust governance process in place for their stress test processes. This includes a review, challenge and approval process that involves multiple levels of the organization and occurs throughout the stress test process. Any feedback received during this process is incorporated into the stress test processes as appropriate.

Description of Risks Included in the 2016 Stress Test

The Company and the Bank maintain an enterprise risk management program that is designed to identify, quantify, monitor, report and control the risks that they face. The Company and the Bank seek to mitigate adverse variations in earnings and capital by identifying and managing risk exposures and preserving appropriate levels of capital during periods of growth and stress. The following is a list of risks that are either explicitly or implicitly included in the 2016 Stress Test:

Credit Risk – the risk to current or anticipated earnings or capital arising from an obligor's failure to meet the terms of any contract or otherwise perform as agreed. Credit risk is found in all activities in which settlement or repayment depends on counterparty, issuer or borrower performance. It exists any time bank funds are extended, committed, invested or otherwise exposed through actual or implied contractual agreements, whether reflected on or off the balance sheet.

Market Risk (Price) – the risk to current or anticipated earnings or capital arising from changes in the value of either trading portfolios or other obligations that are entered into as part of distributing risk. These portfolios typically are subject to daily price movements and are accounted for primarily on a mark-to-market basis. This risk occurs most significantly from market making, dealing and position-taking in interest rate, foreign exchange, equity, commodities and credit markets.

Interest Rate Risk – the risk to current or anticipated earnings or capital arising from movements in interest rates. Interest rate risk results from differences between the timing of rate changes and the timing of cash flows (repricing risk); from changing rate relationships among different yield curves, indices or spread relationships affecting bank activities (basis risk); from changing rate relationships across the

[2] Pre-provision net revenue is defined as net interest income plus noninterest income minus noninterest expense.

spectrum of maturities (yield curve risk); and from interest-related options embedded in bank products (options risk).

Operational Risk – the risk to current or anticipated earnings or capital arising from inadequate or failed internal processes or systems, human errors or misconduct or adverse external events. Operational losses result from internal fraud; external fraud; inadequate or inappropriate employment practices and workplace safety; failure to meet professional obligations involving clients, products and business practices; damage to physical assets; business disruption and systems failures; and failures in execution, delivery and process management. Operational losses do not include opportunity costs, forgone revenue or costs related to risk management and control enhancements implemented to prevent future operational losses.

Liquidity Risk – the risk to current or anticipated earnings or capital arising from an inability to meet obligations when they come due without incurring unacceptable losses. Liquidity risk includes the inability to access funding sources or manage fluctuations in funding levels. Liquidity risk also results from a bank's failure to recognize or address changes in market conditions that affect its ability to liquidate assets quickly and with minimal loss in value.

Strategic Risk – the risk to current or anticipated earnings, capital or franchise or enterprise value arising from adverse business decisions, poor implementation of business decisions or lack of responsiveness to changes in the financial services industry and operating environment. This risk is a function of the compatibility of the Company's strategic goals, business strategies, resources and quality of implementation. The resources needed to carry out business strategies are both tangible and intangible. They include communication channels, operating systems, delivery networks and managerial capacities and capabilities.

Reputational Risk – the risk to current or anticipated earnings, capital or franchise or enterprise value arising from negative public opinion or damaged relationships. This risk may impair a bank's competitiveness by affecting its ability to establish new relationships or services or continue servicing existing relationships. Reputation risk is inherent in all bank activities and requires management to exercise an abundance of caution in dealing with customers, counterparties, correspondents, investors and the community.

Compliance Risk – the risk to current or anticipated earnings or capital arising from violations of laws, rules or regulations, or from nonconformance with prescribed practices, internal policies and procedures or ethical standards. This risk exposes a company to fines, civil money penalties, payment of damages and the voiding of contracts. Compliance risk can result in diminished reputation, reduced franchise or enterprise value, limited business opportunities and lessened expansion potential. Compliance risk is not limited to risk from failure to comply with consumer protection laws; it encompasses the risk of noncompliance with all laws and regulations, including financial reporting rules, as well as prudent ethical standards and contractual obligations. It also includes the exposure to litigation (known as legal risk) from all aspects of financial services, traditional and nontraditional.

Overview of the 2016 Severely Adverse Scenario

The 2016 Severely Adverse Scenario is characterized by a severe global recession, accompanied by a period of heightened corporate financial stress and negative yields for short-term U.S. Treasury securities. In this scenario, the level of U.S. real GDP begins to decline in the first quarter of 2016 and reaches a trough in the first quarter of 2017 that is 6.25 percent below the pre-recession peak. The unemployment rate increases by 5 percentage points, to 10 percent, by the middle of 2017 and headline consumer price inflation rises from about 0.25 percent at an annual rate in the first quarter of 2016 to about 1.25 percent at an annual rate by the end of the recession.

Asset prices drop sharply in the scenario, consistent with the developments described above. Equity prices fall approximately 50 percent through the end of 2016, accompanied by a surge in equity market volatility, which approaches the levels attained in 2008. House prices and commercial real estate prices also experience considerable declines, with house prices dropping 25 percent through the third quarter of 2018 and commercial real estate prices falling 30 percent through the second quarter of 2018. Corporate financial conditions are stressed severely, reflecting mounting credit losses, heightened investor risk aversion, and strained market liquidity conditions; the spread between yields on investment-grade corporate bonds and yields on long-term Treasury securities increases to 5.75 percent by the end of 2016.

As a result of the severe decline in real activity and subdued inflation, short-term Treasury rates fall to negative 0.50 percent by mid-2016 and remain at that level through the end of the scenario. For the purposes of this scenario, it is assumed that the adjustment to negative short-term interest rates proceeds with no additional financial market disruptions. The 10-year Treasury yield drops to about 0.25 percent in the first quarter of 2016, rising gradually thereafter to reach about 0.75 percent by the end of the recession in early 2017 and about 1.75 percent by the first quarter of 2019.

Results of the 2016 Stress Test in the 2016 Severely Adverse Scenario

Results for the Company

Table 1 depicts a breakdown of net income for the Company over the Stress Period. Cumulative PPNR over the Stress Period amounts to $308.0 million, which represents a decline from levels leading up to the first quarter of the Stress Period. Indeed, the Company's actual cumulative PPNR over the nine quarters ending Dec. 31, 2015 totaled $407.7 million. The primary driver of lower PPNR in the 2016 Severely Adverse Scenario was lower noninterest income at the Company's nonbank subsidiaries, although lower noninterest income at the Bank also negatively impacted the results.

In addition to lower PPNR, net income was also negatively impacted by a significant increase in provision expense for loan losses. Though net income declined in the 2016 Stress Test, the Company had sufficient income to cover assumed dividend payments throughout the Stress Period.

Table 1: Net Income (000)	**9 Quarter Sum**
Pre-Provision Net Revenue[3]	$307,958
Provision Expense	$143,707
Realized Gains/Losses on Securities	$0
Taxes	$18,189
Net Income	$146,062

Total loan and lease net charge-offs amount to $86.0 million[4] in the Stress Period, which is a significantly higher level than the Company typically experiences. For reference, net charge-offs for the worst nine quarter period since Jan. 1, 2007 totaled $52.0 million[5]. In the 2016 Stress Test, higher levels of charge-offs were driven primarily by credit cards and commercial and industrial (C&I) loans.

[3] PPNR for the Company includes $21.7 million in operational losses and $1.7 million in investment security losses.
[4] The Bank accounts for all of the loan and lease charge-offs at the Company.
[5] This nine quarter period is the quarter ending Dec. 31, 2009 through the quarter ending Dec. 31, 2011.

Table 2 depicts beginning, ending and minimum capital ratios observed during the Stress Period. The Company's Tier 1 Risk-Based Capital Ratio is projected to decline by 154 basis points from Dec. 2015 to the trough in Mar. 2018. The primary drivers of the decline in capital ratios in the 2016 Severely Adverse Scenario are a decline in noninterest income at the Company's nonbank subsidiaries, increased credit losses at the Bank and an increase in risk-weighted assets at the Bank. The increase in risk-weighted assets is indirectly the result of an increase in deposits during the Stress Period that acts to inflate the Company's balance sheet. As a result of these items, the Company's capital ratios experience deterioration during the Stress Period.

Table 2: Capital Ratios (%)	**Beginning**	**Minimum**	**Ending**
Common equity tier 1 risk-based capital ratio	11.74	10.40	10.40
Tier 1 risk-based capital ratio	11.86	10.32	10.32
Tier 1 leverage ratio	9.08	6.84	6.84
Total risk-based capital ratio	12.80	11.62	11.62

Results for the Bank

Table 3 depicts a breakdown of net income for the Bank over the Stress Period. Cumulative PPNR over the Stress Period amounts to $337.6 million, which represents an increase from levels leading up to the first quarter of the Stress Period. Indeed, the Bank's actual cumulative PPNR over the nine quarters ending Dec. 31, 2015 totaled $314.7 million. The primary driver of higher PPNR in the 2016 Severely Adverse Scenario was higher net interest income, which was driven by a larger balance sheet due to deposit growth in the scenario. This higher net interest income more than offset the effect of lower noninterest income. Despite the increase in PPNR, a significant increase in provision expense for loan losses resulted in a decline in net income, compared to the nine quarters leading up to the start of the Stress Period.

Table 3: Net Income (000)	**9 Quarter Sum**
Pre-Provision Net Revenue[6]	$337,589
Provision Expense	$143,707
Realized Gains/Losses on Securities	$0
Taxes	$28,752
Net Income	$165,130

Total loan and lease net charge-offs amount to $86.0 million in the Stress Period, which is a significantly higher level than the Bank typically experiences. For reference, net charge-offs for the worst nine quarter period since Jan. 1, 2007 totaled $52.0 million[7]. In the 2016 Stress Test, higher levels of charge-offs were driven primarily by credit cards and C&I loans.

Table 4 depicts beginning, ending and minimum capital ratios observed during the Stress Period. The Bank's Tier 1 Risk-Based Capital Ratio is projected to decline by 79 basis points from Dec. 2015 to the trough in Mar. 2018. The primary drivers of the decline in capital ratios in the 2016 Severely Adverse Scenario are increased credit losses and an increase in risk-weighted assets. The increase in risk-weighted assets is indirectly the result of an increase in deposits during the Stress Period that acts to inflate the Bank's balance sheet. As a result of these items, the Bank's capital ratios experience deterioration during the Stress Period but remain above regulatory well-capitalized levels.

[6] PPNR for the Bank includes $21.7 million in operational losses and $1.7 million in investment security losses.
[7] This nine quarter period is the quarter ending Dec. 31, 2009 through the quarter ending Dec. 31, 2011.

Table 4: Capital Ratios (%)	Beginning	Minimum	Ending
Common equity tier 1 risk-based capital ratio	10.63	9.84	9.84
Tier 1 risk-based capital ratio	10.63	9.84	9.84
Tier 1 leverage ratio	8.13	6.51	6.51
Total risk-based capital ratio	11.22	10.61	10.72

Conclusion

Despite the decline in capital ratios in the 2016 Severely Adverse Scenario, the results of the 2016 Stress Test demonstrates that, for every ratio in every quarter of the Stress Period, the Bank's capital ratios remain above regulatory well-capitalized levels and the Company's capital ratios remain in excess of the minimum capital standards required by the FRB.