

Deutsche Bank Trust Corporation

2017 Mid-Cycle Stress Test Disclosure



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## 1 Overview and Requirements

Deutsche Bank Trust Corporation (“DBTC”, “we” or “our”) is a U.S. bank holding company (“BHC”) regulated by the Board of Governors of the Federal Reserve System (“FRB”) that primarily engages in commercial banking activities through its main depository institution subsidiary, Deutsche Bank Trust Company Americas (“DBTCA”). DBTC is an indirect wholly-owned subsidiary of Deutsche Bank Aktiengesellschaft (“DBAG”, and together with its subsidiaries, “DB Group”).

DBTC and its subsidiaries engage in a variety of lending, deposit taking and other financial services activities. DBTC operates three primary Lines of Business (“LoBs”): Corporate & Investment Banking; Deutsche Bank Wealth Management; and Deutsche Bank Asset Management.

Section 165(i)(2) of the Dodd-Frank Wall Street Reform and Consumer Protection Act (“Dodd-Frank Act”) and the related regulations promulgated thereunder by the FRB require U.S. BHCs with \$50 billion or more of total consolidated assets, such as DBTC, to conduct two stress tests each year, generally referred to as the Dodd-Frank Act stress tests or “DFAST”. Under the annual DFAST requirement, DBTC and DBTCA are required to conduct and complete stress tests over a nine quarter time horizon using a set of macroeconomic scenarios (Supervisory baseline, Supervisory adverse and Supervisory severely adverse) provided by the FRB.<sup>1</sup> Under the mid-cycle DFAST requirements, DBTC is also required to conduct a mid-cycle stress test using a set of internally developed macroeconomic scenarios (BHC baseline, BHC adverse and BHC severely adverse) designed to stress the firm’s idiosyncratic risks and vulnerabilities (“Mid-Cycle DFAST”). The results of these stress tests are submitted to the FRB. For the 2017 Mid-Cycle DFAST, the forecast time horizon for the stress tests is the nine quarter period beginning in the third quarter of 2017 (July 1, 2017) and continuing through the end of the third quarter of 2019 (September 30, 2019).

The DFAST rules require DBTC to publish a summary of its 2017 Mid-Cycle DFAST results under the BHC severely adverse scenario. The projections, which form the basis of the information provided in this report, represent hypothetical estimates that involve an economic outcome that is more adverse than expected and, as such, these estimates do not represent DBTC’s expected losses, revenues, net income before taxes, or capital ratios. The Mid-Cycle DFAST for DBTC was conducted in accordance with the amended Stress Test Rules.<sup>2</sup> The Mid-Cycle DFAST process is not conducted under the FRB’s Capital Plan Rule<sup>3</sup> and is not part of the annual Comprehensive Capital Analysis and Review process. Accordingly, the FRB does not provide an objection or non-objection to a firm’s Mid-Cycle DFAST results.

The results of DBTC’s Mid-Cycle DFAST indicate that we would expect to have ample capital throughout a hypothetical severe and protracted economic downturn to allow DBTC to continue operations, maintain ready access to funding, remain a financial intermediary, and meet obligations to creditors and counterparties and the expectations of internal and external stakeholders.

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<sup>1</sup> For more information with respect to the scenarios provided by the FRB, see Board of Governors of the Federal Reserve System (Feb. 10, 2017), “2017 Supervisory Scenarios for Annual Stress Tests Required under the Dodd-Frank Act Stress Testing Rules and the Capital Plan Rule,” available at <https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20170203a5.pdf>.

<sup>2</sup> See 12 C.F.R. 252 Subpart F.

<sup>3</sup> See 12 C.F.R. 225.8.

## 1.1 Overview and Description of DBTC's Severely Adverse Scenario

DBTC's BHC severely adverse ("BHC SA") scenario assumes a sharp U.S. and global recession. The key characteristic of this scenario is a recessionary cycle of collapsing business sentiment, contraction in consumer and investment spending, and severe financial market disruptions.

The U.S. economic cycle downturn is assumed to begin in Q3 2017 and Gross Domestic Product ("GDP") contracts as much as 6.1% over the scenario horizon. The general collapse in aggregate demand and economic activity pushes down inflation and results in an increase in U.S. unemployment, which peaks at 10.2% in Q2 2019. Global spill-overs via trade, financial linkages, and uncertainty shocks lead to a severe recession in Europe and a sharp slump in emerging markets. Equities and corporate bonds are assumed to sell-off in line with the collapse in business sentiment and rising risk aversion.

Monetary policy responds quickly by cutting the federal funds target rate to a range of 0 to 0.25% in the first quarter of the scenario. Additionally the FRB is assumed to cut the interest rate on excess reserves ("IOER") in several steps to -0.25%, similar to policies that other central banks have implemented in the past.

Other macroeconomic and market conditions assumed in DBTC's BHC SA scenario include:

- Residential housing prices drop 23% nation-wide, with shocks being particularly severe in New York City and Los Angeles;
- Commercial real estate prices decline up to 37%;
- GDP in the European Monetary Union contracts 6.5% over the scenario horizon;
- Implied market volatility peaks at 80%;
- Global trade volumes contract 36%;
- S&P 500 market index drops up to 54%;
- Corporate credit spreads widen significantly, with BBB spreads peaking at 5.5 percentage points;
- As a consequence of severe financial market disruptions, tensions arise in U.S. interbank money markets;
- U.S. Treasuries rally and yields on 10-Year U.S. Treasury bonds fall as low as 0.5%;
- The U.S. dollar is assumed to benefit from safe haven and repatriation flows; and
- The USD to EUR foreign exchange rate bottoms out at 0.95 USD per EUR.

Certain idiosyncratic events were also included in the BHC SA stress scenario.

## 2 Risk Types

DBTC has identified the following risks and risk drivers arising from its strategies and business activities under the BHC SA scenario. Material risks, individually and in the aggregate, are incorporated in internally defined idiosyncratic events and in models, and are projected to result in material balance sheet, income statement, or capital impacts.

### 2.1 Credit Risk

Credit risk arises from any transaction in which an actual, contingent or potential claim against a borrower, obligor or other counterparty exists.

Risk drivers for credit risk include, but are not limited to:

- Counterparty default risk related to loans;
- Loss severity due to a decline in collateral values or inability to utilize collateral; and
- Changes in commitment and utilization.

### 2.2 Operational Risk

Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems as well as from external events. This includes legal risk and excludes strategic and business risk.

Risk drivers for operational risk include, but are not limited to:

- Anti-financial crime risks (including anti-money laundering/Bank Secrecy Act risks);
- Transaction processing risks;
- Information security risks (e.g., cyber security, identity risk); and
- Technology and infrastructure disruption risks.

Many of the key drivers of reputational and compliance risks, as described below, are also drivers of the operational risk exposure of DBTC.

### 2.3 Market Risk

In general, market risk arises from the uncertainty concerning changes in market prices and rates (including interest rates, foreign exchange rates, equity prices and commodity prices) and other relevant parameters. As of June 30, 2017, aggregate trading assets and liabilities represented less than 1% of DBTC's total assets and fall below the thresholds for application of the Market Risk Capital Rule.<sup>4</sup>

### 2.4 Liquidity Risk

Liquidity risk is the risk arising from the potential inability to meet payment obligations when they come due.

Given that over 95% of DBTC's assets reside in DBTCA and are funded solely with stable deposits and equity capital, liquidity risk (e.g., extensive deposit withdrawal and inability to fund assets) is low with respect to DBTC.

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<sup>4</sup> See 12 C.F.R. 217.201.

## 2.5 Business Risk

Business risk is the risk assumed due to potential changes in general business conditions, such as changes in markets, client behaviors and technological developments. This can affect business results if DBTC fails to adjust quickly to changing conditions.

Risk drivers for business risk include, but are not limited to:

- An economic downturn driving a decline of (new) business activity coupled with increased utilization of unfunded commitments and resulting credit losses; and
- Changes in competition and the regulatory framework applicable to DBTC that result in significant business impact.

## 2.6 Reputational Risk

Reputational risk is the risk of possible damage to DBTC's brand and reputation, and the associated risk to earnings, capital or liquidity, arising from any association, action or inaction by DBTC and/or its affiliates which could be perceived by stakeholders to be inappropriate, unethical or inconsistent with DBTC's values and beliefs.

Potential sources of reputational risk include, but are not limited to:

- Unsuitable products or transactions;
- Regulatory actions;
- Dealings with certain clients; and
- Employee misconduct.

## 2.7 Compliance Risk

Compliance risk is defined as the current or prospective risk to earnings, capital and/or public trust arising from violations or non-compliance with laws, rules and regulations or ethical standards. Such violations or non-compliance may lead to fines, damages and/or the voiding of contracts and may diminish an institution's reputation (as discussed above).

Potential sources of compliance risk include, but are not limited to:

- Duties to customers risk (e.g., client suitability, fiduciary risk); and
- Supervisory control risks and regulatory compliance risks.

### 3 Methodology

For purposes of DFAST, DBTC uses quantitative models and expert judgment estimation approaches to project asset and liability balances, revenue, losses, risk weighted assets (“RWA”) and capital over the planning horizon. All quantitative models and expert judgment estimation approaches undergo a thorough review and challenge process and are validated for their conceptual soundness.

#### 3.1 Pre-Provision Net Revenue

Net interest income (“NII”) is the product of projected balances and rates. Asset and liability balance projections take into consideration contractual maturity information, prepayments, new business, and non-accruals. Projected rates take into consideration contractual pricing for existing exposures and projected pricing on new business. Balances, prepayments, non-accruals, and pricing on new business are projected using quantitative and expert judgment estimation approaches leveraging the historical relationship between modeled outcomes and drivers identified by the LoBs.

Non-interest income is projected using quantitative and expert judgment estimation approaches that incorporate key drivers and scenario inputs for fee income, shortfall income, trading gains/losses, other gains/losses, transfer pricing, and cash management.

Non-interest expense is driven by internal policies and spending strategy. Management uses historical information and internal operating variables to project the sub-components of non-interest expense, including: salary expense, benefits expense, other personnel expenses, premises and fixed assets, communication and data services, and intercompany expenses.

#### 3.2 Losses and Provisions

##### Credit Risk

DBTC projects credit losses under stress using an expected loss approach, where expected losses depend on the probability of default (“PD”), loss given default, and exposure at default. These risk parameters are projected under stress and then utilized to estimate DBTC's potential net charge-offs, Allowance for Loan and Lease Losses, and Provision for Loan and Lease Losses (“PLLL”) over the projection horizon.

DBTC uses a suite of models tailored to its specific business portfolios for estimating the impact of the macroeconomic cycle on default rates. Stressful macroeconomic conditions impact PDs differently for each credit portfolio using bespoke sets of macroeconomic variables. The models are segmented based on the structure and associated risk drivers of each portfolio.

##### Operational Risk

DBTC's approach to the operational risk loss projections includes results from quantitative models and expert judgment estimation approaches.

Management projects legal and non-legal related operational risk losses utilizing a suite of quantitative models, scenario analyses, and qualitative expert judgment. Operational risk is assessed in terms of:

- Baseline and stressed losses based on internal operational loss data;
- Baseline and stressed losses related to current and pending litigation exposures; and
- Idiosyncratic tail risk losses based on current and expected future risk profile.

Results are then compared against empirical benchmarks and a benchmark model to assess appropriateness of overall loss estimates.

## Market Risk

Mark-to-Market losses/gains from trading assets and liabilities are included in non-interest revenue. Non-interest revenue projections associated with Market-to-Market positions are driven primarily by macroeconomic drivers. DBTC is exposed to a limited amount of market risk.

## 3.3 Changes in Capital Ratios

Capital projections utilize a framework that is based on exposure identification and data sourcing, risk weight classification, exposure calculation, aggregation, and report line item mapping. Using balances as of June 30, 2017, capital supply was projected based on anticipated activity over the planning horizon and the resulting balance and pre-provision net revenue ("PPNR") projections under the BHC SA scenario.

RWAs were projected using a rule-based approach based on interpretations of the U.S. Basel III capital rules. Exposure attributes were used to classify exposures and determine the corresponding risk weights and Credit Conversion Factors ("CCFs"). Once the RWA classification of exposures was determined, the risk weights and CCFs were applied to actual and projected balances for all assets. All measures were calculated utilizing the standardized approach.

## 3.4 Capital Actions

For purposes of the DFAST results set forth herein, standardized capital action assumptions were applied as required by 12 C.F.R. 252.56(b), as follows:

*(1) For the first quarter of the planning horizon, the bank holding company must take into account its actual capital actions as of the end of that quarter; and*

*(2) For each of the second through ninth quarters of the planning horizon, the bank holding company must include in the projections of capital:*

*i. Common stock dividends equal to the quarterly average dollar amount of common stock dividends that the company paid in the previous year (that is, the first quarter of the planning horizon and the preceding three calendar quarters) plus common stock dividends attributable to issuances related to expensed employee compensation or in connection with a planned merger or acquisition to the extent that the merger or acquisition is reflected in the covered company's pro forma balance sheet estimates;*

*ii. Payments on any other instrument that is eligible for inclusion in the numerator of a regulatory capital ratio equal to the stated dividend, interest, or principal due on such instrument during the quarter;*

*iii. An assumption of no redemption or repurchase of any capital instrument that is eligible for inclusion in the numerator of a regulatory capital ratio; and*

*iv. An assumption of no issuances of common stock or preferred stock, except for issuances related to expensed employee compensation or in connection with a planned merger or acquisition to the extent that the merger or acquisition is reflected in the covered company's pro forma balance sheet estimates.*

## 4 Mid-Cycle DBTC Stress Test Results<sup>5</sup>

### 4.1 Pre-Provision Net Revenue, Provisions, Other Gains/Losses and Net Income before Taxes

Figure 4-1: DBTC Projected Nine Quarter Cumulative PPNR, PLLL, Other Gains/Loss and Net Income before Taxes under the BHC Severely Adverse Scenario

Projected PPNR, PLLL, Other Gains/Losses and Net Income before Taxes – DBTC	
\$ millions	Cumulative 9Qtrs
PPNR <sup>6</sup>	(394)
Other Revenue	0
Less	:
Provision for Loan and Lease Losses	181
Realized Losses/(Gains) on Securities (AFS/HTM)	0
Other Losses/(Gains)	0
Equals	
Net (Loss)/Income Before Taxes	(575)

### 4.2 Cumulative Loan Losses

Figure 4-2: DBTC Projected Nine Quarter Cumulative Loan Losses by Loan Type under the BHC Severely Adverse Scenario<sup>7</sup>

Projected Loan Losses – DBTC		
\$ millions	Cumulative 9-Quarters	Portfolio Loss Rates (%) <sup>8</sup>
Loan Losses	220	2.12
First Lien Mortgages, Domestic	32	1.15
Junior Liens and HELOCs, Domestic	19	3.16
Commercial and Industrial	26	2.00
Commercial Real Estate, Domestic	96	4.27
Credit Cards	N/A	N/A
Other Consumer	2	1.74
Other Loans	45	1.35

<sup>5</sup> These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios

<sup>6</sup> Trading and counterparty losses are included in PPNR.

<sup>7</sup> Numbers may not foot due to rounding.

<sup>8</sup> Portfolio loss rates are calculated as cumulative nine quarter loan losses divided by the average nine quarter loan balance. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair value option and are calculated over nine quarters.

### 4.3 Risk Weighted Assets

Figure 4-3: DBTC Projected Risk Weighted Assets

Actual 2Q17 and Projected 3Q19 Risk Weighted Assets under the BHC Severely Adverse Scenario - DBTC		
\$ millions	Actual 2Q17	Projected 3Q19
		Standardized Approach
Risk Weighted Assets	11,438	9,907

### 4.4 Capital Ratios

Figure 4-4: DBTC Capital Results under the BHC Severely Adverse Scenario

Capital Ratios – DBTC			
Capital Ratios (%)	Actual – 2Q17	Stressed Capital Ratios	
		Ending – 3Q19	Projected - 9Qtrs Minimum
Common Equity Tier 1 Capital Ratio	69.6%	65.7%	59.9%
Tier 1 Capital Ratio	69.6%	65.7%	59.9%
Total Capital Ratio	69.8%	66.3%	60.9%
Tier 1 Leverage Ratio	15.7%	16.8%	14.3%

## 5 Drivers of DBTC Stress Test Results

### 5.1 Capital Ratios<sup>9</sup>

As of June 30, 2017, DBTC had Common Equity Tier 1 (“CET1”), Tier 1 capital, Total capital, and Tier 1 leverage ratios of 69.6%, 69.6%, 69.8% and 15.7%, respectively. DBTC’s capital is mainly composed of CET1, the form of capital with the highest loss absorbing capacity.

Regulatory capital ratios are calculated and reported under the U.S. Basel III-based capital rules as in effect for a given quarter.

Throughout the projection horizon under the BHC SA scenario, DBTC has capital ratios substantially in excess of minimum CET1, Tier 1 capital, Total capital, and Tier 1 leverage ratio requirements of 4.5%, 6.0%, 8.0%, and 4.0%, respectively. DBTC results show post-stress minimums of 59.9%, 59.9%, 60.9% and 14.3% for CET1, Tier 1 capital, Total capital, and Tier 1 leverage ratios, respectively.

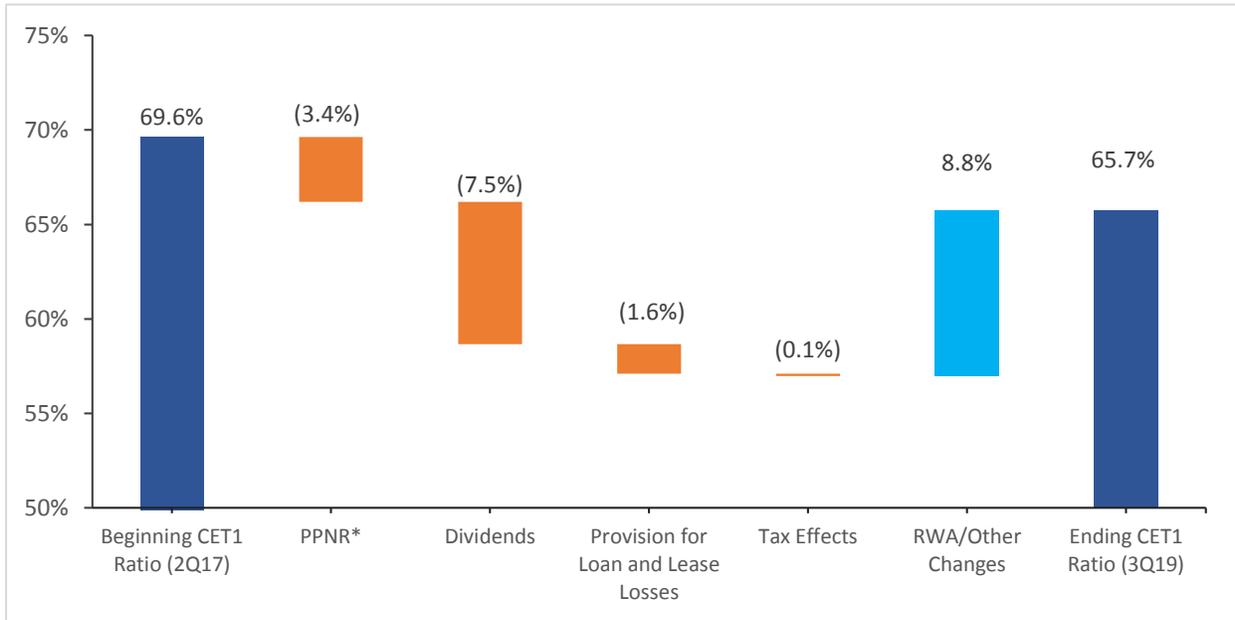
The main drivers of changes in DBTC’s regulatory capital ratios over the nine quarter planning horizon in the BHC SA scenario consist of:

- A decrease in RWA, primarily driven by a reduction in loans leading to increases in CET1, Tier 1, and Total capital ratios;
- Negative PPNR over the planning horizon, due to operational risk expenses from idiosyncratic events and the impact of negative interest rates;
- Projected dividends based on DFAST standardized capital action assumptions as required by 12 C.F.R. 252.56(b); and
- Projected increase in provisions for loan and lease losses over the planning horizon that contribute to decreases in CET1, Tier 1, and Total capital ratios.

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<sup>9</sup> These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios.

Figure 5-1: Key Drivers of Mid-Cycle DFAST Pro Forma CET1 Capital for DBTC under the BHC Severely Adverse Scenario<sup>10</sup>



\*PPNR includes impacts from operational risk idiosyncratic events

Cumulative PPNR leads to a reduction in capital over the planning horizon, due to the following factors: (i) increased operational risk expenses that include losses related to hypothetical idiosyncratic events;<sup>11</sup> (ii) reduced net interest income arising from negative interest rates; and (iii) slightly lower non-interest income primarily driven by challenging economic conditions and a smaller overall balance sheet.

DBTC’s business strategy and risk profile have changed significantly since 2008, with an emphasis on exiting certain businesses while focusing on others. Reductions in the balance sheet drove a decline in RWA over the nine-quarter projection horizon. These reductions in RWA account for the majority of the CET1 ratio increase across the projection horizon.

DBTC’s RWA projections reflect the application of the FRB’s capital rules in effect for a given quarter.

DBTC’s disclosures of projected results, risks, and assumptions are hypothetical pursuant to the requirements of the DFAST and related instructions. These scenarios and assumptions do not reflect DBTC’s future expectations; they involve an economic outcome that is more adverse than expected and, as such, these estimates do not represent DBTC’s expected losses, revenues, net income before taxes, or capital ratios.

<sup>10</sup> Numbers may not foot due to rounding.

<sup>11</sup> Operational risk and counterparty losses flow through PPNR (i.e., non-interest expense).