



September 2017

FINANCIAL REGULATION

Perspectives on the Swaps Push-Out Rule

Accessible Version

GAO Highlights

Highlights of [GAO-17-607](#), a report to congressional requesters

Why GAO Did This Study

Given the role of derivatives in contributing to the 2007—2009 financial crisis, the Dodd-Frank Act includes various provisions that subject the swap market and its participants to greater regulation, including section 716. Proponents of section 716 sought to prohibit banks from engaging in riskier swap activities that could cause the banks to need federal assistance backed by taxpayers. Opponents of section 716 maintained that swaps trading by banks did not significantly contribute to the financial crisis. In late 2014, section 716 was amended to narrow its scope of prohibited swap activities. Banks generally were required to begin complying with the amended section 716 in July 2015.

GAO was asked to examine various effects of the amended and original versions of section 716. This report examines the provision's effect on U.S. banks and their BHCs, end-users of swaps, and taxpayers in light of other Dodd-Frank Act reforms.

GAO analyzed publicly available data on swaps and derivatives held by banks and their BHCs and reviewed laws and regulations applicable to swaps as well as academic, industry, and GAO reports, research, and other materials. GAO also interviewed federal banking and swaps regulators, 15 U.S. banks that were registered as swap dealers and thus covered by section 716, end-users that were or would have been affected by section 716, an industry association, and experts, such as academics researching the swaps market.

View [GAO-17-607](#). For more information, contact Lawrence L. Evans, Jr., at (202) 512-8678 or EvansL@gao.gov

September 2017

FINANCIAL REGULATION

Perspectives on the Swaps Push-Out Rule

What GAO Found

Since the 1980s, banks have been engaging in swaps: financial contracts (derivatives) in which two parties “swap,” or exchange, payments based on changes in asset prices or other values. A variety of firms (end-users) use swaps to hedge risk, to speculate, or for other purposes. For example, an airline may use swaps to lock in its fuel price to hedge against a future price rise. End-users engage in swaps through swap dealers, and some large banks act as swap dealers, exposing them to risks. Section 716 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act)—also known as the “swaps push-out rule”—requires banks registered as swap dealers, in effect, to stop engaging in certain swap activities to remain eligible for federal financial assistance but allows them to “push out” such activities to nonbank affiliates within the same bank holding company (BHC). As originally enacted, section 716 would have covered certain equity, commodity, and credit default swaps activities, but amendments made in 2014 now cover only certain swap activity based on asset-backed securities.

GAO analyses of the effects of the amended and original versions of section 716 on U.S. banks and their BHCs, swap end-users, and taxpayers in light of other Dodd-Frank Act reforms found the following:

- *A significantly larger volume of swaps would have been pushed out under the original section 716.* The amended section 716 affected four U.S. banks and caused them to push out an estimated \$265 billion of swaps in notional value as of September 30, 2016, or less than 1 percent of their total derivatives. The original version would have affected 11 U.S. banks (including the 4 banks) and could have affected an estimated \$10.5 trillion of swaps in notional value, or about 6 percent of their total derivatives, if the provision had not been amended.
- Section 716 increases risks and costs for BHCs and end-users. Under the amended version, banks moved their covered swap activities to nonbank affiliates, requiring the affiliates and clients to incur legal and operational costs. Banks and end-users told GAO that moving the swaps can increase their risks and, in turn, costs. Such risks and costs likely would have been greater under the original version because of its broader scope.
- Other Dodd-Frank Act provisions mitigate risks. Section 716 seeks to reduce a bank's risk of failure and potential need for federal assistance, but the act's other reforms also seek to mitigate such risks. For example, regulators have subjected banks to enhanced prudential and other requirements that can help to mitigate their swap-related risks. Consistent with such requirements, GAO's analyses indicate the 11 U.S. banks that would have been affected by the original section 716 held financial resources needed to support their swap-related credit, liquidity, and market risk exposures as of September 30, 2016. Federal banking regulators and BHCs with the largest bank swap dealers are continuing to develop resolution strategies that seek to resolve a large BHC in an orderly manner and without federal assistance if it were to fail. These strategies, if successful, can help BHCs to wind-down or sell their swaps in an orderly manner and avoid value destruction.

Contents

Letter		1
	Background	4
	Section 716 Affected a Small Number of U.S. Banks and a Relatively Small Percentage of Their Total Derivatives	18
	Section 716 Imposes Costs on, and Increases Risks for, BHCs and Swap End-Users	23
	Banks Continue to Engage in Swap Activity Covered under the Original Section 716 and Mitigate Associated Risks	33
	Other Dodd-Frank Act Reforms Mitigate the Potential Need for Taxpayer-Backed Federal Assistance	44
	Agency Comments	49
<hr/>		
Appendix I: Objectives, Scope, and Methodology		51
Appendix II: Banks' Reported Derivative Measures and Their Relationship to Derivative Risks		56
Appendix III: Select Dodd-Frank Act Requirements That Help Mitigate Risks Associated with Banks' Swap Activities		64
Appendix IV: Estimating Certain Risks for U.S. Banks That Would Have Been Affected by the Original Section 716		79
Appendix V: Dodd-Frank Act Resolution Reforms and Largest U.S. Bank Swap Dealers		92
Appendix VI: Regulators' Oversight of Section 716 Compliance		104
Appendix VII: GAO Contact and Staff Acknowledgments		107
Appendix VIII: Accessible Data		108
	Data Tables	108
<hr/>		
Tables		
	Table 1: Federal Banking Prudential Regulators and Their Basic Functions	5
	Table 2: Example of an Interest Rate Swap	58

Table 3: Example of a Credit Default Swap Contract	59
Table 4: Hypothetical Example of Bank B’s Derivatives with Two Counterparties under Legally Enforceable Master Netting Agreements	61
Table 5: Hypothetical Example of Bank B’s Derivatives Portfolio’s Notional Amounts, Gross Fair Values, and Fair Values after Netting and Collateral	63
Table 6: Basel III Minimum Capital and Leverage Regulatory Requirements Applicable to Banks and Their Holding Companies	66
Table 7: Minimum Liquidity Ratio Requirements Applicable to Certain Banks and Their Holding Companies	73
Table 8: Key Dodd-Frank Act Requirements That Seek to Reduce the Probability of Failure of a Bank or Its Holding Company	77
Table 9: Over-the-Counter Derivatives’ Fair Value of Collateral as a Percentage of Net Current Credit Exposure by Counterparty Type for the Four Largest U.S. Banks That Would Have Been Affected under the Original Section 716 (from the First Quarter of 2015 through the Third Quarter of 2016)	86
Table 10: Over-the-Counter Derivatives’ Fair Value of Collateral as a Percentage of Net Current Credit Exposure by Counterparty Type for the Seven Smaller U.S. Banks That Would Have Been Affected Under the Original Section 716 (from the First Quarter of 2015 through the Third Quarter of 2016)	87
Table 11: 2015 Resolution Plans’ Derivatives-Related Deficiencies or Shortcomings Jointly Identified by the Board of Governors of the Federal Reserve System and the Federal Deposit Insurance Corporation	94
Table 12: Summary of Selected Actions Taken by Four U.S. Bank Holding Companies to Address the Board of Governors of the Federal Reserve System and the Federal Deposit Insurance Corporation’s Derivatives-Related Guidance for the 2017 Resolution Plans	96

Figures

Figure 1: Section 716 Timeline and Covered Swaps, from July 2013 through July 2015	12
--	----

Figure 2: Simplified Example of the Structure of a U.S. Bank Holding Company and How It Could Move Swap Activities Covered under Section 716 to a Nonbank Affiliate	14
Figure 3: Overview of Clearing, Trading, and Reporting Requirements under Dodd-Frank Act Swaps Reforms	18
Figure 4: Key Information about the Derivatives Holdings of U.S. Banks Registered as Swap Dealers, as of September 30, 2016	20
Figure 5: Credit, Equity, and Commodity and Other Derivatives Held by the 11 Bank Swap Dealers That Would Have Been Affected by the Original Section 716 as a Percentage of the Notional Value of Their Total Derivatives, as of September 30, 2016	22
Figure 6: Example of Bank Swap Dealer's End-User Portfolio Affected by Section 716 of the Dodd-Frank Act	31
Figure 7: Select Dodd-Frank Act's Prudential and Other Requirements That Help Mitigate Swap-Related Risks Faced by U.S. Bank Swap Dealers	38
Figure 8: Four Largest U.S. Swap Dealer Banks' Recognized Net Gains or Losses from Exposures That Include Swaps Covered by the Original Section 716 as a Percentage of Bank Capital (from the First Quarter of 2015 through the Third Quarter of 2016)	89
Figure 9: Seven Smaller U.S. Swap Dealer Banks' Recognized Net Gains or Losses from Exposures That Include Swaps Covered by the Original Section 716 as a Percentage of Bank Capital (from the First Quarter of 2015 through the Third Quarter of 2016)	90
Figure 10: Overview of a Bank Holding Company's Bankruptcy Process for Implementing the Single Point of Entry Strategy	97
Figure 1: Section 716 Timeline and Covered Swaps, from July 2013 through July 2015 (Two-year Section 716 transition period granted	108
by federal bank regulators upon banks' requests)	108
Figure 4: Key Information about the Derivatives Holdings of U.S. Banks Registered as Swap Dealers, as of September 30, 2016	108
Figure 5: Credit, Equity, and Commodity and Other Derivatives Held by the 11 Bank Swap Dealers That Would Have Been Affected by the Original Section 716 as a	

Percentage of the Notional Value of Their Total Derivatives, as of September 30, 2016	109
Figure 7: Select Dodd-Frank Act's Prudential and Other Requirements That Help Mitigate Swap-Related Risks Faced by U.S. Bank Swap Dealers	109
Figure 8: Four Largest U.S. Swap Dealer Banks' Recognized Net Gains or Losses from Exposures That Include Swaps Covered by the Original Section 716 as a Percentage of Bank Capital (from the First Quarter of 2015 through the Third Quarter of 2016)	110
Figure 9: Seven Smaller U.S. Swap Dealer Banks' Recognized Net Gains or Losses from Exposures That Include Swaps Covered by the Original Section 716 as a Percentage of Bank Capital (from the First Quarter of 2015 through the Third Quarter of 2016)	111

Abbreviations

AIG	American International Group, Inc.
BHC	bank holding company
Call Reports	Consolidated Reports of Condition and Income
CCAR	Comprehensive Capital Analysis and Review
CFTC	Commodity Futures Trading Commission
CLAR	Comprehensive Liquidity Assessment and Review
DFAST	Dodd-Frank Act stress tests
Dodd-Frank Act	Dodd-Frank Wall Street Reform and Consumer Protection Act
FDIC	Federal Deposit Insurance Corporation
Federal Reserve	Board of Governors of the Federal Reserve System
GSIB	global systemically important bank holding company
ISDA	International Swaps and Derivatives Association, Inc.
LCR	Liquidity Coverage Ratio
Lehman	Lehman Brothers Holdings Inc.
NSFR	Net Stable Funding Ratio
OCC	Office of the Comptroller of the Currency
OTC	over-the-counter
RWA	risk-weighted assets
SEC	Securities and Exchange Commission
SPOE	Single Point of Entry
VaR	Value-at-risk

This is a work of the U.S. government and is not subject to copyright protection in the United States. The published product may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.



September 1, 2017

The Honorable Elizabeth Warren
Ranking Member
Subcommittee on Financial Institutions and Consumer Protection
Committee on Banking, Housing and Urban Affairs
United States Senate

The Honorable Elijah E. Cummings
Ranking Member
Committee on Oversight and Government Reform
House of Representatives

Swaps and other over-the-counter (OTC) derivatives played a role in the 2007—2009 financial crisis in varying degrees and ways, as illustrated by the failure of Lehman Brothers Holdings Inc. (Lehman) and the near failure of American International Group, Inc. (AIG).¹ A swap is a type of OTC derivative in which two parties agree to exchange payments based on the value of an underlying asset, a reference rate, or an index over a specified period.² According to a 2009 survey conducted by a derivatives industry association, 94 percent of the world’s 500 largest companies use derivatives to manage and hedge their business and financial risks.³ A number of large banks and other companies act as swap dealers by buying or selling swaps and other derivatives to client companies, or swap end-users.

Section 716 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd Frank Act)—also known as the “swaps push-out

¹See, for example, GAO, *Large Bank Holding Companies: Expectations of Government Support*, [GAO-14-621](#) (Washington, D.C.: July 31, 2014) and *Financial Crisis: Review of Federal Reserve System Financial Assistance to American International Group, Inc.*, [GAO-11-616](#) (Washington, D.C.: Sept. 30, 2011).

²Common types of derivatives include futures, options, forwards, and swaps and can be traded through an exchange or over-the-counter. This report focuses on swaps, as defined by section 1a(47) of the Commodity Exchange Act, and security-based swaps, as defined by section 3(a)(68) of the Securities Exchange Act. See 7 U.S.C. § 1a(47); 15 U.S.C. § 78c(a)(68).

³International Swaps and Derivatives Association, Inc., News Release, *Over 94% of the World’s Largest Companies Use Derivatives to Help Manage Their Risks, According to ISDA Survey*, April 23, 2009.

rule”—effectively required banks registered as swap dealers or security-based swap dealers with the Commodity Futures Trading Commission (CFTC) or the Securities and Exchange Commission (SEC), respectively, to stop engaging in certain types of swaps or security-based swap activities, or be prohibited from receiving certain types of assistance.⁴ The provision allowed covered banks to move such activity to nonbank affiliates. Before banks had to begin complying with section 716 (that is, stop engaging in certain swaps activity in order to retain access to certain federal assistance), the provision was amended in December 2014 to exclude most of the types of swaps that initially were subject to section 716.⁵ Proponents of the original section 716 sought to prohibit banks with access to federal assistance from engaging in riskier swap activities and to reduce the potential for the federal government, and therefore potentially taxpayers, to have to provide emergency assistance to banks engaging in such swap activities. In contrast, opponents of the provision maintained that swaps trading by banks did not significantly contribute to the 2007—2009 financial crisis. While the largest bank swap dealers supported amending section 716 to narrow its scope, other stakeholders held that the amendment could increase the risk of a bank needing federal assistance and could provide less protection to taxpayers. In addition to section 716, the Dodd-Frank Act included other provisions to address, among other things, the financial stability risks associated with major financial companies and the swap market.

You asked us to examine various effects of the amended and original section 716. This report examines

1. the number of U.S. banks and the value of their swaps that were affected under the amended section 716 and that would have been affected under the original section 716,
2. the actual and potential costs or negative effects of the amended and original section 716 for U.S. banks and swap end-users,

⁴Pub. L. No. 111-203, § 716, 124 Stat. 1376, 1648 (2010) (codified as amended at 15 U.S.C. § 8305). For purposes of this report, unless otherwise specified, we use the term “swap dealer” to refer to both swap dealers and security-based swap dealers, and we use the term “swap” to refer to both swaps and security-based swaps.

⁵Consolidated and Further Continuing Appropriations Act, 2015, Pub. L. No. 113-235, Div. E, § 630, 128 Stat. 2130, 2378 (2014).

-
3. U.S. banks' risks associated with swap activities that were covered under the original section 716 but not subject to the amended version of section 716, as well as mitigating factors, and
 4. the effects of section 716 and other Dodd-Frank Act requirements on risk to taxpayers in the event of bank failure.

To examine the number of U.S. banks and the value of their swaps affected by the amended and original section 716, we reviewed both versions of section 716 and relevant analyses prepared by the federal banking regulators, four large banks, selected law firms, and others. To estimate the notional amount of swaps affected by the original and amended section 716, we used data from the Consolidated Reports of Condition and Income (Call Reports) as of September 30, 2016, and data from SwapsInfo.com on structured finance swaps transacted between July 16, 2015, and September 30, 2016.⁶

To examine the costs or negative effects of the amended and original section 716 for U.S. banks and swap end-users, we reviewed the 2-year transition applications submitted by banks to the Board of Governors of the Federal Reserve System (Federal Reserve) or the Office of the Comptroller of the Currency (OCC); documentation on and materials related to the International Swaps and Derivatives Association (ISDA) Master Agreement and credit support annex; and reports addressing the implementation of section 716 published by consulting firms, credit rating agencies, and law firms.

To examine the banks' and taxpayers' risks associated with swap activities covered by the original section 716, we reviewed the Dodd-Frank Act's prudential and resolution reforms and related regulations; publicly available regulatory filings submitted by U.S. banks registered as swap dealers or their parent holding companies, including annual or quarterly financial filings and resolution plans; and industry, academic, and other studies or reports examining the role of derivatives in the 2007—2009 financial crisis and ways to mitigate risks posed by derivatives under the U.S. Bankruptcy Code. To analyze credit, liquidity, and market risks associated with swaps covered under the original section 716, we used primarily Call Report data, including the net positive and negative fair values of their trading derivatives (derivative assets and liabilities), fair value of their collateral collected for their trading

⁶SwapsInfo.com is a website managed by the International Swaps and Derivatives Association that captures data on U.S. credit default swap transactions.

derivatives, quarterly net gains or losses from their trading derivatives, and total risk-based capital, as well as data from annual or quarterly filings with SEC. We assessed the reliability of the data from the Call Reports, SwapsInfo.com, and SEC annual and quarterly filings by interviewing knowledgeable officials, reviewing relevant documentation, or testing the data for missing or incorrect values. We determined the data were sufficiently reliable for our reporting objectives.

For some or all of the objectives, we interviewed officials from the Federal Reserve, Federal Deposit Insurance Corporation (FDIC), OCC, CFTC, and SEC; 15 U.S. banks that were provisionally registered as swap dealers with CFTC and thus were subject to the amended and original section 716; 7 non-generalizable swap end-users that were judgmentally selected based on their use of swaps covered under the original or amended section 716; and other market participants or observers, including an industry association, credit rating agencies, and academics knowledgeable about section 716 or the swaps market. For more information on our scope and methodologies, see appendix I.

We conducted this performance audit from March 2016 to August 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Prudential Regulators

In the banking industry, the specific regulatory configuration for a banking institution generally depends on the type of charter the institution chooses. Depository institution charter types include commercial bank and thrift charters:

- Commercial banks originally focused on the banking needs of businesses but over time have broadened their services.
- Thrifts include savings banks, savings associations, and savings and loans and were originally created to serve the needs—particularly the mortgage needs—of those not served by commercial banks.

Charters may be obtained at the state or federal level. State regulators charter institutions and participate in the institutions’ oversight, but all institutions that have federal deposit insurance have a federal prudential regulator. The federal prudential regulators—which generally may issue regulations, conduct supervision, and take enforcement actions against industry participants within their jurisdiction—are OCC, Federal Reserve, and FDIC, and their basic functions are summarized in table 1.⁷ Additionally, FDIC insures deposits in banks and thrifts.

Table 1: Federal Banking Prudential Regulators and Their Basic Functions

Agency	Basic function
Office of the Comptroller of the Currency	Charters and supervises national banks, federal savings associations (also known as federal thrifts), and federally chartered branches and agencies of foreign banks.
Board of Governors of the Federal Reserve System	Supervises state-chartered banks that opt to be members of the Federal Reserve System, bank and thrift holding companies and the nondepository institution subsidiaries of those institutions, and nonbank financial companies designated by the Financial Stability Oversight Council for enhanced supervision. Also supervises Edge corporations pursuant to the Edge Act and, in conjunction with their primary supervisors, if any, certain designated financial market utilities (such as a clearinghouse) pursuant to the Dodd-Frank Act. ^a Also supervises state-licensed branches and agencies of foreign banks and regulates the U.S. nonbanking activities of foreign banking organizations.
Federal Deposit Insurance Corporation	Supervises insured state-chartered banks that are not members of the Federal Reserve System, as well as insured state savings associations and insured state chartered branches of foreign banks; insures the deposits of all banks and thrifts that are approved for federal deposit insurance; resolves all failed insured banks and thrifts; and may be appointed to resolve a financial company whose failure could threaten the financial stability of the United States. Also, has back-up supervisory responsibility for all federally insured depository institutions.

Source: GAO. | GAO-17-607

^aEdge Act corporations are established as separate legal entities and may conduct a range of international banking and other financial activities in the United States.

Large banking organizations in the United States generally are organized as bank holding companies (BHC), which are companies that can control, among other entities, one or more banks.⁸ Typically, a large U.S. parent (or top tier) BHC owns a number of domestic depository institutions that also engage in lending and other activities. A BHC also may own

⁷Under the Dodd-Frank Act provisions on regulation of the OTC swaps market, the prudential regulators include the Federal Reserve, OCC, FDIC, the Farm Credit Administration, and the Federal Housing Finance Agency. See 7 U.S.C. § 1a(39).

⁸For additional information on bank holding companies, see, for example, GAO, *Government Support for Bank Holding Companies: Statutory Changes to Limit Future Support Are Not Yet Fully Implemented*, [GAO-14-18](#) (Washington, D.C.: Nov. 14, 2013) and *Large Bank Holding Companies: Expectations of Government Support*, [GAO-14-621](#) (Washington, D.C.: July 31, 2014).

nonbanking and foreign entities that engage in a broader range of business activities, which may include securities dealing and underwriting, insurance, real estate, leasing and trust services, or asset management. A BHC's nonbank subsidiaries are affiliates of the BHC's bank subsidiaries.⁹ Some large U.S. BHCs have thousands of subsidiaries.

The Bank Holding Company Act of 1956, as amended, contains a comprehensive federal framework for the supervision and regulation of BHCs and their nonbank subsidiaries.¹⁰ Generally, any company that seeks to acquire control of an insured bank or BHC shall apply for approval as a BHC with the Federal Reserve.¹¹ Under the Bank Holding Company Act, BHCs are subject to, among other things, consolidated

⁹In general, companies that control or are under common control with an insured depository institution are defined by section 23A of the Federal Reserve Act as "affiliates" of the bank. 12 U.S.C. § 371c. Section 23A governs transactions between an insured depository institution and its affiliates. Among other things, section 23A sets the quantitative limitations on an insured depository institution's covered transactions with any single affiliate and with all affiliates combined; sets forth collateral requirements for certain transactions with affiliates; and requires all covered transactions to be conducted on terms consistent with safe and sound banking practices. The Dodd-Frank Act amended section 23A as it relates to derivatives and now provides that a derivative transaction with an affiliate is a covered transaction to the extent that the transaction causes an insured depository institution or a subsidiary to have credit exposure to the affiliate. Pub. L. No. 111-203, § 608, 124 Stat. 1376, 1608 (2010). The Dodd-Frank Act also requires that any credit exposure must be secured consistent with the collateral requirements of section 23A.

¹⁰Bank Holding Company Act of 1956, Pub. L. No. 84-511, 70 Stat. 133 (1956) (codified as amended at 12 U.S.C. §§ 1841-1852). BHCs are companies that own or control, among other entities, a bank, as defined in the Bank Holding Company Act. 12 U.S.C. § 1841(a)(1), (c).

¹¹Any one of the following circumstances may result in a company having control over a bank or other company under the Bank Holding Company Act: (1) stock ownership—the company owns, controls, or has the power to vote 25 percent or more of any class of the voting securities of a bank or BHC (either directly or indirectly or acting through one or more other persons); (2) ability to elect a board majority—the company controls the election of a majority of the directors or trustees of a bank or BHC; or (3) effective control of management—the Federal Reserve determines, after notice and opportunity for hearing, that the company directly or indirectly exercises a controlling influence over the management or policies of a bank or BHC. For purposes of any such proceeding, it is presumed that any company that directly or indirectly owns, controls, or has power to vote fewer than 5 percent of any class of voting securities of a specific bank or BHC does not have the requisite control. 12 U.S.C. § 1841(a)(1)-(3).

supervision by the Federal Reserve.¹² Further, the act restricts the activities of the BHC and its affiliates to those that are closely related to banking or, for qualified financial holding companies, activities that are financial in nature.¹³

Types of Swaps and Swap End-Users

In general, swaps and security-based swaps (collectively referred to as swaps in this report, unless otherwise noted) are types of derivative contracts that involve ongoing exchanges of payments for a specified period.¹⁴ Swaps and other derivatives have one or more “underlyings” (i.e., specified interest rate, security price, commodity price, foreign exchange rate, index of prices or rates, or other variable) and one or more notional amounts (i.e., number of currency units, shares, bushels, pounds, or other units specified in the contract) that help determine the amount of the payments. For example, an end-user seeking to hedge its interest rate risk may enter into an interest rate swap with a dealer to exchange fixed-rate interest payments of 5 percent of \$10 million for floating interest payments based on the 3-month London Interbank Offered Rate. Under the terms of the swap, the dealer agrees to make quarterly payments of 5 percent multiplied by \$10 million to the end-user, and the end-user agrees to make quarterly payments of the 3-month London Interbank Offered Rate multiplied by \$10 million. The notional value of this contract would be \$10 million because that is the specified

¹²In the United States, consolidated supervision generally is equated with holding company supervision at the top tier or ultimate holding company in a financial enterprise. The Federal Reserve oversees holding companies (including financial holding companies, which are bank holding companies qualified to engage in many nonbanking financial services) as well as thrift holding companies.

¹³In 1999, the Gramm-Leach-Bliley Act provided that a BHC may elect to become a financial holding company that can engage in a broader range of activities that the Federal Reserve determines to be financial in nature or incidental to such financial activity. 12 U.S.C. § 1843(k)(1). A financial holding company can engage in activities that the Federal Reserve determines (1) to be financial in nature or incidental to such financial activity, or (2) are complementary to a financial activity and do not pose a substantial risk to the safety and soundness of depository institutions or the financial system generally. The BHC and its depository institution subsidiaries must be well-capitalized and well-managed. 12 U.S.C. § 1843(l)(1).

¹⁴As discussed in detail later, CFTC has jurisdiction over swaps, which include interest rate swaps, foreign exchange swaps, commodity-based swaps, broad-based equity swaps and broad-based security index swaps. SEC has jurisdiction over security-based swaps, which include single-name and narrow-based security index swaps and swaps based on a single security.

value on which exchanged interest payments are based. Swaps and other derivatives volumes generally are measured by their notional amounts. For example, the notional amount of derivative contracts held by insured U.S. commercial banks and savings associations increased from around \$17 trillion in 1995 to around \$165 trillion in 2016. However, notional amounts generally do not represent amounts at risk.¹⁵

Financial and nonfinancial firms use swaps and other derivatives to hedge risk, to speculate, or for other purposes, such as to reduce uncertainty. For example, an airline may enter into a commodity swap to lock in its fuel price over a certain time horizon, so that it can better manage its costs. Banks and other end-users that are exposed to maturity, currency, or interest rate mismatches between assets and liabilities may enter into swaps to hedge their exposure. Speculators may enter into equity derivatives to speculate on the direction of equity markets in order to make a profit, understanding that the profit or loss from the swap can be large in comparison to the cost of entering the swap.

Unlike futures contracts, which are standardized financial contracts that are traded on exchanges, swaps traditionally have been privately negotiated between two counterparties in the OTC market. Types of swaps include the following:

- Interest rate swaps are contracts in which two parties agree to exchange interest cash flows or one or more notional principal amounts at certain times in the future according to an agreed-on formula. Banks, corporations, sovereigns, and other institutions use swaps to manage their interest-rate risks or speculate on interest-rate movements.
- Foreign exchange swaps are simultaneous purchases and sales of a certain amount of foreign currency for two different value dates. Corporations use such swaps to hedge their assets and liabilities incurred as a result of their overseas operations. Investors (e.g., international mutual funds) use such swaps to gain exposure to markets or to hedge currency risk.
- Commodity swaps are agreements between two counterparties to make periodic exchanges of cash based on notional quantity of a

¹⁵See appendix II for an explanation of notional amounts and measures of risks associated with swaps.

specified commodity or related index. The term “commodity” encompasses agricultural products, base metals, and energy products. Market participants include commodity producers and users, hedge funds, and mutual funds.

- Equity swaps are transactions in which payments referenced to the return on a certain equity index (e.g., S&P 500) or an equity and an interest rate are exchanged and are usually based on a fixed notional amount. End-users of equity swaps include money managers, hedge funds, insurance companies, corporations, and finance companies.
- A credit default swap is a contract between a seller and buyer of protection against the risk of default on a debt obligation issued by a reference entity and serves as an insurance policy that protects the buyer against the loss on the debt obligation in case of a default by the debt issuer (i.e., reference entity).¹⁶ The protection buyer makes periodic payments over the contract’s life, and the premium is a percentage of the contract’s notional value. If a credit event occurs (e.g., bankruptcy), the premium payment stops, and the protection seller pays the buyer the notional amount or agreed-to default payment. The debt obligation can include a loan, a bond, an asset-backed security, or a credit index. For example, an insurer that has invested in bonds issued by a company may go to a bank swap dealer to buy protection against the risk of the company defaulting on its bonds.¹⁷ In general, credit default swaps are between institutional investors and dealers.

For most OTC derivative transactions, a dealer is one of the two counterparties to the contract. The 102 entities provisionally registered with CFTC as swap dealers (as of April 2017) include U.S. and foreign banks, securities broker-dealers, and futures commission merchants. Some BHCs own two or more swap dealers. Dealers often trade with other dealers, such as to hedge, or offset, risk from their OTC derivatives trades with their client firms or other risks.

¹⁶Credit default swaps also can serve other risk mitigation functions, such as to help protect one party against the default of its counterparty in a separate arrangement. Another type of credit derivative is a total-rate-of-return swap in which a counterparty agrees to pay the total return on an underlying reference asset to its counterparty in exchange for a benchmark rate plus a spread.

¹⁷Appendix II provides an example of the mechanics of a credit default swap.

Section 716 of the Dodd-Frank Act

Section 716 prohibits the provision of federal assistance to banks that engage in certain swap activities but allows them to move, or “push out,” such activities to nonbank affiliates of the bank. As such, a BHC can continue to engage in those swaps through its nonbank subsidiaries.

Bank Swap Dealers

Section 716 of the Dodd-Frank Act does not directly prohibit a bank from engaging in swap activities. Rather, it provides that no federal assistance be provided to any “swaps entity” unless the entity restricts its swap activities to those permitted under the provision. The term “federal assistance” is defined as the use of any advances from any Federal Reserve credit facility or discount window that is not part of a program or facility with broad-based eligibility under section 13(3)(A) of the Federal Reserve Act, FDIC insurance or guarantees for the purpose of (A) making any loan to, or purchasing any stock, equity interest, or debt obligation of any swaps entity; (B) purchasing the assets of any swaps entity; (C) guaranteeing any loan or debt issuance of any swaps entity; or (D) entering into any assistance arrangement (including tax breaks), loss sharing, or profit sharing with any swaps entity. Covered depository institutions, including insured depository institutions, are included within the definition of a swaps entity only if they are registered swap dealers or

security-based swap dealers.¹⁸ Because banks do not want to jeopardize their access to federal assistance, section 716 effectively prohibits bank swap dealers from engaging in swap activity unless they restrict that activity to swaps permitted under the provision.

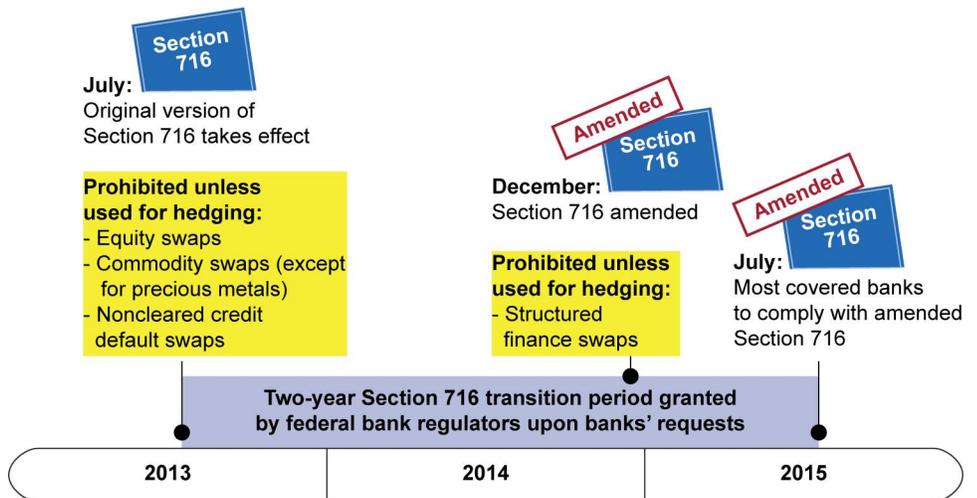
The original section 716 covered several types of swap activities: (1) swaps involving rates or reference assets permissible for investment by a national bank,¹⁹ (2) credit default swaps that are cleared by a derivatives clearing organization or a clearing agency, and (3) swaps transactions used for hedging or other similar risk-mitigating activities directly related to the bank's activities. Consequently, the original section 716 generally prohibited the provision of federal assistance to bank swap dealers that engaged in swap activity involving most equity swaps, commodity swaps referencing physical commodities (except for precious metals), and

¹⁸15 U.S.C. § 8305. Section 716 defines the term "swaps entity" to mean any swap dealer, security-based swap dealer, major swap participant, or major security-based swap participant that is registered under the Commodity Exchange Act or the Securities Exchange Act of 1934. Covered depository institutions that are registered as major swap participants or major security-based swap participants, and not as swap dealers or security-based swap dealers, are not included in the definition of "swaps entity." Covered depository institutions include insured depository institutions and United States uninsured branches or agencies of foreign banks. While the original version of section 716 did not explicitly include uninsured branches or agencies of foreign banks as covered entities, the Federal Reserve adopted a final rule to treat uninsured U.S. branches or agencies of foreign banks as insured depository institutions for purposes of section 716. 79 Fed. Reg. 340 (Jan. 3, 2014). The amended version of section 716 included uninsured U.S. branches or agencies of foreign banks in its definition of covered depository institutions. In general, a "swap dealer" is any person who: (i) holds itself out as a dealer in swaps; (ii) makes a market in swaps; (iii) regularly enters into swaps with counterparties as an ordinary course of business for its own account; or (iv) engages in any activity causing the person to be commonly known as a dealer or market maker in swaps. 7 U.S.C. § 1a(49). In general, a major swap participant is a person who is not a swap dealer and (i) who maintains a substantial position in swaps for any of the major swap categories as determined by CFTC and SEC, excluding positions for hedging or mitigating commercial risk and positions held by an employee benefit plan for the primary purpose of hedging risk; (ii) whose outstanding swaps create substantial counterparty exposure that could have serious effects on the financial stability of the U.S. banking system or financial markets; or (iii) is a financial entity that is highly leveraged relative to the amount of capital it holds and that is not subject to capital requirements established by an appropriate federal banking agency and maintains a substantial position in swaps in any major swap category. 7 U.S.C. § 1a(33). CFTC adopted a provisional registration process for swap dealers. SEC has adopted a registration process for security-based swap dealers but provided that such entities will not be required to register until after the agency finalizes certain fundamental security-based swap rules.

¹⁹Rates or reference assets permissible for investment by a national bank include those listed as permissible bank investments in 12 U.S.C. § 24(Seventh), including interest rates, foreign exchange, bullion metals, and loans or bank-eligible debt securities.

noncleared credit default swaps, unless the swaps were used for hedging or mitigating bank risk. As shown in figure 1, the original section 716 became effective in July 2013, but the law required the appropriate federal banking agency to permit a transition period of up to 24 months for swap entities that are insured depository institutions to divest or cease certain swap activities.²⁰ Several banks applied for and were granted 2-year extensions by the Federal Reserve and OCC, and those financial institutions had until July 16, 2015, or later to comply with section 716. Under the statute, these entities had the option of applying for an extension of the transition period for up to 1 additional year. Section 716 was amended in December 2014, before the end of each 2-year transition period that had been granted.

Figure 1: Section 716 Timeline and Covered Swaps, from July 2013 through July 2015



Source: GAO analysis of original and amended section 716 of the Dodd-Frank Act. | GAO-17-607

Note: All but two section 716 U.S. covered banks that were granted 2-year transition periods had to comply with the amended section 716 by July 16, 2015. The other two U.S. banks were granted 2-year extensions upon becoming registered swap dealers.

The amended section 716 significantly narrowed the scope of the original provision. The amended section 716 prohibits the provision of federal assistance only to bank swap dealers that engage in swap activities involving structured finance swaps (e.g., swaps on asset-backed

²⁰ See Pub. L. No. 111-203, § 716(f), 124 Stat. 1376, 1649 (codified as amended at 15 U.S.C. § 8305(f)). The law requires that the appropriate banking agency consult with and consider the views of CFTC or SEC, as appropriate.

securities), unless the swaps are used for hedging or unless the asset-backed securities underlying the swaps satisfied credit quality and classification requirements to be set forth by prudential regulators through regulations.²¹ Bank swap dealers are permitted to engage in swap activities involving all other types of swaps without losing access to federal assistance, including those that would have been covered by the original section 716. Additionally, like the original section 716, the amended section 716 allowed a covered bank to retain swaps entered into before the bank's compliance date (called legacy swaps). Thus, it generally prohibits bank swap dealers that were granted 2-year transitions from entering any new structured finance swaps on or after July 16, 2015, without losing access to federal assistance, unless the new swaps generally were used for hedging or risk-management purposes.

Nonbank Affiliates

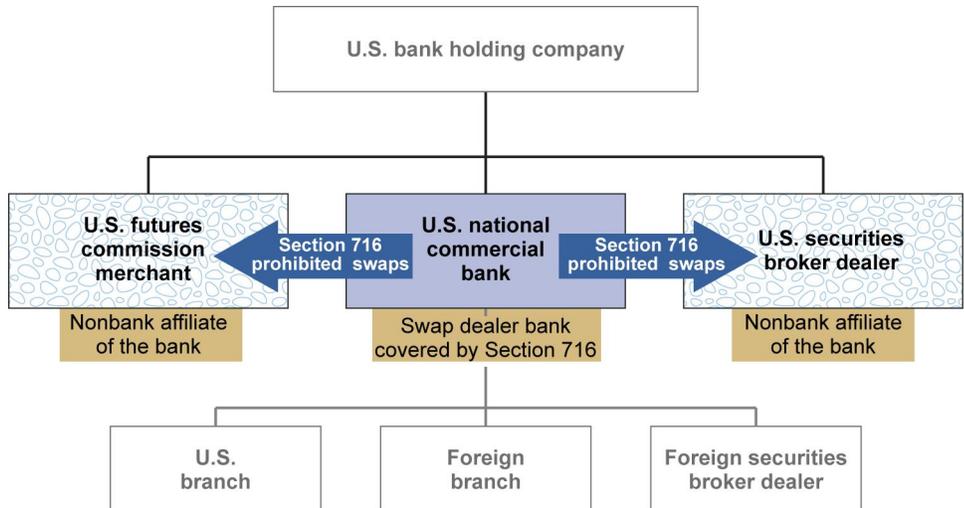
The original and amended versions of section 716 allowed covered banks to move their swap activities covered under section 716 to their nonbank affiliates, so long as the bank was part of a BHC or savings and loan holding company.²² Figure 2 provides a simplified example of a BHC that has both bank and nonbank subsidiaries. In the figure, the U.S. commercial bank is a bank swap dealer that engages in section 716 covered swaps activities under either version of the provision. In response, the BHC could move the bank's covered swap activities to one or both of these nonbank affiliates, including foreign nonbank affiliates.²³

²¹Section 716 defines a "structured finance swap" as a swap or security-based swap based on an asset-backed security (or group or index primarily comprised of asset-backed securities). 15 U.S.C. § 8305(d)(2).

²²In addition to the covered depository institution being required to be a part of a bank or savings and loan holding company or a foreign banking organization supervised by the Federal Reserve, the swaps entity affiliate must comply with sections 23A and 23B of the Federal Reserve Act and other requirements that CFTC or SEC and the Federal Reserve may determine to be necessary and appropriate. 15 U.S.C. § 8305(c). Sections 23A and 23B of the Federal Reserve Act include certain restrictions on transactions with affiliates, including limits on the aggregate amount of transactions between banks and their affiliates as well as requirements that a bank and its subsidiary engage in transactions only on terms that are substantially the same as those prevailing at the time for comparable transactions with nonaffiliated companies. See 12 U.S.C. §§ 371c, 371c-1.

²³As explained later in the report, this could trigger swap registration requirements for the nonbank affiliates if they were not already registered as swap dealers with CFTC.

Figure 2: Simplified Example of the Structure of a U.S. Bank Holding Company and How It Could Move Swap Activities Covered under Section 716 to a Nonbank Affiliate



Source: GAO. | GAO-17-607

Regulation of the Use of Derivatives by Banks

Currently, banks are permitted to structure, trade, or deal in a broad range of exchange-traded and OTC derivatives.²⁴ For banks to conduct derivatives activities, federal banking regulators generally require the banks to have adequate risk management and measurement systems and controls to conduct the activities in a safe and sound manner, and they must have sufficient capital to support the risks associated with the

²⁴Since around the early 1980s, OCC has permitted national banks to engage in derivatives activities. In general, national banks are permitted to conduct only the activities authorized under the National Bank Act of 1863. The act does not expressly authorize national banks to engage in derivatives trading and dealing, but its “bank powers” clause grants national banks general authority to engage in activities that are part of or incidental to the “business of banking,” which the act does not define. 12 U.S.C. § 24 (Seventh). Through its interpretive letters on the bank powers clause, OCC has concluded in a variety of contexts that national banks may engage in customer-driven, cash-settled financial intermediation transactions that they are authorized to conduct as part of or incidental to the business of banking under 12 U.S.C. § 24 (Seventh). Section 303 of the FDIC Improvement Act of 1991 and the related regulations issued by FDIC operate to restrict the activities and certain investments of insured state banks and their subsidiaries to those permissible for national banks, unless FDIC has determined that the activity would pose no significant risk to the appropriate deposit insurance fund and the state bank complies with applicable capital standards.

activities.²⁵ For example, before a bank conducts derivatives activities, senior management should ensure that all appropriate regulatory approvals are obtained and that adequate operational procedures and risk control systems are in place. After the bank's initial entry into derivatives activities has been properly approved, any significant changes in such activities or any new derivatives activities should be approved by the board of directors or, as appropriate, senior management. Other specific requirements include the following:

- Banks should have comprehensive written policies and procedures to govern their use of derivatives.
- Senior management should establish an independent unit or individual responsible for measuring and reporting derivatives risk exposures.
- Banks should have comprehensive risk management systems that are commensurate with the scope, size, and complexity of their activities and the risks they assume.
- Banks should have audit coverage of their derivatives activities adequate to ensure timely identification of internal control weaknesses or system deficiencies.
- The board of directors should ensure that the bank maintains sufficient capital to support the risk exposures (e.g., market risk, credit risk, liquidity risk, operational risk, legal risk) that may arise from its derivatives activities.²⁶

Bank swap dealers are subject to their federal banking regulator's prudential requirements, including minimum OTC swap margin (or

²⁵See, for example, the Office of the Comptroller of the Currency's Banking Circular 277, Risk Management of Financial Derivatives (Oct. 27, 1993) and OCC, Risk Management of Financial Derivatives, Comptroller's Handbook, Narrative - January 1997, Procedures - February 1998.

²⁶Market risk is the risk of financial loss resulting from movements in market prices, such as interest rates, commodity prices, stock prices, or the relative value of currencies (foreign exchange). Credit risk arises from the potential that a counterparty will fail to perform on an obligation. Liquidity risk is risk to an institution's financial condition from its inability to meet its contractual obligations. Operational risk is the potential for unexpected financial losses due to inadequate information systems, operational problems, breaches in internal controls, or fraud. Legal risk is the potential for financial losses due to unenforceable contracts, law suits, or adverse judgments.

collateral) requirements.²⁷ In addition, as discussed in the next section, banks that engage in swaps or security-based swap activities in amounts above a specified threshold must also register as swap or security-based swap dealers with CFTC or the SEC, respectively.²⁸

Regulation of the Swaps Market and Its Participants

Title VII of the Dodd-Frank Act establishes a new regulatory framework for swaps. The act authorizes CFTC to regulate swaps and SEC to regulate security-based swaps with the goals of reducing risk, increasing transparency, and promoting market integrity in the financial system. Title VII includes the following four major swaps reforms:

- **Registration, capital, margin, and other requirements.** Title VII provides for the registration and regulation of swap dealers and major swap participants, including subjecting them to (1) prudential regulatory requirements, such as minimum capital and minimum initial and variation margin requirements and (2) business conduct requirements to address, among other things, interaction with counterparties, disclosure, and supervision.²⁹

²⁷Prudential regulators adopted new margin rules for noncleared swaps requiring registered swap dealers to collect or post collateral (e.g., cash or securities) from or to counterparties. See 80 Fed. Reg. 74,840 (Nov. 30, 2015). Such collateral provides an additional cushion in front of capital to absorb derivative losses. See appendix III for more details. CFTC and SEC also have issued final or proposed rules to establish margin requirements on noncleared swaps pursuant to the Dodd-Frank Act.

²⁸CFTC requires an entity that conducts dealing activity in swaps above \$3 billion in aggregate notional amount over a 12-month period to register as a swap dealer, subject to a phase-in period during which the threshold is set at \$8 billion absent any further action by CFTC. The phase-in period will terminate on December 31, 2018. See 17 C.F.R. § 1.3(ggg); 81 Fed. Reg. 71,605 (Oct. 18, 2016). SEC has adopted registration rules that require registration of security-based swap dealers that conduct credit default swap dealing activity exceeding \$8 billion in aggregate notional amount and \$400 million in aggregate notional amount for other security based swaps during a phase-in period. After the phase-in period, registration thresholds will be \$3 billion for credit default swap that are security-based swaps and \$150 million for other security-based swaps. The compliance date for registration of security-based swap dealers has not yet occurred. See 80 Fed. Reg. 48,964 (Aug. 14, 2015); 77 Fed. Reg. 30,596, 30,756 (May 23, 2012).

²⁹In general, minimum capital requirements are designed to provide firms with sufficient liquidity to meet unsubordinated obligations to customers and counterparties and sufficient resources to wind down in an orderly manner without the need for a formal proceeding. Minimum margin requirements are generally intended to regulate the amount of credit directed into swaps and related transactions and to help protect swaps entities and their customers from price fluctuations and against losses arising from undue leverage. Minimum margin requirements also can help manage counterparty credit risk.

- **Mandatory clearing.** Title VII imposes mandatory clearing requirements on certain swaps, but it exempts, among other things, certain end users that use swaps to hedge or mitigate commercial risk.³⁰
- **Exchange trading.** Title VII requires certain swaps subject to mandatory clearing to be traded and executed on a regulated trading platform, including an organized exchange or swap execution facility, unless no facility offers the swap for trading.³¹
- **Mandatory reporting.** Title VII requires all swaps to be reported to a registered swap data repository or, if no such repository will accept the swap data, to CFTC or SEC, and requires that transaction and pricing data for newly executed swaps be reported to the public.³²

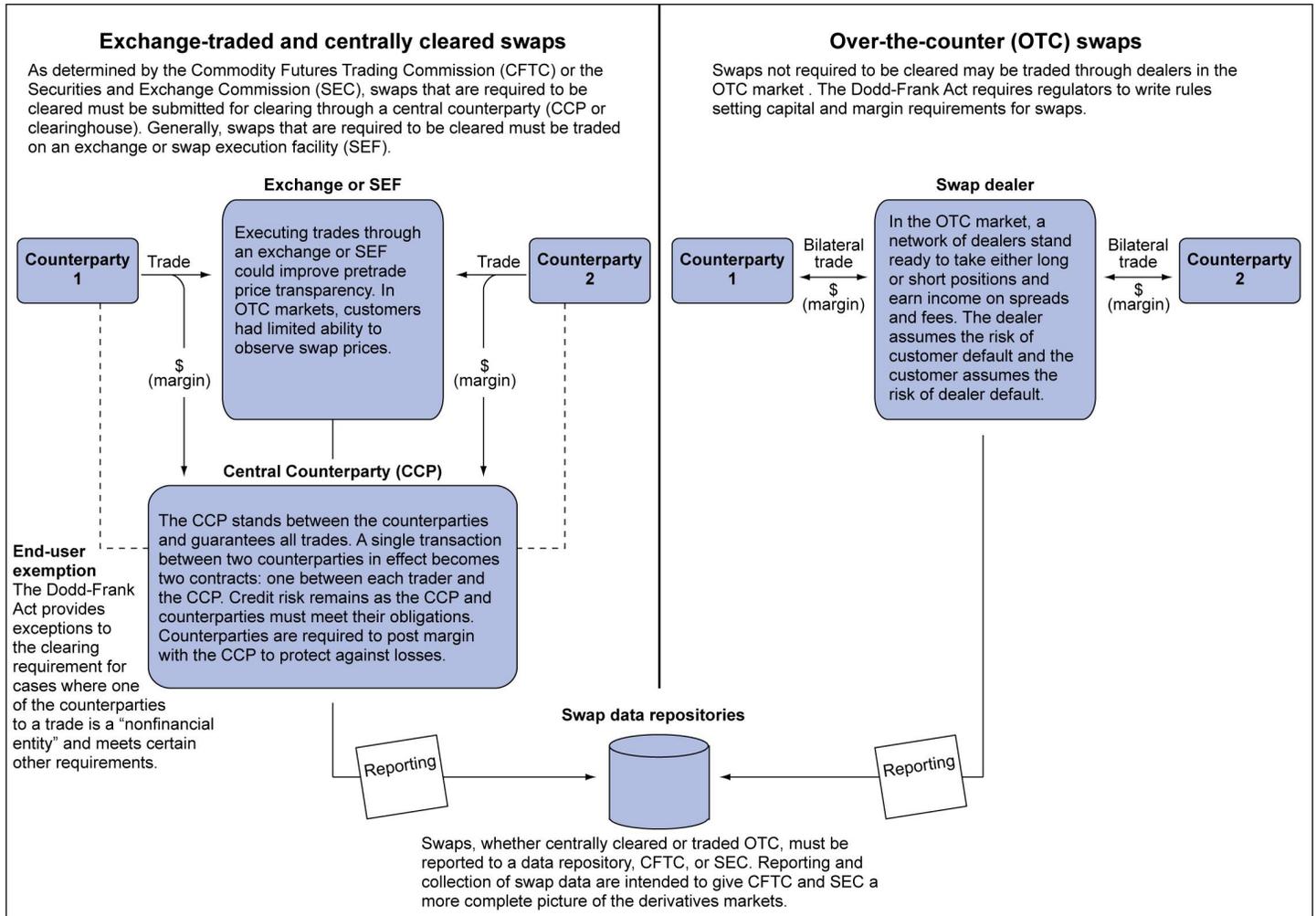
Figure 3 illustrates these reforms and some of the differences between swaps traded on exchanges and cleared through clearinghouses and noncleared swaps.

³⁰Any entity acting as a clearinghouse, or central counterparty with respect to swaps and other derivative contracts, unless granted an exemption, must register with CFTC as a derivatives clearing organization, SEC as a clearing agency, or both, and is subject to regulatory requirements established by CFTC, SEC, or both, as appropriate.

³¹Organized exchanges and swap execution facilities are subject to comprehensive registration and operational and self-regulatory requirements.

³²Swap data repositories are new entities created by the Dodd-Frank Act to provide a central facility for swap data reporting and recordkeeping. Under the act, all swaps are required to be reported to a registered swap or security-based swap data repository. CFTC and SEC have issued swap and security-based swap data repository rules, respectively. CFTC's rules are in effect. On March 31, 2017, SEC extended a temporary exemption from compliance with security-based swap data repository rules.

Figure 3: Overview of Clearing, Trading, and Reporting Requirements under Dodd-Frank Act Swaps Reforms



Source: GAO analysis of the Dodd-Frank Act. | GAO-17-607

Note: Some OTC swaps that are not traded on an exchange or SEF are centrally cleared through a CCP.

Section 716 Affected a Small Number of U.S. Banks and a Relatively Small Percentage of Their Total Derivatives

Our analysis shows that of the 15 U.S. banks covered by section 716, 4 had to take steps to comply with the amended provision compared to 11

that would have had to take steps to comply with the original provision. Approximately 1,400 U.S. banks reported holding swaps or other derivatives in the second quarter of 2015, and 15 of them, about 1 percent, had registered with CFTC as swap dealers and were thus covered entities under both versions of section 716.³³ As shown in figure 4, as of September 30, 2016, the 15 covered banks collectively held a total notional amount of around \$176 trillion in derivatives, which represented around 99 percent of the derivatives held by all U.S. banks. However, this activity was concentrated among four banks, which collectively held a total notional amount of about \$159 trillion in derivatives, or around 90 percent of the derivatives held by the 15 U.S. bank swap dealers. The amended section 716 affected four U.S. bank swap dealers that conducted structured finance swap activities, and we estimated that these banks “pushed out” about \$265 billion of such swaps in notional value (or less than 1 percent of the banks’ total derivatives). Because originally covered swaps generally included credit, commodity, and equity swaps, the original section 716 would have affected 11 banks that are swap dealers in these markets. We estimated that these banks continue to hold about \$10.5 trillion of such swaps in notional value (or around 6 percent of their total derivatives) due to the section 716 amendment.

³³Section 716 covers U.S. insured depository institutions and uninsured U.S. branches and agencies of foreign banks that are registered swap dealers under the Commodity Exchange Act or the Securities Exchange Act. In this report, we limit our analysis to U.S. insured depository institutions that were conditionally registered as swap dealers with CFTC as of July 16, 2015. The same 15 U.S. banks were registered with CFTC as swap dealers through September 30, 2016—about a year after the covered banks generally had to start complying with section 716—and are thus the only U.S. banks covered under section 716 during that period. As previously discussed, CFTC adopted a provisional registration process for swap dealers, but as of July 31, 2017, entities were not yet required to register as security-based swap dealers with SEC.

Figure 4: Key Information about the Derivatives Holdings of U.S. Banks Registered as Swap Dealers, as of September 30, 2016

U.S. bank swap dealer	Bank's total derivatives (notional value in billions of dollars)	Bank's derivatives as a percentage of total derivatives held by U.S. banks	Bank's derivatives as a percentage of its bank holding company's derivatives
JPMorgan Chase Bank National Assoc. (N.A.)	\$51,077	28.8 %	101 %
Citibank, N.A.	48,140	27.1	93
Goldman Sachs Bank USA	38,053	21.4	84
Bank of America, N.A.	21,973	12.4	62
Wells Fargo Bank, N.A.	7,364	4.1	101
HSBC Bank USA, N.A.	4,327	2.4	38
Morgan Stanley Bank, N.A.	1,572	0.9	6
State Street Bank and Trust Company	1,290	0.7	99
Bank of New York Mellon	958	0.5	98
PNC Bank, N.A.	351	0.2	101
SunTrust Bank	273	0.2	101
U.S. Bank N.A.	269	0.2	99
Northern Trust Company	266	0.1	100
KeyBank N.A.	77	0.0	86
Fifth Third Bank	69	0.0	98
Total:	\$176,060	99 %	

Source: GAO analysis of Federal Financial Institutions Examination Council and Federal Reserve Bank of Chicago data. | GAO-17-607

Note: The percentage of a bank holding company's total derivatives held in the bank can be greater than 100 percent, because the bank may include derivative transactions with its affiliates when it reports its total derivatives, but such interaffiliate transactions would not be included by the bank holding company when it reports its total derivatives on a consolidated basis.

Analysis of Swaps Affected by the Amended Section 716

Our analysis shows that of the 15 U.S. banks registered as swap dealers, 4 of the banks were dealers in structured finance swaps and had to stop such swap activity by July 16, 2015, or lose access to federal assistance under the amended section 716.³⁴ As discussed in more detail later, the four banks moved their structured finance swap activity to their nonbank affiliates. In that regard, the structured finance swaps entered into by these nonbank swap dealers on or after July 16, 2015, represent the amount of swaps that the four banks “pushed out” to the nonbank affiliates. Based on data collected by swap data repositories and simplifying assumptions, we estimated that nonbank affiliates of the four

³⁴OCC or Federal Reserve granted each of these four U.S. banks 2-year extensions that extended each bank's section 716 compliance date to July 16, 2015. We interviewed the U.S. banks registered as swap dealers to determine which ones were affected by the amended section 716 and would have been affected by the original section 716. For more details on our methodology, see appendix I.

swap dealers collectively entered into around 16,300 structured finance swaps with a total notional amount of around \$265 billion between July 16, 2015, and September 30, 2016. This total is the amount that presumably would have been traded by the four banks if they did not have to push them out to nonbank affiliates to remain eligible for federal assistance. These swaps include only structured finance swaps on asset-backed securities indexes and exclude structured finance swaps on single-name asset-backed securities.³⁵ Our estimate assumes that one of the four nonbank swap dealer affiliates was a party to every new swap, none of the new swaps were entered into for hedging or risk management purposes, and there were no new structured finance swaps on single-name asset-backed securities.³⁶ According to our estimate, the amount of swaps affected by the amended section 716 would represent less than 1 percent of the total notional amount of the derivatives held by the four banks as of September 30, 2016 (or around 4 percent of their credit derivatives), if the banks were allowed to hold such derivatives.

Analysis of Swaps That Would Have Been Affected under the Original Section 716

Our analysis shows that of the 15 U.S. banks registered as swap dealers, 11 banks (including the 4 that were affected by the amended section 716) would have had to take steps to comply with the original provision.³⁷ The 11 banks are dealers in originally covered swaps and were able to continue to engage in such swap activities (with the exception of certain structured finance swaps) due to the section 716 amendment. Based on Call Report data, we estimated that the 11 bank swap dealers collectively held a total notional amount of around \$10.5 trillion in credit, equity, and commodity and other derivatives as of September 30, 2016.³⁸ This amount, which is almost 40 times larger than our estimate of affected swaps under the amended section 716, approximates the maximum

³⁵According to officials representing a bank swap dealer and an investment bank, the market for structured finance swaps in single-name asset-backed securities is small.

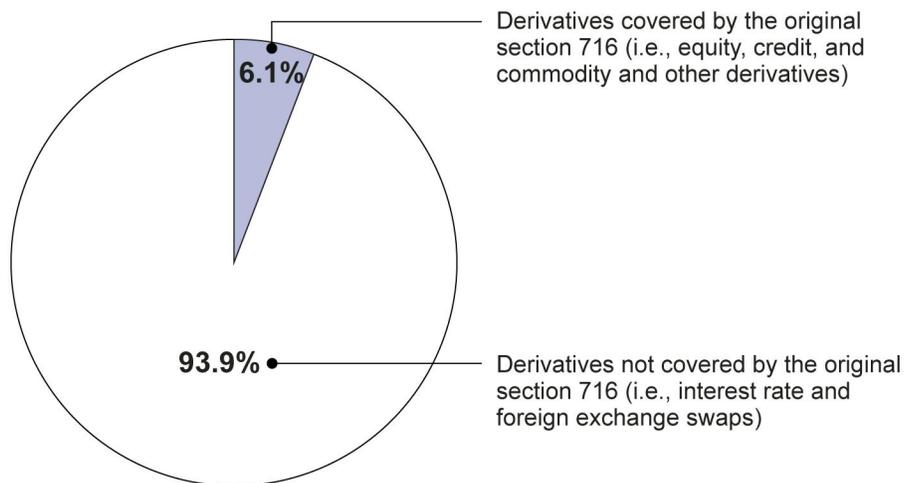
³⁶To the extent that these conditions do not hold, our estimates may be too high or too low. See appendix I for additional information on our methodology.

³⁷OCC or Federal Reserve granted each of these 11 U.S. banks 2-year extensions that extended each bank's section 716 compliance date to July 16, 2015, or later. Four of the 15 banks told us they engaged in only interest rate and foreign exchange swap activities and therefore would not have been affected by the original or amended section 716.

³⁸See appendix I for additional information on our methodology.

notional amount of covered swaps that the 11 dealers could have had to move out of the banks under the original section 716, but it likely is an overestimate for the reasons discussed later. As shown in figure 5, the total notional amount of derivatives covered by the original section 716 comprises about 6 percent of the 11 banks' total derivatives notional value. Moreover, 4 of the 11 banks account for 94 percent of the \$10.5 trillion estimated notional value.

Figure 5: Credit, Equity, and Commodity and Other Derivatives Held by the 11 Bank Swap Dealers That Would Have Been Affected by the Original Section 716 as a Percentage of the Notional Value of Their Total Derivatives, as of September 30, 2016



Source: GAO analysis of Federal Financial Institutions Examination Council data. | GAO-17-607

Although our estimate of the amount of swaps affected by the original section 716 is relatively small, our estimate likely is an overestimate for several reasons. First, the original section 716 would have allowed bank swap dealers to continue to hold covered legacy swaps after the provision took effect.³⁹ Second, it also would have allowed bank swap dealers to use covered swaps for hedging. Third, it would have covered noncleared credit default swap activities but not cleared credit default swap activities. These factors would affect the total notional amount of swaps that would have been moved out of the banks under the original provision, but publicly available data do not allow us to distinguish between (1) legacy

³⁹While some clients likely would have asked their banks to move their legacy swaps to nonbank swap dealers for netting purposes (as discussed below), banks generally told us that they do not know how many of their clients would have made such a request had the original section 716 not been amended.

swaps and new swaps entered into on or after July 16, 2015, (2) swaps used and not used for hedging, (3) commodity swaps referencing bullion and other commodity swaps, and (4) cleared and noncleared credit default swaps.⁴⁰

Section 716 Imposes Costs on, and Increases Risks for, BHCs and Swap End-Users

According to affected BHCs and end-users we interviewed, the steps required to implement the amended section 716 imposed certain costs on BHCs and swap end-users, although BHCs generally indicated that the costs were easily absorbed. In contrast, BHCs and end-users stated that implementation costs would likely have been significantly greater under the original section 716 due to the larger scope of covered swaps and the much larger volume of affected end-users. In addition, because section 716 could cause affected end-users to enter into swaps with the bank's affiliated nonbank swap dealers—splitting end-users' swaps into at least two separate portfolios—the efficiency with which dealers and end-users are able to manage their counterparty credit risk can be reduced. These efficiency losses can lead to higher counterparty credit risk or collateral costs and liquidity risk. Because significantly more end-users' portfolios likely would have been split under the original section 716, the losses in efficiencies likely would have been much greater and likely would have led to larger increases in risk or related collateral costs. However, end-users could mitigate their efficiency losses by having their bank swap dealers move their legacy swaps to the nonbank swap dealer affiliates.

Implementing the Original Section 716 Likely Would Have Imposed Greater Operational and Legal Costs on BHCs and End-Users

To not be subject to the prohibition on federal assistance under the amended section 716, BHCs had to undertake various steps to move the covered swap activity out of the banks and into nonbank subsidiaries or to cease such activity throughout the company. Generally, these steps included (1) identifying swap activity covered by section 716 at the bank

⁴⁰See appendix I for more details on our estimate on the value of swaps that would have been affected under the original section 716.

swap dealer, (2) moving this swap activity out of the bank into nonbank affiliates or ceasing such activity, and (3) for swaps moved to nonbank affiliates, negotiating new master netting agreements—such as the widely used ISDA Master Agreement published by the International Swaps and Derivatives Association (ISDA)—with affected end-users, as needed.⁴¹

According to stakeholders we interviewed, the actions that BHCs would have been required to take to execute these steps would have been significantly more complicated and costly under the original section 716 for both BHCs and end-users due to the larger scope of covered swaps and the much larger volume of affected end-users relative to the amended provision. As discussed previously, we estimated that the notional value of affected swaps would have been almost 40 times larger under the original versus the amended section 716. In addition, regulators, market experts, and market participants we spoke with noted that the structured finance swap market—that is, the swaps affected by the amended 716—was active before the 2007–2009 crisis but since then has become a relatively small market, with one or two actively traded indices primarily used by some financial end-users, such as hedge funds or investment companies.⁴² In contrast, a wide variety and large number of financial and commercial end-users use swaps that were covered by the original section 716—commodity, equity, or noncleared credit default swaps—to manage risks in their businesses.

Swap Dealers' Implementation Costs

The four banks took action in response to the amended section 716 told us that they generally have not had major difficulties implementing the amended section 716.⁴³ To comply with the amended section 716, the BHCs of the four banks engaged in structured finance swap activity stopped their banks from engaging in such swap activity and moved the activity to existing nonbank affiliates of the bank that were already registered as swap dealers. The BHCs told us that they primarily incurred

⁴¹The ISDA Master Agreement is an internationally accepted document used to provide certain legal and credit protection for parties who enter into OTC derivatives. There are two main versions that are commonly used: the 1992 ISDA Master Agreement and 2002 ISDA Master Agreement.

⁴²A structured finance swap index is a type of credit derivative referencing a basket of asset-backed securities, such as securitized mortgage cash flows.

⁴³For more discussion on OCC's and the Federal Reserve's oversight of the four banks' amended section 716 compliance, see appendix VI.

legal and operational costs in doing so, but that such costs were generally easily absorbed by the firm and would have been much larger under the original provision.

- **Amended section 716 operational costs.** BHCs stated that after identifying affected structured finance swaps at the bank, each BHC also identified one or two existing nonbank swap dealer affiliates of the bank to which it could readily move its bank's structured finance swap activity. The BHCs stated that this decision was relatively self-evident because they already had registered nonbank swap dealer affiliates that had the infrastructure and processes in place to trade structured finance swaps. Consequently—and also because the volume of swaps affected by the amended section 716 was relatively small—the operational costs of moving the swaps to nonbank subsidiaries were relatively manageable, according to the four BHCs.
- **Amended section 716 legal costs.** The BHCs stated they incurred some legal costs in establishing new ISDA Master Agreements when needed. ISDA Master Agreements typically are entered into between two swap counterparties, such as the bank swap dealer and a swap end-user. To trade structured finance swaps with a nonbank swap dealer as a result of section 716 restrictions, an affected end-user had to enter into another ISDA Master Agreement with the nonbank unless an agreement was already in place. The four affected BHCs stated that affected clients generally entered into new ISDA contracts with the nonbank affiliate as needed. Some banks' stated that they moved legacy swaps to nonbank affiliates per client request.

Under the original section 716, implementation costs for the BHCs of the 11 bank swap dealers that would have been affected likely would have been much larger because the original provision covered more types of swaps and the number of affected end-users would have been significantly larger.

- **Original section 716 operational costs.** In response to the original section 716, the BHCs that would have been affected stated that they likely would have taken steps similar to those taken by BHCs affected by the amended version. First, BHCs said they would have had to identify affected originally covered swaps at the bank. Then, BHCs generally stated that they were considering whether to move such swap activity to existing nonbank affiliates and/or newly created nonbank affiliates, or whether they should cease dealing originally

covered swaps.⁴⁴ For example, three BHCs told us that they might have had to move originally covered swaps to multiple nonbank affiliates in the United States and globally because no one nonbank affiliate could have served as a dealer for such swaps. Moreover, two of them and two other BHCs stated that they might not have viable nonbank affiliates that could have absorbed all of the affected activity and might have had to create new nonbank affiliates. In both cases, BHCs stated that they likely would have needed to spend time, divert capital, and duplicate bank swap trading systems and processes at the nonbank affiliates to make them viable.⁴⁵ Lastly, a smaller BHC told us that the cost of creating new nonbank affiliates would have been significant and that it likely would have stopped its swap activity.

- **Original section 716 legal costs.** BHCs also noted the potential challenges of negotiating a much larger volume of ISDA Master Agreements under the original section 716. For example, a BHC told us that the number of its counterparties affected by the amended section 716 was a few hundred, compared to several thousand that would have been affected under the original section 716. Another BHC stated it had less than 50 swaps in categories covered by the original section 716, but other BHCs stated they had a couple thousand to hundreds of thousands of such swaps. Like the amended section 716, the original section 716 did not require a bank swap dealer to move legacy swaps to its affiliated nonbank swap dealer to remain eligible for federal assistance, but as discussed later, the bank's clients might have requested their swaps to be moved to the nonbank swap dealer to take advantage of netting efficiencies. According to market participants, negotiating an ISDA Master Agreement could take 1 to 12 months, and some BHCs expected that it would take them between 1 and 2 years to redocument the agreements with all of their affected clients under the original section 716, in part depending on the extent to which clients would have sought renegotiation of contract terms with the nonbank affiliates. In addition, all 11 BHCs likely would have had to negotiate these

⁴⁴The term "nonbank affiliate" refers to a nonbank affiliate of the bank covered by section 716 (i.e., a nonbank subsidiary of a section 716 bank's BHC).

⁴⁵According to BHCs, creating a new nonbank affiliate would have involved ensuring that the affiliate had the necessary (1) domestic and, if necessary, foreign regulatory approvals; (2) regulatory capital to support the new or additional swaps trading; and (3) legal, financial, operational, and other capabilities or resources to engage in swap activity and manage associated collateral.

agreements with thousands of the affected end-users at around the same time.

End-Users' Implementation Costs

Because section 716 directly affects the relationship between bank swap dealers and end-user clients, both the original and amended provisions involve some operational and legal costs for affected end-users as well. According to two market participants and a regulator, end-users affected by the amended section 716 typically included hedge funds, banks, pension funds, and insurance companies. BHCs and end-users we interviewed stated that they incurred costs establishing new swap trading relationships with nonbank affiliates of the bank, if a relationship did not exist already, and maintaining these relationships. They said that operationally, end-users would have had to ensure their information management systems and processes were able to trade structured finance swaps with the nonbank affiliates of the banks instead of bank swap dealers. They also stated that legally, at least some affected end-users had to enter into new ISDA Master Agreements with nonbanks as a result of the amended section 716. For example, two end-users we spoke with stated that, in doing so, they used the same terms of their contracts with the banks, and one end-user said this process took 4 to 8 weeks.

Overall costs to end-users under the original section 716 likely would have been greater than under the amended section 716 because the universe of affected clients would have been much larger. According to BHCs and end-users we interviewed, both financial end-users (such as hedge funds, other banks, insurance companies, and investment companies) and commercial end-users (such as agricultural businesses, airlines, and oil and natural gas producers) use commodity, equity, or noncleared credit default swaps to manage risks in their businesses or for other purposes. They stated, and regulators agreed, that many more end-users would have had to incur operational costs of maintaining trading accounts with more dealers and spend legal resources and time renegotiating ISDA agreements than they would have under the amended section 716. Some BHCs and a market participant stated that at least some affected end-users likely would have asked for better terms rather than simply replicating the terms of their original contract with the banks, as happened under the amended statute.

Lastly, some BHCs and end-users we spoke with stated that the original section 716 could have increased the trading costs of affected BHCs enough to increase the overall cost of trading swaps for end-users in the

long run. Specifically, they stated that it typically costs nonbank dealers more to engage in swap activity than bank dealers due, in part, to differences in their capital costs.⁴⁶ According to these stakeholders, affected BHCs likely would have passed at least part of these higher costs on to end-users, such as in the form of wider swap bid-ask spreads.⁴⁷

Section 716 Can Result in Increased Risks and Collateral Costs That Would Have Been Larger under the Original Section 716

According to stakeholders we interviewed, because the restrictions under both versions of section 716 may cause affected bank end-users to enter into swaps with the bank swap dealer and its nonbank swap dealer affiliate, end-users may split their swap portfolios into two portfolios (one with each dealer). They stated that this scenario can reduce the efficiency with which bank and nonbank dealers and end-users are able to manage their counterparty credit risk and can lead to higher counterparty credit risk or higher collateral costs and liquidity risk. Because more end-users would have been affected under the original relative to the amended section 716, more swap portfolios could have been split, and the losses in efficiencies likely would have been greater and would have led to larger increases in risk and related collateral costs. However, end-users could mitigate their efficiency losses by having their bank swap dealers move their legacy swaps to the nonbank swap dealer affiliates.

Netting and Counterparty Credit Risk

Under an ISDA Master Agreement, swaps transactions between the two counterparties under the agreement become part of the same contract and thus part of the same netting set, which allows the parties to combine, or “net,” obligations owed to and from each other under their

⁴⁶For example, the purchase of deposit insurance allows a bank to lower its risk profile and therefore operate with less capital and a lower cost of funds.

⁴⁷The bid-ask spread is the difference between the best buying price and the best selling price.

transactions into a single obligation.⁴⁸ The ability to net their obligations should one party default enables swap counterparties to reduce their counterparty credit risk. For example, if a bank and an end-user have two swaps and the end user defaults, the obligations of the parties are terminated and the market-to-market values of the swaps are netted into a single sum owed by, or owed to, the bank. If the marked-to-market value of one swap is positive \$100 and the marked-to-market value of the other swap is negative \$80, then the counterparty credit risk exposures are as follows:⁴⁹

- Under an ISDA Master Agreement, the two values are netted against each other, resulting in a single obligation of \$20 that the end-user owes to the bank. As a result, the bank has a \$20 credit exposure to the end-user, and the end-user has no credit exposure to the bank. The bank would have a \$20 claim against the end-user.
- Without an ISDA Master Agreement, the bank and the end-user are not able to net the marked-to-market values of their swaps. As a result, the bank's credit exposure to its end-user is \$100, and the end-user's credit exposure to the bank is \$80. In the event of an end-user default, the bank would be obligated to pay the end-user the \$80 and would have a \$100 claim against the end-user.

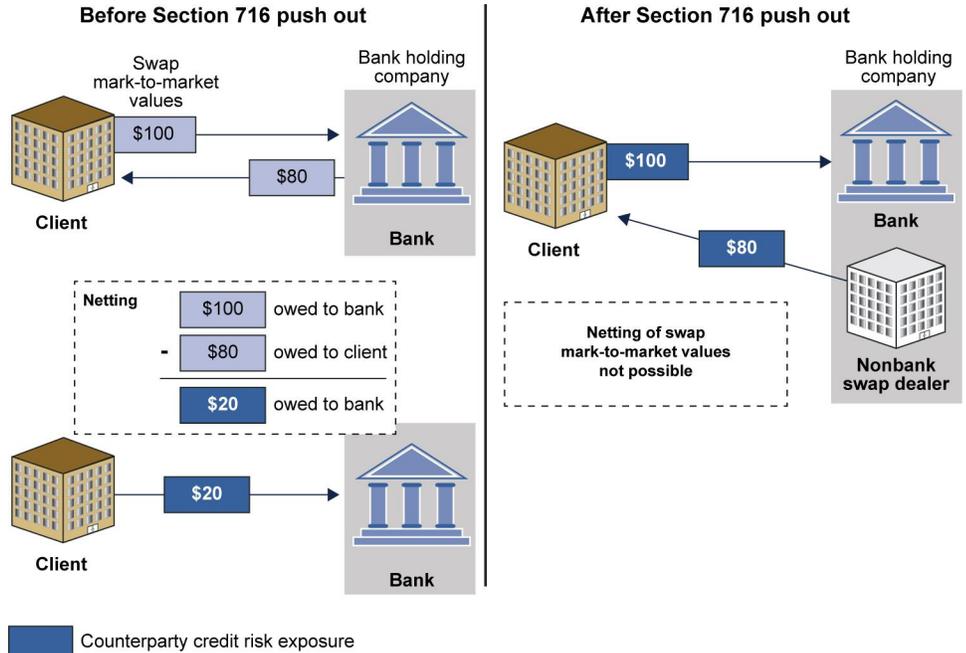
Because of section 716, end-users may split their swap transactions and, in turn, their swap portfolios and netting sets between a BHC's bank and nonbank swap dealers—reducing the efficiency by which they can manage their counterparty credit risk. Although an ISDA Master Agreement allows a dealer and end-user to bilaterally net their swap obligations between each other, officials from an industry association told

⁴⁸The ISDA Master Agreement creates a single legally enforceable contract between the two parties under which all transactions under the agreement between the parties can offset each other. Under an ISDA Master Agreement, netting takes two forms. Payment netting takes place during the normal business of a solvent firm and involves combining offsetting cash flow obligations between two parties on a given day in a given currency into a single net payable or receivable. Close-out netting, which applies to transactions between a defaulting firm and a nondefaulting firm, refers to a process involving termination of obligations under a contract with a defaulting party and subsequent combining of positive and negative replacement values into a single net payable or receivable.

⁴⁹Positive replacement values are those owed to the non-defaulting party, and negative replacement values are those owed by the non-defaulting party. Because the value of derivatives can change as market conditions change, the credit risk exposure between counterparties can change over time. Close out netting replaces the individual swaps with a new amount that is determined by taking into account the market values of the swaps.

us that these agreements generally do not allow a BHC's bank and nonbank dealers to multilaterally net their obligations with the same end-user. As shown in figure 6, by splitting an end-user's netting set between a BHC's two dealers, section 716 can reduce the ability of the counterparties to net their obligations to reduce their counterparty credit risk.

Figure 6: Example of Bank Swap Dealer’s End-User Portfolio Affected by Section 716 of the Dodd-Frank Act



Source: GAO. | GAO-17-607

Our analysis indicates that the losses in netting efficiencies would likely have been larger under the original section 716, primarily because the original provision would have affected a greater number of end-users and their ISDA agreements. Bank-provided examples indicate that the original section 716 could have had a large effect on counterparty credit risk for end-users that hold both swaps covered and not covered by the provision. For example, one of a bank’s corporate clients would experience a 22 percent increase in its counterparty credit risk exposure if it split its foreign exchange derivatives (not covered by the original provision) and commodity derivatives (covered by the provision) into two netting sets. Similarly, one of a bank’s commercial client’s counterparty credit risk exposure would increase from \$0 to \$5 million if its interest rate and foreign exchange derivatives were split from its commodity derivatives. Finally, a bank estimated that its counterparty credit risk to a hedge fund would increase by more than 100 percent if the hedge fund split its interest rate and foreign exchange derivatives and equity and credit derivatives into two netting sets.

Counterparty Credit Risks and Collateral Costs

As a market practice, banks and other swap dealers have required certain of their counterparties to post collateral (such as cash or securities) to cover the amount owed on their swap exposures to mitigate counterparty credit risk.⁵⁰ Moreover, as discussed in more detail later in this report, pursuant to the Dodd-Frank Act, prudential regulators have imposed margin requirements on noncleared swaps that generally require the counterparty that originates the counterparty credit risk exposure to post collateral to the other party commensurate to the risk.⁵¹ The party that collects the collateral can then use it to absorb losses if the counterparty were to default on the swap. Before section 716 was enacted, if collateral agreements that called for netting of collateral were in place in the example shown in figure 6 discussed previously, then the client would post \$20 in collateral with the bank. After section 716, the client would post \$100 in collateral with the bank, and the nonbank dealer would post \$80 in collateral. Although the additional collateral mitigates the increase in counterparty credit risk for one party, it also increases costs and liquidity risk for the party posting the collateral.

The prudential regulators' OTC swap collateral requirements generally require banks to post and collect collateral to and from other swap dealers and financial end-users, but not commercial end-users.⁵²

⁵⁰For example, swap counterparties may voluntarily enter into a credit support annex as part of the ISDA Master Agreement. The credit support annex regulates collateral under the ISDA Master Agreement by defining the terms and conditions under which collateral is posted to mitigate counterparty credit risk.

⁵¹See the next section and appendix III for more details on these requirements. Pursuant to the Dodd-Frank Act, prudential regulators established such collateral requirements for their regulated entities that are registered as swap dealers or major swap participants. 80 Fed. Reg. 74,840 (Nov. 30, 2015). CFTC and SEC also have issued final or proposed rules to establish margin requirements on noncleared swaps pursuant to the Dodd-Frank Act.

⁵²In January 2015, the Terrorism Risk Insurance Program Reauthorization Act amended the Dodd-Frank Act to provide that initial and variation margin requirements generally do not apply to noncleared swaps in which a counterparty qualifies for an exemption or exception from clearing under the Dodd-Frank Act. Pub. L. No. 114-1, § 302, 129 Stat. 3, 28 (2015). See 81 Fed. Reg. 50,605 (Aug. 2, 2016). According to prudential regulators, observers argue that nonfinancial end-users using swaps to hedge pose a reduced risk to their counterparties and the stability of the U.S. financial system and statements in the Dodd-Frank Act's legislative history suggest that Congress did not intend to impose margin requirements on nonfinancial end-users engaged in hedging activities. See 76 Fed. Reg. 27,564 (May 11, 2011) (citing 156 Cong. Rec. S5904 (daily ed. July 15, 2010) (statement of Sen. Lincoln)).

Consequently, both banks and financial end-users likely experienced and would have experienced higher collateral costs under the amended and original section 716 to the extent that the provision reduced or would have reduced netting efficiencies. In contrast, commercial end-users—while they may have posed increased credit risks to banks under the original section 716 due to losses in netting efficiencies—would not necessarily have had to post collateral accordingly.

Lastly, swap end-users theoretically could preserve netting efficiencies to a greater extent if they moved all of their swaps under the same netting set to the nonbank affiliate. This action likely would involve moving not only section 716 covered swaps but also all other swaps—such as legacy swaps (i.e., section 716 covered swaps entered into before the effective date of the statute) or interest rate and foreign exchange swaps—to the nonbank dealer. Such action would help preserve a larger part or all of an end-user's netting set and, thus, the ability to net and not incur additional collateral requirements. Of the four BHCs affected by the amended section 716, two told us that none of their clients asked to move any of the legacy structured swaps to the nonbank affiliates, and two told us that some of their clients asked to move their legacy swaps to the nonbank affiliates. However, under the original section 716 some clients likely would have requested their banks to transfer their legacy commodity, equity, or noncleared credit default swaps or even some interest rate or foreign exchange swaps to the nonbank affiliates to preserve netting benefits.⁵³ A number of banks could not determine precisely how many and to what extent clients would have done this, partly because the decision is client-driven and made on a facts-and-circumstances basis.

Banks Continue to Engage in Swap Activity Covered under the Original Section 716 and Mitigate Associated Risks

Through its restrictions on banks engaging in certain commodity, equity, or noncleared credit default swap activity, the original section 716 would

⁵³Before Section 716 was amended, OCC asked banks to consider this scenario (i.e., that nonsection 716 swaps would end up being moved to nonbank dealers to preserve netting) in their requests for a transition period for compliance with original section 716. Section 716 provided that the appropriate federal banking agency shall permit a transition period for insured depository institution swap entities to divest or cease nonconforming swap activities.

have required 11 U.S. bank swap dealers to cease such activity and thus would have reduced the possibility for such swaps to contribute to these banks' potential failure. At the same time, this potential benefit likely would have resulted in costs for their BHCs and swap end-users, as discussed earlier. With the amendment to section 716, the 11 U.S. bank swap dealers have been allowed to continue to engage in swap activity, except for certain structured finance swaps, and take on the related risk exposures. However, the 11 banks are required by the Dodd-Frank Act and other regulations to have certain levels of financial resources to support their swap activity and adequate systems to manage the associated risks.

Consistent with such regulatory requirements, our analyses indicate that the 11 U.S. banks that would have been affected by the original section 716 held financial resources needed to support their swap-related credit, liquidity, and market risk exposures as of September 30, 2016. If the banks continue to hold such levels of financial resources and maintain adequate risk management systems, as required by their regulators and certain Dodd-Frank Act reforms and related regulations, we believe that losses stemming solely from swaps activity likely can be absorbed by the banks without causing them serious financial distress. However, it is important to note that, as illustrated by Lehman's failure, derivatives can exacerbate a firm's financial distress caused by other losses.

Other Dodd-Frank Act Provisions Mitigate Risks Posed by Swap Activity

Although the swap activity that banks continue to engage in as a result of the amendment of section 716 poses some degree of risk (which we discuss in detail in the next section), other Dodd-Frank Act requirements can help banks mitigate this risk. Besides section 716, other Dodd-Frank Act provisions seek to reduce BHCs' probability of failure by subjecting them, including their banks, to enhanced prudential requirements and to heightened supervision. Since the 1980s, banks have been permitted to engage in various swap and other derivative activities but have been required to have adequate management and measurement systems and controls to conduct the activities in a safe and sound manner, as

previously discussed.⁵⁴ Banks also have been required to hold certain levels of capital—which acts as a cushion to absorb unexpected losses—to support their derivatives-related risks.⁵⁵ More recently, banks have also been subject to the Dodd-Frank Act’s enhanced prudential requirements that are designed, in part, to better ensure that they hold sufficient resources to support their swap activity and maintain risk management and other systems to do so in a safe and sound manner.

A number of the Dodd-Frank Act’s prudential and other reforms required the prudential regulators to issue regulations or take steps to help mitigate risks that banks face due to their derivatives activities, such as counterparty credit, liquidity, and market risks, including the following examples (for a more comprehensive discussion of each regulation, see app. III):

- **Capital and leverage requirements.** Prudential regulators revised their capital rules, in part to require banks to hold more capital against their derivative credit exposures and, thus, provide a larger cushion to absorb losses from such instruments, including derivatives trading losses and losses from counterparty defaults. Thus, in our view, these requirements help mitigate counterparty credit and market risks.⁵⁶
- **Margin rules.** Prudential regulators adopted new margin rules to require swap dealers of noncleared swaps to collect or post collateral (e.g., cash or securities) from or to certain counterparties to help protect each other against losses, including from counterparty

⁵⁴For example, banks should have comprehensive risk management systems that are commensurate with the scope, size, and complexity of their activities and the risks they assume, and the board of directors should ensure that the bank maintains sufficient capital to support the risk exposures that may arise from its derivatives activities. See the Office of the Comptroller of the Currency’s Banking Circular 277, Risk Management of Financial Derivatives (Oct. 27, 1993) and the Office of the Comptroller of the Currency, Risk Management of Financial Derivatives, Comptroller’s Handbook, Narrative - January 1997, Procedures - February 1998.

⁵⁵Capital is a source of long-term funding, contributed largely by a bank’s equity stockholders and its own returns in the form of retained earnings, which provide banks with a cushion to absorb unexpected losses.

⁵⁶BHCs and banks with significant trading operations are required to report their market risk-weighted assets and include this amount in the total risk-weighted assets amount used to calculate their capital ratios. In 2015 and 2016, all section 716 banks and their BHCs were market risk firms.

default.⁵⁷ The collateral that a bank collects from a swap counterparty provides an additional cushion (before using the bank's own capital) to absorb derivative losses from swaps with that counterparty. Swap margin requirements are more targeted and dynamic than capital requirements, reflecting changes in risk of a specific swap counterparty's portfolio. Thus, in our view, margin rules help banks mitigate swap counterparty credit risk. However, as discussed earlier, margin requirements can increase liquidity risk for swap counterparties.

- **Single counterparty credit limit for BHCs.** The Federal Reserve proposed regulations to limit the aggregate net credit exposure of a BHC with total consolidated assets of \$50 billion or more to a single counterparty. These BHCs would be subject to increasingly stringent credit exposure limits.⁵⁸ Because the proposal would limit a BHC's combined exposures to a single counterparty including from swaps and other derivatives, we view the requirement as helping to limit swap counterparty credit risk.
- **Liquidity requirements.** Prudential regulators have adopted or proposed rules to impose minimum liquidity requirements and the Federal Reserve conducts supervisory liquidity stress tests on BHCs to help ensure that they have or can raise the funds needed to meet their near-term obligations, including from derivatives.⁵⁹ Thus, in our view, liquidity requirements help to mitigate liquidity risk faced by banks because of their swap obligations.

⁵⁷The Dodd-Frank Act's capital and margin requirements for noncleared swaps complement other Dodd-Frank Act provisions that require all sufficiently standardized swaps to be cleared through a registered derivatives clearing organization or clearing agency.

⁵⁸The proposed limits on aggregate net credit exposure to any one counterparty range from 25 percent of all regulatory capital to 15 percent of tier 1 capital, depending on the BHC's size and other characteristics. According to Federal Reserve staff, common equity tier 1 capital is considered the highest quality capital that a banking institution can have to support its operations and absorb unexpected financial losses. Common equity tier 1 capital consists primarily of retained earnings (the profits a bank has earned but has not paid out to shareholders in the form of dividends or other distributions) and qualifying common stock, with deductions for items such as goodwill and deferred tax assets. See appendix III for more details.

⁵⁹The liquidity requirements include the liquidity coverage ratio and the net stable funding ratio. Certain BHCs are also subject to Federal Reserve supervisory annual quantitative stress tests and qualitative assessments of their liquidity positions and liquidity risk management practices. See appendix III for more details.

- **Capital planning and stress testing.** The Federal Reserve also established supervisory stress test requirements for certain BHCs.⁶⁰ These tests generate forward-looking information about a BHC's capital adequacy under hypothetical scenarios that, among other things, impose market losses, including from derivatives trading.⁶¹ The Federal Reserve uses these stress tests as part of quantitative and qualitative assessments of BHCs' capital adequacy and capital planning processes.⁶² Consequently, in our view, capital planning and stress test requirements can help banks mitigate market and counterparty credit risks.
- **Volcker Rule.** The prudential regulators adopted regulations to implement section 619 of the Dodd-Frank Act (also known as the Volcker Rule) which, among other things, allows BHCs and their subsidiaries to engage in swap activity and use swaps to hedge risks but subject to certain restrictions and requirements. Thus, in our view, the Volcker Rule generally seeks to limit the amount of market risk to which swap dealers can be exposed.

Figure 7 highlights these and other Dodd-Frank Act requirements that help mitigate the counterparty credit, liquidity, and market exposures that banks face due to their derivatives activities. Based on our analysis, all 15 section 716 covered bank swap dealers or their BHCs are subject to the requirements identified in figure 7's lighter boxes. In addition, larger, more complex BHCs are subject to additional capital, leverage, or other requirements that may constrain a BHC's bank from entering into new swaps, for example, if such activity would cause the BHC's capital to fall below required levels. Based on our analysis, of the 15 covered banks or BHCs, 11 larger, more complex BHCs and their banks are subject to

⁶⁰The Dodd-Frank Act also requires banks with \$10 billion in assets or more to conduct annual stress tests pursuant to regulations prescribed by their respective primary financial regulatory agencies. All of the banks covered by section 716 are subject to such company-run stress tests.

⁶¹BHCs with large trading operations, including from derivatives, are subject to additional components in their hypothetical scenarios designed to stress their trading and private equity (in the case of the global market shock) or counterparty positions (in the case of the counterparty default component).

⁶²The Federal Reserve may object to a BHC's capital plan if stress test results show the company's post-stress capital ratios (regulatory measures that indicate how much capital is available to cover unexpected losses) falling below required minimum levels or if the Federal Reserve's qualitative assessment deems the firm's capital planning and related processes to be inadequate. If the Federal Reserve objects to a BHC's capital plan, the BHC may not make any capital distribution unless the Federal Reserve indicates in writing that it does not object to the distribution.

some or all of the additional requirements identified in figure 7's darker boxes. These 11 are known as Advanced Approaches BHCs under the risk-based capital rules, and 8 of the 11 are BHCs that the Federal Reserve has identified as global systemically important BHCs (GSIB).⁶³

Figure 7: Select Dodd-Frank Act's Prudential and Other Requirements That Help Mitigate Swap-Related Risks Faced by U.S. Bank Swap Dealers

Requirements that address:		
Counterparty credit risk	Market risk	Liquidity risk
Minimum capital and leverage requirements		Minimum liquidity requirements
Capital conservation buffer		Liquidity stress testing
Capital plans and stress testing		
Swap margin rules	Market risk capital rule	
Single counterparty credit limits	Volcker rule	
Capital surcharge		
Countercyclical capital buffer		
Supplemental leverage requirements		

- Requirements applicable to all section 716 covered banks and/or their bank holding companies
- Requirements applicable to section 716 covered banks that are subsidiaries of an advanced approaches or a global systemically important bank holding company and/or their bank holding companies

Source: GAO analysis of the Dodd-Frank Act, *Federal Register* documents, and documents by the Board of Governors of the Federal Reserve System, the Office of the Comptroller of the Currency, and the Federal Deposit Insurance Corporation. | GAO-17-607

Note: Although we categorize the requirements based on counterparty credit, liquidity, and market risks, the requirements can help mitigate more than one type of risk and work collectively to help enhance the resiliency of bank swap dealers. The requirements may be more stringent for some firms based on their size, complexity, or other measures. Advanced Approaches BHCs generally are those with at least \$250 billion in total consolidated assets or at least \$10 billion in total on-balance-sheet foreign exposure. Global systemically important bank holding companies are banking organizations whose distress or disorderly failure because of their size, complexity, and interconnectedness, could cause significant disruption to the wider financial system and economy. In the United States, the Federal Reserve established criteria for identifying a global systemically important bank holding company through a rulemaking in 2015.

⁶³Advanced Approaches BHCs generally are those with at least \$250 billion in total consolidated assets or at least \$10 billion in total on-balance-sheet foreign exposure. GSIBs are banking organizations whose distress or disorderly failure because of their size, complexity, and interconnectedness would cause significant disruption to the wider financial system and economy. In the United States, the Federal Reserve established criteria for identifying a GSIB through a rulemaking in 2015. See 80 Fed. Reg. 49,082 (Aug. 14, 2015). See appendix III for more details.

Risks Associated with Swaps Covered under the Original Section 716 in Relation to the Financial Resources of the Affected U.S. Banks

Due to the amendment of section 716, 11 U.S. bank swap dealers that generally would have been prohibited from receiving federal assistance or required to stop engaging in commodity, equity, or noncleared credit default swap activity continued such swap activity, and the related exposures remained within the banks.⁶⁴ Our analyses indicate the 11 U.S. banks that would have been affected by the original section 716 held financial resources needed to support their swap-related credit, liquidity, and market risk exposures as of September 30, 2016.⁶⁵ Our results are consistent with the goals of the Dodd-Frank Act's prudential and other requirements designed to mitigate the risks banks face from their swap activity and to reduce their probability of failure. If banks continue to hold financial resources and maintain adequate risk management systems, as required by their regulators and certain Dodd-Frank Act reforms and regulations, losses stemming solely from the swap activity likely can be absorbed by the banks without causing them serious financial distress. However, as previously stated, it is important to note that derivatives can exacerbate a firm's financial distress caused by other losses as illustrated by Lehman's failure.

⁶⁴In this section, banks' measures of trading credit derivatives do not include risks from structured finance swaps because banks no longer trade those swaps. As a reminder, according to 4 of the 15 bank swap dealers, these 4 banks were dealers in structured finance swaps when they had to start complying with the amended section 716 and thus had to stop engaging in such swap activity or be prohibited from receiving federal assistance. However, their exclusion is likely to have negligible effects on our measures of bank risk for those four banks because, as discussed earlier, the volume of such swaps that the banks are no longer trading is very small (less than 1 percent of the total notional amount of the derivatives held by the four banks as of September 30, 2016).

⁶⁵Our analyses likely overestimate the counterparty credit risk raised by swaps covered under the original section 716. This is primarily because our estimates may include hedges and derivatives that are not swaps. In addition, our estimates assume that all commodity, equity, and credit default swaps that were at the banks approximately a year after section 716's effective date would have been moved to nonbank affiliates by that time. We discuss our analyses, methodologies, and limitations in more detail in appendix IV.

Counterparty Credit Risk

For the 11 U.S. banks, our analyses indicate that the banks held the capital needed to support counterparty credit exposures (accounting for netting but not collateral) from their equity, commodity, or credit derivatives as of September 30, 2016.⁶⁶ Our analyses also show that the fair value of the collateral held by banks in relation to their OTC trading derivative counterparties was, on average, sufficient to cover at least 68 percent of net current credit exposures of their derivatives as of that date.⁶⁷ These results indicate that as of September 30, 2016—about a year after most banks would have had to comply with the original section 716—the banks had capital to absorb losses from such derivatives, and that such losses likely would have been mitigated to a significant degree with the collateral received from bank OTC derivative counterparties. We used banks' estimated or reported net trading derivative assets and liabilities as our measure of the banks' current counterparty credit risk exposure and compared the values to the banks' capital.

- For the four largest bank swap dealers, we estimate that their net credit exposures from their equity, commodity, and credit derivatives (not accounting for collateral) constituted from 1 percent to 10 percent of their total capital as of September 30, 2016.⁶⁸ As discussed in appendix IV, we estimated the banks' net credit exposures because

⁶⁶Measuring credit exposure in derivative contracts involves identifying those contracts for which a bank would lose value if the counterparty to the contract defaulted. The total for all contracts with positive fair values to the bank is the gross value of its derivative assets and represents an initial measurement of the bank's counterparty credit exposure associated with its derivatives. The total for all contracts with negative fair values to the bank is the gross value of its derivative liabilities and represents a measurement of the bank's liquidity risk exposure associated with its derivatives. As discussed earlier, bank swap dealers typically have netting agreements with their counterparties that allow them to create a single legal obligation for all their transactions under the agreement—that is, a net derivative asset or a net derivative liability). See appendix II for an explanation of the differences among gross notional and gross and net derivative assets and liabilities. These measures are based on the fair values of the derivatives and convey the current credit exposure of the derivatives, not their potential future exposure.

⁶⁷The fair value of collateral is the price at which the collateral would be sold in an orderly transaction between market participants in its principal (or most advantageous) market. An orderly transaction is one that occurs under sufficient time and exposure to the market to allow for usual or customary marketing activities to unfold, so the transaction is not a forced liquidation or distressed sale.

⁶⁸Bank of America, N.A.; Citibank, N.A.; Goldman Sachs Bank USA; and JPMorgan Chase Bank N.A. were the four U.S. bank swap dealers with the largest notional value of total derivatives as of September 30, 2016.

the banks do not publicly report such data by type of derivative, and our methodology has important limitations.⁶⁹ In addition, we estimate that the four largest bank swap dealers on average collectively held collateral against 99 percent of their collective net current credit OTC derivatives exposures as of September 30, 2016. However, this percentage does not mean that almost all current credit exposure would be mitigated with collateral, as some counterparties over-collateralize and others under-collateralize exposures, and collateral is not fungible across swap counterparties.

- For the other seven bank swap dealers, we estimate that their actual net current credit exposures (not accounting for collateral) of all their trading derivatives—including swaps not covered under the original section 716—comprised from 4 percent to 16 percent of their total capital as of September 30, 2016. We could not reliably estimate the net trading derivative assets of the seven banks' equity, commodity, and credit derivatives. As a result, we used the actual total net trading derivative assets, which include interest rate and foreign exchange derivatives that were not covered by the original section 716 and typically comprise the majority of the banks' trading derivatives.⁷⁰ In addition, we estimate that these banks on average collectively held collateral against 68 percent of their collective net current credit OTC derivatives as of September 30, 2016.⁷¹ Again, this percentage does not mean that 68 percent of their current credit exposure would be

⁶⁹For our methodology, we used data from a large BHC that reported gross and net trading derivative assets and liabilities by type of underlying (i.e., interest rate, foreign exchange, equity, commodity, and credit derivatives) to develop a range of "netting ratios" that captured the relationship between gross and net derivative assets and liabilities by type of underlying over a 5-year period. We then applied the ratios by type of underlying to convert the reported gross trading derivative assets of the four banks into estimated net trading derivative assets by type of underlying. Although we compared our estimated net total derivative assets and liabilities against the reported net total derivative assets and liabilities to assess the reasonableness of our estimates, our methodology assumes that four banks' netting ratios are comparable to the BHC's netting ratios. To the extent this assumption does not hold true because of differences in the composition of the banks' derivatives trading portfolios or other reasons, our estimates would be adversely affected. See appendix IV for more details on our methodology.

⁷⁰For the seven banks, interest rate and foreign exchange derivatives accounted from 80 percent to 100 percent of the banks' total derivatives' notional values as of September 30, 2016. One bank with almost all interest rate and foreign exchange derivatives told us it was a dealer in swaps covered by the original section 716.

⁷¹The net current credit exposure in a bank's call report (schedule RC-R) includes all OTC derivatives held by the bank. We do not use net trading derivative assets because these may include derivatives that are centrally cleared (i.e., not OTC).

mitigated with collateral, as some counterparties over-collateralize and others under-collateralize exposures, and collateral is not fungible across swap counterparties.

Liquidity Risk

For the 11 U.S. banks, our analyses indicate the banks held the high-quality liquid assets needed to support their equity, commodity, or credit derivatives' payment and collateral obligations as of September 30, 2016. Derivative liabilities expose banks to liquidity risk, in part because the derivative contracts typically require the banks to make regular payments as agreed in the contracts and post collateral to counterparties as the fair value of the contracts moves in the counterparties' favor.⁷² To assess liquidity risk, we used estimated or reported net derivative liabilities for banks' trading derivatives as our measure of the banks' derivatives liquidity risk, and we compared those values against the banks' high-quality liquid assets. Because banks, like their counterparties, post collateral for some of their derivative liabilities and because our analyses do not account for such collateral, our results likely overestimate the actual derivatives-related liquidity risk exposures.⁷³

- For the four largest bank swap dealers, we estimate that the net derivative liabilities for their equity, commodity, and credit derivatives (not accounting for posted collateral) constituted from less than 1 percent to about 5 percent of the banks' high-quality liquid assets as of September 30, 2016. We used the same methodology described previously to estimate the net derivative liabilities for the banks' equity, commodity, and credit derivatives as we did to estimate the net derivative assets for the banks' equity, commodity, and credit derivatives.

⁷²The fair value of a derivative contract is the price at which the contract would be transferred in an orderly transaction—one that occurs under sufficient time and exposure to the market to allow for usual or customary marketing activities to unfold—between market participants in its principal (or most advantageous) market. On a daily basis, bank swap dealers recalculate the fair market value of their derivatives contracts based on current market prices (called marking to market).

⁷³Certain derivatives contain provisions that require a bank to post additional collateral or immediately settle any outstanding liability balances upon the occurrence of a specified credit event, such as a credit downgrade of the bank or its holding company. Such contingent features increase the liquidity risks. See appendix IV for some measures of these risks for the four largest bank swap dealers.

- For the other seven bank swap dealers, we estimate that the actual total net trading derivative liabilities (including swaps not covered under the original section 716 but not accounting for collateral) constituted from about 1 percent to about 9 percent of their high-quality liquid assets as of September 30, 2016. As discussed earlier, due to data limitations, we could not reliably estimate the net derivative liabilities for the banks' equity, commodity, and credit derivatives. As a result, we used the actual total net trading derivative liabilities, which included interest rate and foreign exchange derivatives that were not covered by the original section 716 and typically comprise the majority of the banks' trading derivatives.

Market Risks

Our analyses of the 11 banks' quarterly mark-to-market losses from trading equity, commodity, and credit derivatives between the first quarter of 2007 and the third quarter of 2016 show that banks held the capital needed to support related trading losses. These results provide a backward-looking measure of the market risk associated with the trading of such swaps.

- For the four largest bank swap dealers, we estimate that quarterly net trading losses from their equity, commodity, and credit derivatives ranged from 5 percent to 7.6 percent of their total capital between the first quarter of 2007 and the third quarter of 2016.
- For six of the other seven bank swap dealers, we estimate that their quarterly net trading losses from their equity, commodity, and credit derivatives ranged from 0 percent to about 2 percent of their total capital between the first quarter of 2001 and third quarter of 2016. For the other bank, its largest loss during a quarter was around 14 percent of its capital.

Value-at-risk (VaR), which is a forward-looking measure of market risk generally posed by derivatives and other trading activities, suggests that the 11 banks have the capital needed to support expected losses from derivatives under regular market conditions.⁷⁴ Banks control market risk

⁷⁴A VaR model simulates the value of a portfolio under a range of scenarios in order to generate a distribution of potential gains and losses. VaR represents the loss a portfolio is not expected to exceed more than a certain number of times per period, based on a specified holding period, confidence level, and window of historical data. For example, a VaR statistic equivalent to a 99 percent confidence level means that for a VaR with a 1-day holding period, there should not be losses in excess of VaR, on average, 99 out of 100 trading days.

by establishing limits against potential losses using VaR models. The models use historical data to quantify the potential losses from adverse market moves in normal markets. Based on our analyses, the reported VaR measures for the BHCs of the four largest bank swap dealers indicate that the market risk from each BHC's trading activities, which include the BHC's section 716 bank's derivatives trading activities, is a small percentage of each of the four bank's capital: for example, ranging from 0.02 percent to 0.22 percent of their capital in the third quarter of 2016.⁷⁵

In addition, based on results from the Federal Reserve's supervisory stress tests, the BHCs of the 11 banks had sufficient capital to cover trading losses, including from their banks' trading derivatives, under stressed market conditions. The BHCs of the 11 bank swap dealers are subject to the Federal Reserve's stress tests, which evaluate the BHCs' revenues, losses, and ultimately their capital levels under baseline, adverse, and severely adverse scenarios. In its 2015 and 2016 reviews, the Federal Reserve did not object to any of the capital plans, including the supervisory stress test results, of the 11 BHCs. For example, under the stress tests, all 11 BHCs were able to maintain at least minimum regulatory capital requirements under stressed scenarios.

Other Dodd-Frank Act Reforms Mitigate the Potential Need for Taxpayer-Backed Federal Assistance

Section 716 seeks to reduce the risk of the federal government having to provide assistance backed by taxpayers to cover losses of a failed bank,

⁷⁵OCC's analyses of the VaR for the four largest bank swap dealers' BHCs indicate that the market risk from their trading activities generally is a small percentage of their capital (less than 0.1 percent of their equity capital in the third quarter of 2016).

but other Dodd-Frank Act provisions also mitigate this risk.⁷⁶ While the Dodd-Frank Act's prudential reforms discussed earlier seek to lower the probability of failure of large BHCs or their banks, the act's resolution reforms seek to reduce the risk that the failure of a large BHC would adversely affect U.S. financial stability. Federal banking regulators and large BHCs are developing resolution strategies that seek to resolve a large BHC, if it were to fail, in an orderly manner and without federal assistance. For example, under the resolution strategies being developed by the BHCs with the four largest bank swap dealers, only the BHC would enter bankruptcy; its bank and other subsidiaries would remain solvent.⁷⁷ These strategies, if successful, could help enable the BHC and its bank swap dealer to unwind or sell its swaps in an orderly manner and avoid value destruction.

A bank's swaps may not always result in losses that reduce its resolution value because swaps and other derivatives can be either assets or liabilities. In resolution, a failed bank's trading derivatives portfolio could be (1) a net asset that increases the bank's resolution value or (2) a net liability that decreases the failed bank's resolution value.⁷⁸ Because banks hedge market risk, their trading derivative assets and liabilities

⁷⁶FDIC's Deposit Insurance Fund has been supported by assessments on insured banks and had a balance of approximately \$83 billion at year-end 2016. According to FDIC officials, when multiple bank failures have depleted fund resources in the past, FDIC has turned to the banking industry to replenish the fund by raising assessment rates, charging special assessments, or requiring banks to prepay assessment to meet fund liquidity needs. During one period in its history (from 1991 to 1993), FDIC relied on funds borrowed from the U.S. Treasury (through the Federal Financing Bank) for temporary working capital, which was repaid with proceeds from the disposition of assets acquired from failed banks. The banking industry must repay through assessments any funds borrowed from the U.S. Treasury not repaid out of proceeds from the sale of failed bank assets.

⁷⁷As discussed earlier, four bank swap dealers—Bank of America, N.A.; Citibank, N.A.; Goldman Sachs Bank USA; and JPMorgan Chase Bank N.A.—account for the vast majority of derivatives held by banks. These banks are subsidiaries of BHCs that the Federal Reserve has identified as GSIBs in light of the greater risk their failure would pose to U.S. financial stability. For these reasons, this section's discussion and analyses primarily focuses on the four U.S. BHCs and their bank swap dealers.

⁷⁸Banks can only estimate their swaps' future value, because that value is a function of market and other factors. For example, over a swap's life and in light of market changes, a bank may owe its counterparty money at one point (making the swap a liability) but be owed money by its counterparty at another point (making the swap an asset).

typically are close to each other in value.⁷⁹ As discussed earlier, the Volcker Rule also serves to help minimize the market risk to which banks can be exposed through their swaps activity, in part by limiting the extent to which the value of their trading derivative assets can differ from the value of their trading derivative liabilities. Consequently, if a bank can wind down its trading derivatives portfolio in an orderly manner, it could avoid value destruction, if any. However, as illustrated by the failure of Lehman, the legal right of a bank's swaps counterparties to terminate their swaps early if the bank or its BHC were to fail can result in the disorderly unwinding of the bank's swaps and cause the bank to suffer avoidable losses on its swaps that decrease the bank's resolution value.⁸⁰

We found that prudential regulators are implementing the Dodd-Frank Act's resolution reforms that seek to help ensure that the largest BHCs, if they were to fail, can be resolved in an orderly manner and avoid asset fire sales and value destruction.⁸¹ (See app. V for a more detailed discussion of Dodd-Frank Act resolution reforms in relation to BHCs with a bank swap dealer subsidiary.) Before the act, the government generally had two options to address the potential failure of a systemically important BHC or other nonbank financial firm: (1) allow it to enter bankruptcy or (2) provide it with aid. The act preserved bankruptcy as the preferred option and required the large BHCs to develop resolution plans

⁷⁹For example, the percent difference between the gross trading derivatives assets and liabilities for the four largest U.S. bank swap dealers ranged from around -0.4 percent to around 6 percent from the third quarter of 2012 to the third quarter of 2016 based on Call Report data.

⁸⁰Under an ISDA Master Agreement, a party to a swap generally has the right to take certain actions if its counterparty defaults on the contract, including terminating the contract. At the time of its failure, Lehman was party to large volumes of financial contracts, including OTC derivatives. When its holding company declared bankruptcy, many of Lehman's counterparties exercised their default rights. Lehman's default caused disruptions in the swaps and derivatives markets and a rapid, market-wide unwinding of trading positions. According to Lehman's estate administrator, the bankruptcy resulted in the loss of 70 percent of \$48 billion of receivables from derivatives that could otherwise have been unwound.

⁸¹See GAO, *Resolution Plans: Regulators Have Refined Their Review Processes but Could Improve Transparency and Timeliness*, [GAO-16-341](#) (Washington, D.C.: Apr. 12, 2016).

describing how they can be resolved under the U.S. Bankruptcy Code in a rapid and orderly manner.⁸²

In the public sections of their resolution plans, the BHCs of the four largest bank swap dealers generally have stated they have adopted the Single Point of Entry (SPOE) strategy as their preferred resolution strategy under the U.S. Bankruptcy Code. Under the SPOE strategy, only the top-tier BHC would enter bankruptcy. The BHC would use its financial resources, as needed, to support and recapitalize its operating subsidiaries to keep them solvent and preserve their going-concern value. For example, a loss that caused a BHC to fail would be passed up from the subsidiary that incurred the loss and absorbed by the BHC's equity holders and unsecured creditors, which would have the effect of recapitalizing the BHC's subsidiary. By keeping their bank subsidiaries solvent in the event of their failure, the BHCs could enable their banks to wind down or sell their swaps in an orderly manner and preserve their value. If one of the BHCs was not able to keep its bank solvent under its resolution strategy, FDIC would resolve the bank separately under the Federal Deposit Insurance Act (outside of the BHC's resolution strategy) and could transfer the bank's swaps to a solvent company to preserve their value.⁸³

We found that the four U.S. BHCs, along with other resolution plan filers, have faced a number of challenges and obstacles developing their resolution plans.⁸⁴ The four BHCs are continuing to revise their plans to address such challenges and obstacles, and regulators have proposed or

⁸²Under the Dodd-Frank Act, U.S. BHCs with \$50 billion or more in total consolidated assets and nonbank financial companies designated by the Financial Stability Oversight Council are required to submit resolution plans to the Federal Reserve, FDIC, and Financial Stability Oversight Council. 12 U.S.C. § 5365(d). In 2011, the Federal Reserve and FDIC jointly issued a final rule to implement the resolution plan requirement. 76 Fed. Reg. 67,323 (Nov. 1, 2011). Under the Dodd-Frank Act and implementing rule, the Federal Reserve and FDIC must review each plan and if they jointly determine that a plan is not credible or would not facilitate an orderly resolution of the company under the Bankruptcy Code, the regulators will jointly notify the company and request resubmission of a plan that remedies the deficiencies. If a company does not ultimately remedy the deficiencies identified by the Federal Reserve and FDIC, the regulators may jointly impose more stringent capital, leverage, or liquidity requirements on the company or its subsidiaries or restrictions on the company's or any of its subsidiaries' growth, activities, or operations. For additional information, see [GAO-16-341](#).

⁸³1821(c), (e)(8)-(10).

⁸⁴See, for example, [GAO-16-341](#).

finalized regulations to help improve the ability of the BHCs to execute their plans.⁸⁵ According to the Federal Reserve and FDIC, resolution planning cannot guarantee that a BHC's resolution would be executed smoothly, but the preparations can help ensure that the BHC could be resolved under bankruptcy without government support or imperiling the broader financial system.⁸⁶ In 2016, we concluded that whether the plans of the largest BHCs actually would facilitate their rapid and orderly resolution under the U.S. Bankruptcy Code is uncertain, in part because none has used its plan to go through bankruptcy.⁸⁷

In cases where resolution of a large BHC under the U.S. Bankruptcy Code may result in serious adverse effects on U.S. financial stability, the Dodd-Frank Act's Orderly Liquidation Authority serves as the backstop alternative.⁸⁸ Orderly Liquidation Authority gives FDIC the authority, subject to certain constraints, to resolve large financial companies outside of the bankruptcy process.⁸⁹ Since 2013, FDIC has been developing a SPOE strategy to implement this authority.⁹⁰ FDIC would be appointed receiver of the top-tier holding company and establish a bridge financial

⁸⁵For example, the Federal Reserve issued a final rule to require a U.S. top-tier BHC identified as a GSIB to maintain outstanding a minimum level of eligible external total loss-absorbing capacity comprised of capital issued by the GSIB and eligible external long-term debt. 82 Fed. Reg. 8266 (Jan. 24, 2017). In addition, the Federal Reserve, FDIC, and OCC separately proposed rules that generally prohibit swap counterparties to a U.S. GSIB's subsidiaries from exercising their cross-default rights based on the GSIB's entry into resolution. 81 Fed. Reg. 29,169 (May 11, 2016) (Federal Reserve); 81 Fed. Reg. 74,326 (Oct. 26, 2016) (FDIC); 81 Fed. Reg. 55,381 (Aug. 19, 2016) (OCC). See appendix V for additional information.

⁸⁶Board of Governors of the Federal Reserve System and Federal Deposit Insurance Corporation, *Resolution Plan Assessment Framework and Firm Determinations (2016)* (Washington, D.C.: Apr. 13, 2016).

⁸⁷See [GAO-16-341](#).

⁸⁸Pub. L. No. 111-203, § 204, 124 Stat. 1376, 1454-1456 (codified at 12 U.S.C. § 5384).

⁸⁹12 U.S.C. § 5382(a). Before the Secretary of the Treasury, in consultation with the President, makes a decision to seek the appointment of FDIC as receiver of a financial company, at least two-thirds of those serving on the Board of Governors of the Federal Reserve System and at least two-thirds of those serving on the Board of Directors of FDIC must vote to make a written recommendation to the Secretary of the Treasury to appoint FDIC as receiver. 12 U.S.C. § 5383(a)(1)(A). For additional information on Orderly Liquidation Authority, see GAO, *Bankruptcy: Agencies Continue Rulemakings for Clarifying Specific Provisions of Orderly Liquidation Authority*, [GAO-12-735](#) (Washington, D.C.: July 12, 2012).

⁹⁰78 Fed. Reg. 76,614 (Dec. 18, 2013).

company into which it would transfer the holding company's assets.⁹¹ The bridge company would continue to provide the holding company's functions, and the company's subsidiaries would remain operational. As its SPOE strategy has evolved, FDIC has focused on developing multiple options for liquidating the subsidiaries, such as by winding down or selling subsidiaries or selling a subsidiary's assets. Importantly, FDIC is authorized to transfer swaps and other qualified financial contracts to the bridge company or another solvent financial company.⁹² According to FDIC, the agency intends to maximize the use of private funding in a systemic resolution, and the law expressly prohibits taxpayer losses from the use of Orderly Liquidation Authority.⁹³

Agency Comments

We provided a draft of this report to CFTC, the Federal Reserve, FDIC, OCC, and SEC for review and comment. CFTC, the Federal Reserve, FDIC, OCC, and SEC provided technical comments that we incorporated as appropriate.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the appropriate congressional committees and members, CFTC, the Federal Reserve,

⁹¹FDIC would apportion the holding company's losses according to the order of statutory priority among the claims of the former equity holders and unsecured creditors, whose equity and certain debt would remain in the receivership. Through a securities-for-claims exchange, the claims of the creditors in the receivership would be satisfied by issuance of securities representing debt and equity in the new holding company.

⁹²12 U.S.C. § 5390(c)(9). To give FDIC time to make such transfers and to avoid a disorderly wind-down of swaps, Title II generally prohibits counterparties to qualified financial contracts from exercising their default rights with the holding company or its subsidiaries. See 12 U.S.C. § 5390(c)(10)(B)(i)(I) and 12 U.S.C. § 5390(c)(16).

⁹³Some argue that Orderly Liquidation Authority could lead to indirect losses for taxpayers. For example, if eligible financial companies must pay assessments to cover losses to the Orderly Liquidation Fund, the companies would pass the cost of the assessments on to their customers in the form of higher fees on financial products and services. See, for example, *See Who is Too Big to Fail: Does Title II of the Dodd-Frank Act Enshrine Taxpayer-Funded Bailouts?: Hearing before the Subcomm. on Oversight and Investigations of the H. Comm. on Financial Services*, 113th Cong. 9, 17 (2013) (statement of John Taylor, Mary and Robert Raymond Professor of Economics, Stanford University).

FDIC, OCC, and SEC. This report will also be available at no charge on our website at <http://www.gao.gov>.

Should you or your staff have questions concerning this report, please contact me at (202) 512-8678 or evansl@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix VII.

A handwritten signature in black ink that reads "Lawrence L. Evans, Jr." The signature is written in a cursive style with a large initial 'L' and a distinct 'Jr.' at the end.

Lawrence L. Evans, Jr.
Director, Financial Markets and Community Investment

Appendix I: Objectives, Scope, and Methodology

We examined the effects of the amended and original versions of section 716 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act).¹ Specifically, we examined (1) the number of U.S. banks and the value of their swaps affected under the amended section 716 and that would have been affected under the original section 716; (2) the actual and potential costs or negative effects of the amended and original section 716 for U.S. banks and swap end-users, (3) U.S. banks' risks associated with swap activities that continue to be carried on by the banks due to the section 716 amendment and mitigating factors, and (4) the effects of section 716 and other Dodd-Frank Act requirements on risk to taxpayers in the event of a bank failure.

Objective 1

To examine the number of U.S. banks and the value of their swaps affected under the amended section 716 and that would have been affected under the original section 716, we reviewed

- both versions of the provision;
- analyses of section 716 prepared by the federal bank regulators (the Board of Governors of the Federal Reserve System (Federal Reserve), Federal Deposit Insurance Corporation (FDIC), and Office of the Comptroller of the Currency (OCC)) and four large banks;
- regulations issued by the Commodity Futures Trading Commission (CFTC) and Securities and Exchange Commission (SEC) on the registration of swap and security-based swap dealers and major swap and security-based swap participants;
- list of entities provisionally registered as swap dealers with CFTC; and
- reports, studies, and other materials on section 716, swaps, or asset-backed securities issued by GAO, law firms, market participants, and others.

¹Pub. L. No. 111-203, § 716, 124 Stat. 1376, 1648 (2010) (codified as amended at 15 U.S.C. § 8305).

We also interviewed federal regulators, including the Federal Reserve, FDIC, OCC, CFTC, and SEC; an industry association; and the 15 U.S. banks that were provisionally registered as swap dealers with CFTC and thus were covered entities under both versions of section 716.² According to 4 of the 15 U.S. banks registered as swap dealers, they were engaged in structured finance swaps activity and thus affected by the amended section 716. In comparison, according to 11 of the 15 U.S. banks registered as swap dealers (including the 4 banks that were affected by the amended section 716), they were engaged in equity, commodity, or noncleared credit default swaps activities and thus would have been affected by the original section 716 had it not been amended.³

To estimate the notional amount of swaps affected by the amended section 716—that is, the swap activity in which the four affected U.S. banks stopped engaging due to the amended section 716—we used data from SwapsInfo.com, a website managed by the International Swaps and Derivatives Association, Inc. (ISDA).⁴ The site uses publicly disseminated data from swap data repositories to which registered swaps dealers in the United States are required to provide such information. ISDA's SwapsInfo.com captures data on credit default swap transactions, including some of those covered under the amended section 716—those structured finance swaps based on groups or indexes primarily comprised of asset-backed securities. However, the data do not include structured finance swaps on single-name asset-backed securities.⁵

²The same 15 U.S. banks were covered by section 716 during our period of analysis—from July 16, 2015, through September 30, 2016. The original and amended section 716 cover U.S. insured depository institutions and uninsured U.S. branches and agencies of foreign banks that are registered swap dealers and security-based swap dealers. In this report, we limit our analysis to U.S. banks that were provisionally registered as swap dealers with CFTC as of July 16, 2015.

³Four of the 15 banks told us they engaged in only interest rate or foreign exchange swap activities and therefore would not have been affected by the original or the amended section 716.

⁴ISDA has over 850 member institutions from 68 countries. These members comprise a broad range of derivatives market participants, including corporations, investment managers, government and supranational entities, insurance companies, energy and commodities firms, and international and regional banks.

⁵For purposes of section 716, structured finance swaps also include swaps and security-based swaps based on a single asset-backed security. Swap data repositories collect and report data on structured finance swaps based on asset-backed securities indexes. Security-based swap data repositories will collect data on security-based swaps on single-name asset-backed securities.

Based on the data provided by ISDA's SwapsInfo.com, we calculated the total notional value of new structured finance swap transactions that were executed between July 16, 2015, and September 30, 2016, and reported to U.S. swap data repositories. We used the total notional amount as our estimate of the volume of structured finance swaps affected by the amended section 716 based on the assumption that the nonbank affiliates of the four U.S. banks affected by the amended section 716 were on one side of every new transaction and that no U.S. bank swap dealer entered into a new structured finance swap for hedging or risk management purposes.⁶ On one hand, our estimate could overestimate the amount of swaps affected by the amended section 716, in part because some of the transactions may not have involved one of the nonbank affiliates. On the other hand, our estimate could underestimate the amount, in part because it does not include all structured finance swaps entered into during our time period.⁷

To estimate the notional amount of swaps affected by the original section 716—that is, the swap activity in which the 11 affected U.S. banks would have stopped engaging due to the original section 716 if it had gone into effect—we used data from the Consolidated Reports of Condition and Income (Call Reports) as of September 30, 2016. Specifically, banks report the notional amount of their interest rate, foreign exchange, equity, commodity and other, and credit derivatives in their Call Reports, and the equity, commodity, and credit default swaps covered under the original section 716 are subsets of the derivatives reported in the Call Reports. In that regard, we used the notional amounts reported by the banks for their equity, commodity, and credit derivatives as of September 30, 2016, to estimate the total notional amount of swaps that would have been affected by the original section 716. Our estimate likely overestimates the total notional amount of swaps that would have been affected by the original section 716, because the estimate includes swaps that might not have been required to be pushed out to retain eligibility for federal assistance, such as (1) swaps used for hedging, (2) swaps entered into

⁶As discussed in the report, the four banks affected by the amended section 716 told us that they moved their structured finance swap activity to their nonbank affiliates.

⁷According to officials from a bank swap dealer and an investment bank, the market for structured finance swaps based on a single asset-backed security is small.

before affected banks were required to comply with section 716 (i.e., legacy swaps), or (3) cleared credit default swaps.⁸

Objective 2

To examine the costs or negative effects of the amended and original versions of section 716 for U.S. banks and swap end-users, we reviewed and analyzed the 2-year transition applications submitted by banks to the Federal Reserve or OCC; OCC examinations of and guidance provided to banks covering section 716; documents on the ISDA Master Agreement and credit support annex; regulations issued by the Federal Reserve, FDIC, OCC, CFTC, and SEC, including on margin or capital requirements for swap and security-based swap dealers; and reports or other materials addressing the implementation of 716 or related issues published by consulting firms, credit rating agencies, and law firms. In addition, we interviewed the 15 section 716 covered banks, 7 non-generalizable end-users of swaps judgmentally selected based on their use of swaps covered under the original or amended section 716, 3 credit rating agencies that issued analyses on section 716 or structured finance swaps, and 3 academics whose research focused on the derivatives markets or section 716.

Objectives 3 and 4

To examine the banks' risks associated with swap activities that continue to be carried on by the banks due to the section 716 amendment and the effects of section 716 and other Dodd-Frank Act requirements on risk to taxpayers in the event of a bank failure, we reviewed

- the Dodd-Frank Act's prudential and resolution reforms and related regulations, including on risk-based and leverage capital requirements, liquidity requirements, total loss-absorbing capacity, global systemically important bank holding companies, the Volcker rule, orderly liquidation authority, and resolution plan requirements;
- joint feedback and guidance provided by the Federal Reserve and FDIC to bank holding companies on their resolution plans;

⁸The original and amended section 716 exempted legacy swaps. That is, section 716 provides that the prohibition on the provision of federal assistance to banks engaging in certain swaps activity only applies to swaps or security-based swaps entered into by a covered depository institution after the end of the transition period.

-
- Federal Reserve’s and OCC’s bank examination manuals and related derivatives guidance;
 - publicly available regulatory filings submitted by U.S. banks registered as swap dealers or their parent holding companies, including SEC annual or quarterly filings and resolution plans;
 - and industry, academic, and other studies or reports examining the role of derivatives in the recent financial crisis and ways to mitigate risks posed by derivatives under the U.S. Bankruptcy Code.

To analyze credit, liquidity, and market risks associated with swaps covered under the original section 716 for the 11 affected U.S. banks, we primarily used Call Report data, including the net positive and negative fair values of their trading derivatives, fair value of their collateral collected for their trading derivatives, and quarterly net gains or losses from their trading derivatives, total risk-based capital. For more information on our methodology, our results, and the limitations of our analysis, see appendix IV. In addition, we interviewed federal banking regulators, banks registered as swap dealers, and others mentioned above about the risks related to the amended and original section 716.

As discussed earlier, we used data from the Call Reports, SEC annual and quarterly filings, and SwapsInfo.com to estimate the total notional value of swaps affected by the amended and original section 716 and to measure and assess the credit, liquidity, and market risks raised by swaps covered under the original section 716. We assessed the reliability of the data by interviewing knowledgeable officials, reviewing relevant documentation, or testing the data for missing or incorrect values. We determined the data were sufficiently reliable for our reporting objectives.

We conducted this performance audit from March 2016 to August 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Banks' Reported Derivative Measures and Their Relationship to Derivative Risks

In their Consolidated Reports of Condition and Income (Call Reports), banks report information about their derivatives, including their notional amounts, gross and net derivative assets and liabilities (also called derivative receivables and payables, or positive and negative fair values of derivatives), and amounts of associated collateral. Such publicly available information can be used to assess how a bank's derivatives can affect its risk exposures.¹ (See app. IV for estimates of certain derivatives risks using swap dealer banks' public financial statements). In this appendix we analyze the relationship among these reported derivatives measures and derivative risks. We explain why derivative notional amounts do not generally represent derivatives risks, how the gross and net values of derivative assets and liabilities can help approximate certain risks associated with derivatives, and how collateral received or paid can further reduce such risks.

Swaps and other derivatives can be assets or liabilities. As explained in the sections that follow, a bank's counterparty credit risk associated with its derivatives can be estimated with varying levels of precision by calculating the value of its (1) gross derivative assets, (2) derivative assets after accounting for netting, and (3) net derivative assets after accounting for the collateral collected from counterparties on those derivatives.² A bank's liquidity risk associated with its derivatives can be estimated by calculating the value of its (1) gross derivative liabilities, (2) derivative liabilities after accounting for netting, (3) and the net derivative

¹Our discussion primarily focuses on information that banks disclose about their derivatives that can be used to assess their counterparty credit and liquidity risks. Banks also disclose other information about their derivatives, such as trading derivatives revenue and measures of derivatives held for purposes other than trading.

²Counterparty credit risk is the potential for financial losses resulting from the failure of a borrower or counterparty to perform on an obligation.

liabilities after accounting for the collateral posted to counterparties for those derivatives.³

Because the dollar amounts associated with these derivatives measures can vary significantly for a given bank, it is important to understand how the measures are related to counterparty credit risk and liquidity risk in order to accurately estimate such risks. For example, the derivatives held by four U.S. banks account for the vast majority of derivatives held by U.S. banks.⁴ As of September 30, 2016, the different reported derivatives measures for these four large bank swap dealers were as follows:⁵

- The notional amounts of their derivatives ranged from around \$22 trillion to \$51 trillion.
- Their gross derivative assets ranged from around \$395 billion to \$1.1 trillion.
- Their net derivative assets ranged from around \$12 billion to \$65 billion, representing 1 percent to 7 percent of their gross derivative assets.
- Their gross derivative liabilities ranged from around \$394 billion to \$1.1 trillion.
- Their net derivative liabilities ranged from around \$5 billion to \$53 billion, representing 1 percent to 5 percent of their gross derivative liabilities.
- The value of the collateral the four banks held against their derivative assets (for over-the-counter (OTC) derivatives) ranged from 87 percent to 110 percent of their net derivative assets. However, these results overestimate the extent to which the collateral would mitigate credit risk as some counterparties over-collateralize and others under-collateralize exposures, and collateral is not fungible across swap counterparties. Banks typically require hedge funds to post an amount of collateral greater than the value they are owed (i.e., greater than the net asset amount of the derivatives with that counterparty), but

³Liquidity risk is risk to an institution's financial condition or safety and soundness arising from its inability, whether real or perceived, to meet its contractual obligations.

⁴The four banks collectively held a total notional amount of about \$159 trillion in derivatives, or around 90 percent of the derivatives held by the 15 U.S. banks registered as swap dealers as of September 30, 2016.

⁵These measures are based on public bank Call Reports for the third quarter of 2016.

banks may not require commercial firms to post collateral. While a bank's total held collateral may nearly equal the total value of its net derivative assets, the bank still may have uncollateralized derivative assets from swaps with commercial firms.

Notional Amounts of Derivatives

Notional amounts alone do not provide useful measures of a bank's credit, liquidity, or market risks associated with its derivatives. The notional amount of a derivative contract is a reference amount that is used with the contract's other terms to calculate payments. Notional amounts generally are measured in dollar amounts but can reference other amounts, such as the number of currency units, shares, bushels, or pounds. Counterparties generally do not exchange the notional amounts except in certain circumstances for certain types of credit derivatives. The examples that follow show the role that notional amounts play in an interest rate derivative contract and a credit default swap contract. In both examples, the notional amount is a dollar amount. In the interest rate derivative example, the notional amount is not exchanged. In the credit default swap example, the notional amount is exchanged.

Example 1—Interest Rate Swap. Company C wants to hedge its risk with a security paying a floating rate and enters into a 1-year interest rate swap with Bank B. Under the swap, Bank B agrees to make quarterly fixed payments of 5 percent multiplied by \$10 million to Company C, and Company C agrees to make quarterly floating payments of 3-month London Interbank Offered Rate (LIBOR) multiplied by \$10 million to Bank B. The swap's notional amount is \$10 million. Table 2 shows the quarterly amounts that Bank B owes Company C, the quarterly amounts that Company C owes Bank B, and the net cash flows between the two counterparties. Bank B and Company C do not exchange the notional amount.

Table 2: Example of an Interest Rate Swap

Quarter	Notional amount (dollars)	Fixed rate (percent)	Gross fixed payment (dollars)	Floating 3-month LIBOR rate (percent)	Gross floating payment (dollars)	Net payment
1	10,000,000	5	125,000	4.745	118,625	Bank B pays Company C \$6,375
2	10,000,000	5	125,000	4.872	121,800	Bank B pays Company C \$3,200
3	10,000,000	5	125,000	5.581	139,525	Company C pays Bank B \$14,525

Appendix II: Banks' Reported Derivative Measures and Their Relationship to Derivative Risks

Quarter	Notional amount (dollars)	Fixed rate (percent)	Gross fixed payment (dollars)	Floating 3-month LIBOR rate (percent)	Gross floating payment (dollars)	Net payment
4	10,000,000	5	125,000	5.468	136,700	Company C pays Bank B \$11,700

Source: GAO. | GAO-17-607

Note: Bank B's payment to Company C—the gross fixed payment—is calculated by multiplying the notional amount (\$10 million) by the fixed rate (5 percent) divided by the number of periods per year (4). Company C's payment to Bank B—the gross floating payment—is calculated by multiplying the notional amount (\$10 million) by the floating rate (3-month LIBOR) divided by the number of periods per year (4).

Example 2—Credit Default Swap. Insurer I invested \$10 million in Company C's bonds and entered into a credit default swap with Bank B to protect itself against a loss if Company C defaults on its debt. Under the swap, Insurer I agrees to make quarterly payments of 5 percent of \$10 million to Bank B, as long as Company C (a third party that is not a party to this contract) does not default on its bonds, and Bank B agrees to pay Insurer I \$10 million in exchange for Company C's bonds if Company C defaults. The contract terminates in 5 years, or earlier if Company C defaults. The swap's notional amount is \$10 million. Table 3 shows that Insurer I made quarterly payments to Bank B for 6 quarters until Company C defaulted. In the seventh quarter, Bank B pays Insurer I \$10 million, and Insurer I delivers Company C's bonds to the bank. Although Bank B paid Insurer I the notional amount, it received \$750,000 in quarterly payments and Company C's bonds, which could have some recovery value.⁶

Table 3: Example of a Credit Default Swap Contract

Quarter	Notional amount (dollars)	Spread (percent)	Company C defaults?	Payment from Insurer I to Bank B (dollars)	Payment from Bank B to Insurer I (dollars)
1	10,000,000	5	No	125,000	0
2	10,000,000	5	No	125,000	0
3	10,000,000	5	No	125,000	0
4	10,000,000	5	No	125,000	0
5	10,000,000	5	No	125,000	0
6	10,000,000	5	No	125,000	0
7	10,000,000	5	Yes	0 ^a	10,000,000

⁶An alternative to physical settlement of a credit default swap is cash settlement. Under the cash settlement approach, the protection seller and buyer of a credit default swap agree on the value of the defaulted bonds and then settle the swap by having the protection seller pay the protection buyer the loss given default.

Source: GAO. | GAO-17-607

Note: Insurer I's payment to Bank B is calculated by multiplying the \$10 million notional amount by 5 percent divided by 4 periods per year, and Insurer I makes these payments to Bank B as long as the bond does not default. Bank B makes no payments to Insurer I unless the bond does default, but if the bond does default, Bank B pays Insurer I \$10 million.

⁹After Company C's default, Insurer I gives company C's bonds to Bank B, which could have some recovery value.

Gross and Net Derivative Assets and Liabilities

Gross and net values of derivatives assets and liabilities can help approximate certain risks associated with derivatives. As mentioned earlier, swaps and other derivatives can be assets or liabilities. To see if a derivative represents an asset or a liability to the bank, a bank estimates the fair value of the contract. The fair value of a derivative contract is the price at which the contract would be transferred in an orderly transaction—one that occurs under sufficient time and exposure to the market to allow for usual or customary marketing activities to unfold—between market participants in its principal (or most advantageous) market. Generally, bank swap dealers recalculate the fair market value of their derivatives contracts based on current market prices (called marking to market) on a daily basis. A bank's total gross derivative assets and liabilities are an initial approximation of derivatives risks as follows:

- The total for all contracts with positive fair values to the bank is the gross value of its derivative assets. Counterparty credit risk is the potential for financial losses resulting from the failure of a counterparty to perform on an obligation. Thus, a bank's gross derivative assets—or the gross value of what it is owed on its derivatives—represents an initial measurement of the bank's counterparty credit exposure associated with its derivatives.⁷
- The total for all contracts with negative fair values to the bank is the gross value of its derivative liabilities. Liquidity risk is the risk to an institution's financial condition from its inability to meet its contractual obligations. Similarly, a bank's gross derivative liabilities—or the gross value of what it owes on its derivatives—represents a measurement of the bank's liquidity risk exposure associated with its derivatives.⁸

⁷Similarly, for a bank's counterparty, the positive fair value of its derivative contracts with the bank represents an initial measure of its counterparty credit exposure to the bank.

⁸Similarly, for a bank's counterparty, the negative fair value of its derivative contracts with the bank represents an initial measure of the liquidity risk associated with its derivative obligations to the bank.

Appendix II: Banks' Reported Derivative Measures and Their Relationship to Derivative Risks

Accounting for the ability to net obligations with a derivatives counterparty better approximates risks associated with derivatives. When a bank has entered into multiple derivative contracts with the same counterparty that are covered by a legally enforceable master netting agreement, the fair values of all of the contracts with that counterparty—both positive and negative—can be combined into a single net positive or negative fair value of all the contracts with that counterparty.⁹ That is, the combined fair values of the contracts under an enforceable master netting agreement with a counterparty result in a net asset or a net liability for the bank with respect to that counterparty. This reduces counterparty credit risk and, possibly, liquidity risk because netting can reduce or eliminate exposures to a particular counterparty. For example, table 4 shows Bank B has three outstanding derivatives with Company C under a legally enforceable master netting agreement, allowing the contracts with positive and negative fair values to be combined into a net derivative asset of \$845,000. Bank B also has two outstanding derivatives with Insurer I under a legally enforceable master netting agreement, resulting in a net derivative liability of \$10,000. For the swaps under the same legally enforceable master netting agreement with Company C, the gross counterparty credit exposures to the company are reduced from \$1,070,000 to \$845,000. For the swaps under the same legally enforceable master netting agreement with Insurer I, counterparty credit exposures are eliminated by netting.

Table 4: Hypothetical Example of Bank B's Derivatives with Two Counterparties under Legally Enforceable Master Netting Agreements

Contract	Counterparty	Legally enforceable master netting agreement?	Derivatives contract type	Notional amount (dollars)	Fair value (dollars)	Net amount (dollars)
1	Company C	Yes	Interest rate	10,000,000	230,000	n/a
2	Company C	Yes	Commodity	20,000,000	840,000	n/a
3	Company C	Yes	Foreign exchange	15,000,000	(225,000)	n/a
	Company C	n/a	n/a	n/a	n/a	845,000
4	Insurer I	Yes	Credit	10,000,000	140,000	n/a
5	Insurer I	Yes	Equity	5,000,000	(150,000)	n/a

⁹The ISDA Master Agreement published by the International Swaps and Derivatives Association (ISDA) is an example of a widely used master netting agreement. It is an internationally agreed upon document used to provide certain legal and credit protection for parties who enter into OTC derivatives. There are two main versions that are commonly used: the 1992 ISDA Master Agreement and 2002 ISDA Master Agreement.

Appendix II: Banks' Reported Derivative Measures and Their Relationship to Derivative Risks

Contract	Counterparty	Legally enforceable master netting agreement?	Derivatives contract type	Notional amount (dollars)	Fair value (dollars)	Net amount (dollars)
	Insurer I	n/a	n/a	n/a	n/a	(10,000)

Source: GAO. | GAO-17-607

Note: n/a = not applicable.

Collateral Posted or Collected

Better measures of counterparty credit risk and liquidity risk would take into account the value of the collateral received and paid by the bank, respectively. As a market practice and more recently as a regulatory requirement, swap dealers and other counterparties have used collateral arrangements to mitigate counterparty credit risk. Under one type of collateral arrangement, both counterparties post collateral (e.g., cash or liquid securities) when they enter a derivative transaction and each counterparty posts additional collateral based on the periodic marking to market of the position. The counterparty whose position has a negative fair value would post collateral with its counterparty. Collateral provides protection to both parties in the event of a default on a transaction of the other party, because the collateral receiver has recourse to the collateral and can thus make good some or all of the loss suffered before having to tap into its own capital to cover losses. The collateral held by a bank helps the bank mitigate its credit risk exposure to the counterparty that provided the collateral. Similarly, the collateral paid by the bank to a counterparty helps mitigate the strain that future swap obligations with that counterparty may pose on the bank.

Example 3: Bank B's Derivatives Portfolio after Accounting for Netting and Collateral. Table 5 shows the total notional amounts and total gross derivative assets and liabilities of Bank B's derivatives and the effects of netting and collateral on Bank B's counterparty credit risk exposure. The total notional amount of derivatives contracts with positive fair value is \$55 million, and the total gross positive fair value of the contracts (i.e., the bank's value of its gross derivative assets) is \$1.54 million. The total notional amount of derivatives contracts with negative fair value is \$45 million, and the total gross negative fair value of the contracts (i.e., the bank's value of its gross derivative liabilities) is about \$795,000. After accounting for netting, gross derivative assets are reduced to \$975,000 and gross derivative liabilities are reduced to \$430,000. After accounting for collected and posted collateral, the total net derivative assets are \$878,000, and total net derivative liabilities are \$349,000. As mentioned earlier, these are more accurate measures of

Appendix II: Banks' Reported Derivative Measures and Their Relationship to Derivative Risks

counterparty credit risk and liquidity risk for bank B, because they measure the bank's outstanding risks after taking into account netting and collateral received and paid.

Table 5: Hypothetical Example of Bank B's Derivatives Portfolio's Notional Amounts, Gross Fair Values, and Fair Values after Netting and Collateral

	Derivative assets		Derivative liabilities	
	Notional amount (dollars)	Fair value (dollars)	Notional amount (dollars)	Fair value (dollars)
Total gross, before accounting for netting and collateral	55,000,000	1,540,000	45,000,000	795,000
Less: Legally enforceable master netting agreements	n/a	(565,000)	n/a	(365,000)
Total net, before accounting for collateral	n/a	975,000	n/a	430,000
Less: Cash collateral collected/posted	n/a	(97,000)	n/a	(81,000)
Total derivative assets/liabilities	n/a	878,000	n/a	349,000

Source: GAO. | GAO-17-607

Note: n/a = not applicable.

Appendix III: Select Dodd-Frank Act Requirements That Help Mitigate Risks Associated with Banks' Swap Activities

In addition to section 716, the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) includes other provisions that serve to limit, reduce, or mitigate risks faced by banks because of their swap or security-based swap (collectively referred to as swaps, unless otherwise noted) activities.¹ Specifically, the Dodd-Frank Act establishes a framework to address the financial stability risks associated with major financial companies. Part of this framework seeks to reduce major financial companies' probability of failure, including from their swap activities, by requiring the Board of Governors of the Federal Reserve System (Federal Reserve) to subject them to enhanced capital, liquidity, and other prudential requirements and to heightened supervision.

In addition, the Dodd-Frank Act also establishes a new regulatory framework specifically for swaps to reduce risk, increase transparency, and promote market integrity in swaps markets. Under the new framework, banks that deal swaps or security-based swaps in amounts above a specified threshold must register as swap or security-based swap dealers with the Commodity Futures Trading Commission (CFTC)

¹Title VII of the Dodd-Frank Act expands regulatory responsibilities for the Commodity Futures Trading Commission and the Securities and Exchange Commission by establishing a new regulatory framework for swaps. The act authorizes the Commodity Futures Trading Commission to regulate "swaps" and the Securities and Exchange Commission to regulate "security-based swaps" with the goals of reducing risk, increasing transparency, and promoting market integrity in the financial system.

or the Securities and Exchange Commission (SEC), respectively.² These bank swap dealers also are subject to margin, capital, and other requirements set by their respective federal prudential banking regulator: the Federal Reserve, the Office of the Comptroller of the Currency (OCC), or the Federal Deposit Insurance Corporation (FDIC).

Dodd-Frank Act Capital and Leverage Requirements for Banking Organizations

Quantitative Capital and Leverage Requirements

Federal prudential banking regulators established an integrated regulatory capital framework by implementing many aspects of the Basel III regulatory capital reforms and the Dodd-Frank Act's prudential reforms.³ The reforms include implementing a number of minimum risk-based capital and leverage requirements and a capital conservation buffer for banking organizations, including U.S. banks and their holding companies (see table 6).⁴

²CFTC requires an entity that conducts dealing activity in swaps above \$3 billion in aggregate notional amount over a 12-month period to register as a swap dealer, subject to a phase-in period during which the threshold is set at \$8 billion absent any further action by CFTC. The phase-in period will terminate on December 31, 2018. See 17 C.F.R. § 1.3(ggg)(4)(i); 81 Fed. Reg. 71,605 (Oct. 18, 2016). SEC has adopted registration rules that require registration of security-based swap dealers that conduct credit default swap dealing activity exceeding \$8 billion in aggregate notional amount and \$400 million in aggregate notional amount for other security-based swaps during a phase-in period. After the phase-in period, registration thresholds will be \$3 billion for credit default swap that are security-based swaps and \$150 million for other security-based swaps. The compliance date for registration of security-based swap dealers has not yet occurred. See 80 Fed. Reg. 48,964 (Aug. 14, 2015); 77 Fed. Reg. 30,596, 30,756 (May 23, 2012).

³Basel III reforms are the latest set of banking regulatory standards established by members of the Basel Committee on Banking Supervision (Basel Committee). The Basel Committee seeks to improve the quality of banking supervision worldwide, in part by developing broad supervisory standards. The Basel Committee consists of central bank and regulatory officials from 28 member countries: Argentina, Australia, Belgium, Brazil, Canada, China, the European Union, France, Germany, Hong Kong SAR, India, Indonesia, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. The Basel Committee's supervisory standards are also often adopted by nonmember countries.

⁴78 Fed. Reg. 62,018 (Oct. 11, 2013).

**Appendix III: Select Dodd-Frank Act
Requirements That Help Mitigate Risks
Associated with Banks' Swap Activities**

Table 6: Basel III Minimum Capital and Leverage Regulatory Requirements Applicable to Banks and Their Holding Companies

Basel III minimum regulatory capital and leverage ratio	Final requirement (percent)		Capital conservation buffer requirement (percent)	Total (percent)
Common Equity Tier 1 Capital / Risk-weighted assets (RWA)	4.5	+	2.5	7.0
Tier 1 Capital / RWA	6.0	+	2.5	8.5
Total Capital / RWA	8.0	+	2.5	10.5
Tier 1 Leverage / Average assets	4.0	n/a	n/a	4.0

Source: GAO analysis of *Federal Register* documents. | GAO-17-607

Note: The above requirements rely on the following types of regulatory capital: common equity tier 1 capital, additional tier 1 capital, and tier 2 capital. According to Federal Reserve staff, common equity tier 1 capital is considered the highest quality capital that a banking institution can have to support its operations and absorb unexpected financial losses. Common equity tier 1 capital consists primarily of retained earnings (the profits a banking institution has earned but has not paid out to shareholders in the form of dividends or other distributions) and qualifying common stock, with deductions for items such as goodwill and deferred tax assets. Tier 2 capital contains supplementary capital elements such as subordinated debt, a portion of loan loss reserves, and certain other instruments. Total capital consists of the sum of tier 1 (common equity tier 1 capital and additional tier 1 capital) and tier 2 capital. Risk-weighted assets are on- and off-balance sheet assets adjusted for their risk characteristics. n/a = not applicable.

In addition, prudential regulators have imposed more stringent capital and leverage requirements on larger, more complex firms that serve as an additional capital buffer. These firms include (1) large, internationally active bank holding companies (BHC), also referred to as Advanced Approaches BHCs, and (2) global systemically important BHCs (GSIB).⁵ There are 15 U.S. banks that are registered with CFTC as swap dealers and thus are covered by the amended section 716 of the Dodd-Frank Act. As of September 30, 2016, 11 of the banks were subsidiaries of Advanced Approaches BHCs, and of these 11 BHCs, 8 of them also were GSIBs. A BHC that does not hold capital sufficient to meet or exceed its combined buffer level is subject to restrictions on capital distributions and discretionary bonus payments to executives, which become progressively

⁵Advanced Approaches BHCs are large internationally active BHCs, generally those with at least \$250 billion in assets or at least \$10 billion in total on-balance-sheet foreign exposure. Global systemically important bank holding companies (GSIB) are BHCs whose distress or failure because of their size, complexity, and interconnectedness could cause significant disruption to the wider financial system and economy. In the United States, the Federal Reserve established criteria for identifying a GSIB through rule making. See 80 Fed. Reg. 49,082 (Aug. 14, 2015).

stricter as its capital level falls deeper into the buffer. The additional capital buffer requirements are the following:⁶

- **Supplementary leverage ratio:** Generally, Advanced Approaches BHCs (including GSIBs) and their bank subsidiaries, must maintain a supplementary leverage ratio of at least 3 percent on top of the minimum leverage ratio requirement described in table 6. The Advanced Approaches BHCs that are GSIBs also must maintain a leverage buffer of 2 percentage points on top of the 3 percent. Additionally, bank subsidiaries of GSIBs must maintain a supplementary leverage ratio of at least 6 percent to be considered “well capitalized” for purposes of Prompt Corrective Action.⁷
- **GSIB capital surcharge:** The Federal Reserve established criteria for identifying a GSIB based on indicators in broad categories that are correlated with systemic importance, such as size, interconnectedness, cross-jurisdictional activity, substitutability, and complexity.⁸ The rule also imposed a risk-based capital surcharge for identified GSIBs based on calculations of risk derived from methods detailed in the rule. When the Federal Reserve issued the final rule on July 20, 2015, it estimated surcharges for the eight GSIBs it identified ranging from 1.0 percent to 4.5 percent of each firm’s total risk-weighted assets.
- **Countercyclical capital buffer:** Advanced Approaches BHCs and their banks are also subject to additional capital buffer requirements that expand the uniform capital conservation buffer in times of increasing financial vulnerabilities.⁹
- **Market risk capital rule:** BHCs and banks with significant trading operations are required to report their market risk-weighted assets

⁶The Federal Reserve also issued a Total Loss-Absorbing Capacity requirement for GSIBs which, among other things, would set a minimum level of total loss absorbing capacity and long-term debt for each BHC that could be used to recapitalize these firms’ critical operations in the event of failure. See 82 Fed. Reg. 8266 (Jan. 24, 2017). This requirement is discussed in more detail in appendix V.

⁷The Federal Deposit Insurance Act requires federal prudential regulators to classify banks into capital categories and take increasingly severe actions, known as prompt corrective action, as a bank’s capital deteriorates.

⁸See 80 Fed. Reg. 49,082 (Aug. 14, 2015). Because the final rule relies on individual GSIB data that change over time, these estimated surcharges at the time the rule was finalized may not match the surcharges that apply to a GSIB under the rule.

⁹See 81 Fed. Reg. 63,682 (Sept. 16, 2016).

and include this amount in the total risk-weighted assets amount used to calculate their capital ratios.¹⁰ In 2015 and 2016, all section 716 banks and their BHCs were market risk firms.

Under the capital and leverage ratio requirements (the minimum capital and leverage ratios and the supplementary leverage ratio) a BHC or bank's weighted or unweighted derivatives exposures will increase the denominator of the ratios and, thus, require the BHC or bank to hold additional capital (as specified in the numerators of the ratios) to comply with the requirements. The capital buffer requirements (the capital conservation buffer and the countercyclical buffer) effectively increase the minimum ratio requirements, consequently increasing the required capital that covered BHCs or banks have to hold. In addition, the market risk capital rule and the more stringent Basel III risk weights on certain types of risky assets, including derivatives, increase risk-weighted assets which in turn increase the denominator of many of the ratio requirements. Because capital provides an institution with a cushion to absorb losses from its various activities, including derivatives trading, the capital and leverage requirements identified above help covered banks and their BHCs mitigate losses from swaps activity.

Capital Planning and Stress Test Requirements

The Federal Reserve also established supervisory stress test requirements for certain BHCs and certain banks, in part as a result of Dodd-Frank Act reforms. Dodd-Frank Act stress tests (DFAST) generate forward-looking information about a BHC's capital adequacy and are used, in part, to project how hypothetical baseline, adverse, and severely adverse scenarios would affect the BHC's revenues and losses and ultimately its capital levels. The Federal Reserve also uses the Comprehensive Capital Analysis and Review (CCAR), which builds on information from DFAST, to quantitatively and qualitatively evaluate the

¹⁰77 Fed. Reg. 53,060 (Aug. 30, 2012). A bank or BHC must apply the market risk capital rule if it has reported aggregate trading assets and trading liabilities equal to (a) 10 percent or more of quarter-end total assets or (b) \$1 billion or more.

capital adequacy and capital planning processes of large BHCs.¹¹ Under CCAR, the Federal Reserve may object to a BHC's capital plan on either quantitative or qualitative grounds. A quantitative objection is made when the stress test reveals that a firm would not be able to maintain its post-stress capital ratios above the regulatory minimum levels over the planning horizon, taking into account its planned capital distributions. The Federal Reserve may object on qualitative grounds if it finds that the BHC's capital planning processes are not sufficiently reliable. If the Federal Reserve objects on quantitative or qualitative grounds, the BHC may not make any capital distributions without the Federal Reserve's permission.

As required under the Dodd-Frank Act, the Federal Reserve annually defines three stress test scenarios—baseline, adverse, and severely adverse—that it uses for the supervisory stress test and requires DFAST BHCs to use in their annual company-run tests.¹² The scenarios consist of hypothetical projections for macroeconomic and financial variables, such as measures of the unemployment rate, gross domestic product, housing and equity prices, interest rates, and financial market volatility. The stress tests' post-stress capital ratios, which are an important output of the stress tests, reflect projections of risk-weighted assets and balance sheet and income statement items under the stress scenarios and

¹¹In CCAR, the Federal Reserve assesses the overall capital adequacy of the firms, including evaluations of whether each firm's capital provides an adequate buffer for the losses that would be incurred during the stress scenarios, whether its risk management and capital planning processes are appropriately well-developed and governed, and how its plans to distribute capital through dividends or share repurchases could affect its ability to remain a viable financial intermediary in the hypothesized scenarios. See Remarks by Daniel K. Tarullo, Member of the Board of Governors of the Federal Reserve System, *Next Steps in the Evolution of Stress Testing*, Yale University School of Management Leaders Forum Yale University, New Haven, Connecticut, September 26, 2016.

¹²The baseline scenario is a set of conditions that affect the U.S. economy or the financial condition of a covered company and that reflect the consensus views of the economic and financial outlook; the adverse scenario is a set of conditions that affect the U.S. economy or the financial condition of a covered company that are more adverse than those associated with the baseline scenario and may include trading or other additional components; and the severely adverse scenario is a set of conditions that affect the U.S. economy or the financial condition of a covered company and that overall are more severe than those associated with the adverse scenario and may include trading or other additional components. 12 C.F.R. §§ 252.32, 252.42, 252.52.

measure the amount of capital a BHC would have available to cover unexpected losses.¹³

Federal Reserve staff told us that stress tests do not separately stress a BHC's over-the-counter (OTC) derivatives portfolios. However, the stress tests are a forward-looking method to help ensure that a BHC has sufficient capital to withstand losses, including from OTC derivatives, under stressed scenarios. In addition, BHCs with large trading operations, including from derivatives, are subject to additional components in the severely adverse and adverse DFAST scenarios designed to stress their trading and private equity (in the case of the global market shock), or counterparty positions (in the case of the counterparty default component).¹⁴ All section 716 covered banks' BHCs are subject to DFAST and CCAR stress tests. Six of the covered banks' BHCs are subject to the global market shock component, and eight of the covered banks' BHCs are subject to the counterparty default component in their adverse and severely adverse scenarios.¹⁵ Lastly, the Dodd-Frank Act also requires banks and other financial companies with \$10 billion in assets or more to conduct annual stress tests pursuant to regulations prescribed by their respective primary financial regulatory agencies. All of the banks covered by section 716 are subject to such company-run stress tests.

Swap Margin (Collateral) Requirements

Title VII of the Dodd-Frank Act provides for the registration and regulation of swap dealers and major swap participants and subjects them to CFTC,

¹³For our most recent review of Federal Reserve's Stress-Test programs, see GAO, *Federal Reserve: Additional Actions Could Help Ensure the Achievement of Stress Test Goals*, [GAO-17-48](#) (Washington, D.C.: Nov. 15, 2016).

¹⁴The global market shock is a set of instantaneous, hypothetical shocks to a large set of risk factors. Generally, these shocks involve large and sudden changes in asset prices, interest rates, and spreads, reflecting general market distress and heightened uncertainty. The counterparty default scenario component involves the instantaneous and unexpected default of the BHC's largest counterparty.

¹⁵The following six BHCs of section 716 covered banks were subject to both the global market shock and the counterparty default components in their adverse and severely adverse stress test scenarios in 2015 and 2016: JPMorgan Chase & Co., Citigroup Inc., Bank of America Corporation, Goldman Sachs Group, Inc., Wells Fargo & Company, and Morgan Stanley. The following two BHCs of section 716 covered banks are subject to the counterparty default component only in their adverse and severely adverse stress test scenarios: Bank of New York Mellon Corporation and State Street Corporation.

SEC, and prudential regulatory requirements, such as minimum capital and minimum initial and variation margin requirements (also referred to as collateral requirements, because margin requirements are satisfied by collecting or posting collateral such as cash or certain securities).¹⁶ Prudential regulators' collateral requirements mandate the exchange of initial and variation margin for noncleared swaps between bank swap dealers and certain counterparties. The amount of required margin varies based on the risk posed by a covered swap entity's counterparty.¹⁷

- Initial margin protects the collecting party from the potential future exposure that could arise from changes in the mark-to-market value of the contract in the event that the margin-posting party defaults. The amount of initial margin reflects the size of the potential future exposure. A covered swap entity generally must post and collect initial margin when it engages in noncleared swaps with another swap entity or with a financial end-user with material swaps exposures.¹⁸ Swap transactions used by other end-users to hedge or mitigate commercial risk are exempt from initial margin requirements. If the end-user is not using the swap for hedging purposes, a covered swap entity must collect initial margin that has been determined to appropriately address the credit risk posed by the counterparty and the risks of such swap.

¹⁶The Dodd-Frank Act's capital and margin requirements for noncleared swaps complement other Dodd-Frank Act provisions that require all sufficiently standardized swaps to be cleared through a registered derivatives clearing organization or clearing agency.

¹⁷A swap entity is defined as a registered swap dealer, security-based swap dealer, major swap participant, or major security-based swap participant for purposes of the margin rules. A covered swap entity includes swap entities regulated by a prudential regulator. 12 C.F.R. § 349.2 (FDIC); 12 C.F.R. § 45.2 (OCC); 12 C.F.R. § 237.2 (Federal Reserve). There are no separate capital requirements for swap dealer banks stemming from Title VII of the Dodd-Frank Act. Prudential regulators clarified that swap dealer banks must comply with the risk-based capital and leverage requirements already applicable to the bank, as discussed earlier in this section.

¹⁸A financial end user is a counterparty that is not a swap entity and generally includes, among other entities, regulated financial institutions such as bank holding companies, insurance companies, and depository institutions. 12 C.F.R. § 237.2 (Federal Reserve); 12 C.F.R. § 349.2 (FDIC); 12 C.F.R. § 45.2 (OCC). Material swaps exposure generally means that an entity and its affiliates have an average daily amount of noncleared swaps, foreign exchange forwards, and foreign exchange swaps with all counterparties for June, July, and August of the previous calendar year that exceeds \$8 billion. 12 C.F.R. § 237.2 (Federal Reserve); 12 C.F.R. § 349.2 (FDIC); 12 C.F.R. § 45.2 (OCC).

- Variation margin protects the transacting parties from the current exposure that has already been incurred by one of the parties from changes in the mark-to-market value of the contract after the transaction has been executed. The amount of variation margin reflects the size of this current exposure. A covered swap entity generally must post and collect variation margin on trades with other swap entities or with financial end-users. Swap transactions used by commercial (i.e., non-financial) end-user counterparties to hedge or mitigate commercial risk are exempt from collateral requirements. If the commercial end-user is not using the swap for hedging purposes, a covered swap entity must collect variation margin that has been determined to appropriately address the credit risk posed by the counterparty and the risks of such swap.¹⁹

Dodd-Frank Act Liquidity Requirements for Banking Organizations

The prudential regulators also are establishing a new liquidity framework for U.S. BHCs, as well as certain savings and loan holding companies and large insured depository institution subsidiaries, by implementing Basel III and Dodd-Frank Act liquidity requirements. The reforms include two new quantitative liquidity standards: the Liquidity Coverage Ratio (LCR) and the proposed Net Stable Funding Ratio (NSFR) (see table 7). The LCR standard is designed to promote the short-term resilience of the liquidity risk profile of large banking organizations and to improve the banking sector's ability to absorb shocks arising from economic and financial stress over a short term.²⁰ The proposed NSFR rule focuses on the stability of a company's funding structure over a longer, one-year horizon. The LCR generally applies to banking organizations with \$250 billion or more in total consolidated assets or \$10 billion or more in on-balance sheet foreign exposure and their subsidiary depository institutions that have assets of \$10 billion or more. The LCR final rule also

¹⁹12 C.F.R. § 237.4(c) (Federal Reserve); 12 C.F.R. § 349.4(c) (FDIC); 12 C.F.R. § 45.4(c) (OCC). The final rule phased in the variation margin requirements between September 1, 2016, and March 1, 2017. The initial margin requirements began phasing in on September 1, 2016, and will phase in over 4 years. 80 Fed. Reg. 74,840, 74,849-50 (Nov. 30, 2015). On February 22, 2017, the Federal Reserve and OCC issued guidance explaining how they expect swap entities covered by the rule to prioritize compliance efforts surrounding the March 2, 2017, variation margin deadline according to the size and risk of their counterparties.

²⁰12 C.F.R. pt. 50 (OCC), 12 C.F.R. pt. 249 (Federal Reserve), 12 C.F.R. pt. 329 (FDIC).

applies a less stringent, modified LCR to BHCs and certain savings and loan holding companies that do not meet these thresholds but have \$50 billion or more in total assets. Covered companies must hold high-quality liquid assets at least equal to 100 percent (70 percent for the modified LCR) of their net cash outflows over a 30-day stress period. As proposed, the NSFR would apply to bank holding companies, certain savings and loan holding companies, and depository institutions that have \$250 billion or more in total consolidated assets or \$10 billion or more in total on-balance sheet foreign exposure, and to their consolidated depository institution subsidiaries that have total consolidated assets of \$10 billion or more. The proposed rule also would apply a less stringent, modified NSFR to BHCs and certain savings and loan holding companies that do not meet these thresholds but have \$50 billion or more in total consolidated assets. The proposal would require covered companies to maintain available stable funding that equals or exceeds 100 percent (or 70 percent in the case of modified NSFR) of its required stable funding on an ongoing basis.²¹

Table 7: Minimum Liquidity Ratio Requirements Applicable to Certain Banks and Their Holding Companies

Basel III Regulatory Liquidity Requirement		Minimum Requirement (percent)
Liquidity Coverage Ratio (LCR)	= $\frac{\text{Stock of High Quality Liquid Assets}}{\text{Net Cash Outflows in any 30-day period}}$	100
Modified LCR	= $\frac{\text{Stock of High Quality Liquid Assets}}{\text{Net Cash Outflows in any 30-day period}}$	70
Net Stable Funding ratio (NSFR)	= $\frac{\text{Available Stable Funding}}{\text{Required Stable Funding}}$	100
Modified NSFR	= $\frac{\text{Available Stable Funding}}{\text{Required Stable Funding}}$	70

Source: Federal Register. | GAO-17-607

Under the liquidity requirements, a BHC's derivative activity can increase the denominator of the ratios and, thus, require the BHC, savings and loan holding company, bank, or thrift to hold more liquid assets or stable funding to comply with the requirements. In the case of the LCR, the denominator of the ratio can increase with (1) net derivative cash outflows (i.e., the amount, if greater than zero, of the payments and collateral made or delivered to each counterparty, less the sum of payments and collateral due from each counterparty, if subject to a valid qualifying

²¹81 Fed. Reg. 35,124 (June 1, 2016). The proposed NSFR requirement would take effect on January 1, 2018.

master netting agreement), or (2) net collateral outflows (i.e., outflows related to changes in collateral positions that could arise during a period of financial stress).²² In the case of the NSFR, the denominator increases if an aggregated measure of a covered company's derivatives portfolio is a net asset, as the regulators believe such assets require full stable funding. The denominator also increases based on a measure of gross derivative values that are liabilities to account for potential changes in the value of the derivatives that may require the firm to post additional collateral or settlement payments.

In addition, the Federal Reserve launched in 2012 the Comprehensive Liquidity Assessment and Review (CLAR) for GSIBs and other large firms. According to Federal Reserve staff, CLAR is a supervisory annual quantitative and qualitative assessment of a GSIB's and other large firms' liquidity positions and liquidity risk management practices. Under CLAR, the Federal Reserve evaluates firms' liquidity positions both through a range of supervisory liquidity metrics and through analysis of firms' internal stress tests that each firm uses to make funding decisions and to determine its liquidity needs. According to Federal Reserve staff, in evaluating the firms' stress testing practices the Federal Reserve has focused on assumptions regarding liquidity needs for derivatives trading, among other issues. Unlike the capital stress tests, CLAR does not include specific standardized minimum liquidity ratios based on stress tests. But according to Federal Reserve staff, through supervisory direction, stress test ratings downgrades, or enforcement actions, the Federal Reserve directs firms with weak liquidity positions under CLAR's liquidity metrics to improve their practices and, as warranted, their liquidity positions.

Limits on BHCs' Credit Exposures and Restrictions on Their Swap Activities

The Federal Reserve has proposed regulations imposing single counterparty credit limits for BHCs with total consolidated assets of \$50 billion or more. The proposal would limit the aggregate net credit

²²The final rule specifies that changes in collateral positions during a period of stress can occur from being required to post additional or higher quality collateral as a result of a change in (1) derivative collateral values, (2) underlying derivative values, or (3) financial condition of the bank, having to return excess collateral, or accepting lower quality collateral as a substitute for already-posted collateral. The rule requires companies to recognize net collateral outflows related to these changes.

exposure, including credit exposure from swaps and other derivatives, of a BHC with total consolidated assets of \$50 billion or more to a single counterparty. For U.S. BHCs, the proposed credit exposure limits are as follows: (1) A GSIB would be required to limit its aggregate net credit exposure to another GSIB or to a nonbank financial company supervised by the Federal Reserve to 15 percent of its tier 1 capital, and to other counterparties to 25 percent of its tier 1 capital,²³ (2) an advanced approaches firm that is not a GSIB would be required to limit its aggregate net credit exposure to a counterparty to 25 percent of its tier 1 capital, and (3) any other covered BHC would have to limit its exposure to a counterparty to 25 percent of its consolidated capital stock and surplus.

Additionally, in an effort to restrain risk taking at BHCs and to reduce the potential for these entities to require federal support because of their speculative trading activity, section 619 of the Dodd-Frank Act (also known as the Volcker Rule) prohibits banking entities from engaging in proprietary trading, subject to certain exceptions.²⁴ Proprietary trading generally refers to using the institution's own funds to profit from short-term price changes and includes derivatives trading.²⁵ The prohibition applies broadly to banking entities that are registered swap dealers. Exceptions from the prohibition exist for derivatives transactions entered into for purposes of risk-mitigating hedging, market-making, or

²³The Dodd-Frank Act created the Financial Stability Oversight Council and authorized it to designate a nonbank financial company for Federal Reserve supervision if the Financial Stability Oversight Council determines it could pose a threat to U.S. financial stability. Pub. L. No. 111-203, § 111, 113, 124 Stat. 1376, 1392, 1398 (2010) (codified at 12 U.S.C. §§ 5321, 5323).

²⁴A banking entity is generally defined as any insured depository institution, company that controls an insured depository institution, company treated as a bank holding company for purposes of section 8 of the International Banking Act of 1978, and any affiliate or subsidiary of such entity. The Volcker Rule also prohibits these entities from investing in or sponsoring hedge funds or private equity funds. 12 U.S.C. § 1851(h)(1).

²⁵Regulations implementing the Volcker Rule define proprietary trading as engaging as principal for the trading account of the banking entity in any purchase or sale of one or more financial instruments, among other requirements. A financial instrument includes any position in a derivative transaction. An account is a trading account if (a) the purpose of the trading is for short-term gain, (b) the account is subject to the Prudential Regulators' market risk capital rules, or (c) the trade is undertaken by a registered entity such as a registered swap dealer or registered securities dealer to the extent the trade is of a kind that required the dealer to be registered. See 12 C.F.R. § 248.3 (Federal Reserve); 12 C.F.R. § 351.3 (FDIC); 12 C.F.R. § 44.3 (OCC).

underwriting.²⁶ Consequently, section 619 and section 716 have some similarities, although they are different in their scope of covered entities or products. Under section 619, banking entities can engage in proprietary trading in derivatives if they meet the requirements of a permitted activity, including market-making or risk-hedging; under section 716, only swap entities have additional restrictions regarding the types of swap activities in which they may engage.²⁷ While section 716 applies to bank swap dealers, the Volcker Rule generally restricts proprietary trading by insured depository institutions and companies that control insured depository institutions and their affiliates and subsidiaries. In this regard, the Volcker Rule seeks to limit the amount of speculative derivatives exposures that can generate large gains but also unmanageably large losses throughout a BHC, as was the case with American International Group, Inc. (AIG) during the 2007—2009 crisis.²⁸

Table 8 summarizes Dodd-Frank Act requirements imposed on bank swap dealers or their BHCs that serve to help reduce their probability of failure.

²⁶The Volcker rule requires that in order to qualify for the market-making exemption the bank's trading desk routinely stands ready to purchase and sell one or more types of financial instruments, among other requirements. In the swap context, a bank's trading desk should stand ready to enter into swaps at the request or demand of a counterparty more frequently than occasionally. See 79 Fed. Reg. 5536, 5595. The amount, types and risks of these types of financial instruments in the market-maker's inventory must be designed not to exceed, on an ongoing basis, the reasonably expected near-term demands of customers, clients or counterparties based on historical demand and consideration of market factors.

²⁷As noted previously, under section 716, a swap entity is a registered swap dealer or a registered major swap participant. The definition excludes major swap participants that are insured depository institutions or branches or agencies of foreign banks.

²⁸In the summer of 2008, AIG Financial Products, a subsidiary of AIG, Inc., started experiencing mounting losses on its credit default swaps through which it sold protection to counterparties against their collateralized debt obligations that were losing value. Ratings downgrades of the collateralized debt obligations resulted in AIG Financial Products having to post additional cash collateral per the terms of the swap contracts, which raised liquidity issues. On September 15, 2008, the rating agencies downgraded AIG's debt rating, resulting in additional \$20 billion in collateral demands and transaction termination payments. On September 16, 2008, the Federal Reserve (and, subsequently, the Department of the Treasury), provided assistance to AIG to avoid its failure.

**Appendix III: Select Dodd-Frank Act
Requirements That Help Mitigate Risks
Associated with Banks' Swap Activities**

Table 8: Key Dodd-Frank Act Requirements That Seek to Reduce the Probability of Failure of a Bank or Its Holding Company

Requirement and Applicable Dodd-Frank Act Provision	Applicability to Section 716 Covered Banks and/or their Bank Holding Companies (BHC), as of September 30, 2016 ^a		
	BHCs and/or their banks	Advanced Approaches firms and/or their banks	GSIBs and/or their banks
Common Equity / Risk-weighted Assets (RWA) ratio Section 165	✓	✓	✓
Tier 1 Capital / RWA ratio Section 165	✓	✓	✓
Total Capital/ RWA Ratio Section 165	✓	✓	✓
Additional capital conservation buffer Section 616	✓	✓	✓
Tier 1 Leverage / Average assets Ratio Section 165	✓	✓	✓
Supplementary Leverage Ratios Section 165, 171	n/a	✓	✓
Capital Surcharge Section 165	n/a	n/a	✓
Countercyclical buffer Section 606	n/a	✓	✓
Capital Stress Testing Section 165	✓	✓	✓
Swap Margin requirements Section 764	✓	✓	✓
Liquidity Coverage Ratio (LCR) and modified LCR Section 165	✓	✓	✓
Net Stable Funding Ratio (NSFR) and modified NSFR Section 165	✓	✓	✓
Liquidity Stress Testing Section 165	n/a	n/a	✓
Single Counterparty Credit Limits Section 165	✓	✓	✓
Volcker Rule Section 619	✓	✓	✓

Source: GAO analysis of the Dodd-Frank Act, the Federal Register, and documents by the Board of Governors of the Federal Reserve System, the Office of the Comptroller of the Currency, and the Federal Deposit Insurance Corporation. | GAO-17-607

Note: Some of the above requirements rely on the following types of regulatory capital: common equity tier 1 capital, additional tier 1 capital, and tier 2 capital. According to Federal Reserve staff, common equity tier 1 capital is considered the highest quality capital that a banking institution can have to support its operations and absorb unexpected financial losses. Common equity tier 1 capital consists primarily of retained earnings (the profits a bank has earned but has not paid out to shareholders in the form of dividends or other distributions) and common stock, with deductions for items such as goodwill and deferred tax assets. Tier 2 capital contains supplementary capital

**Appendix III: Select Dodd-Frank Act
Requirements That Help Mitigate Risks
Associated with Banks' Swap Activities**

elements such as subordinated debt, a portion of loan loss reserves, and certain other instruments. Total capital consists of the sum of tier 1 (common equity tier 1 capital and additional tier 1 capital) and tier 2 capital. Risk-weighted assets are on- and off-balance sheet assets adjusted for their risk characteristics. n/a = not applicable.

^aAs of September 30, 2016, there were 15 section 716 covered banks. Eight of these banks' BHCs were identified as GSIBs: 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. All GSIBs as well as the following three BHCs with banks covered by section 716 were classified as Advanced Approaches BHCs: Northern Trust, PNC, and US Bancorp. Other BHCs with banks covered by section 716 are HSBC North America Holdings, Inc., Fifth Third, KeyCorp, and SunTrust Corporation.

Appendix IV: Estimating Certain Risks for U.S. Banks That Would Have Been Affected by the Original Section 716

The original section 716 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) generally prohibited the provision of federal assistance to banks registered as swap dealers that engaged in equity swaps, commodity (except for precious metals) swaps, and noncleared credit default swaps activity, unless, among other things, the institution limited its swap activities to hedging and other similar risk mitigating activities directly related to the institution's activities. In December 2014, section 716 was amended before the transition periods for complying with the original provision expired, and the provision's scope was reduced to cover only structured finance swaps activity (e.g., swaps on asset-backed securities), unless the swaps were undertaken for hedging or risk management purposes. To analyze the risks associated with swaps covered under the original section 716, we focused on the 11 U.S. banks that were registered as swap dealers and dealt equity, commodity, or noncleared credit default swaps before the original section 716 was amended.¹ Had section 716 not been amended, these 11 U.S. banks would have had to stop engaging in swaps activity for such swaps on or before July 16, 2015, generally when their transition periods expired, in order to retain access to federal assistance. With the amendment, the 11 bank swap dealers were allowed to continue to deal equity, commodity, or noncleared credit default swaps (with the exception of certain structured finance swaps due to the section 716 amendment). We analyzed how equity, commodity, and credit derivatives affected the

¹See appendix I for an explanation of how we determined that 11 of the 15 covered banks would have been affected by the original section 716.

counterparty credit, liquidity, and market risks of the 11 bank swap dealers from July 16, 2015, through September 30, 2016.²

Data, Limitations, and Assumptions for Our Methodology

To analyze counterparty credit and liquidity risks associated with swaps covered under the original section 716, we primarily used data from the 11 U.S. banks' Consolidated Reports of Condition and Income (commonly referred to as Call Reports). As discussed in appendix II, an initial measurement of a bank's counterparty credit risk is the sum of a bank's derivative contracts that have a positive fair value, called gross derivative assets. Similarly, a measurement of a bank's liquidity risk from its derivatives is the sum of the bank's derivative contracts that have a negative fair value, called gross derivative liabilities. In Call Reports, banks report gross derivative assets and liabilities by type of underlying—interest rate, foreign exchange, equity, commodity, and credit derivatives.³ However, gross derivative assets and liabilities can significantly overestimate a bank's counterparty credit or liquidity exposures, because they do not account for netting that can significantly reduce such risks.

As discussed in appendix II, a bank that has multiple derivative contracts with the same counterparty under a legally enforceable master netting agreement can combine all contracts' gross positive and negative fair values (i.e., gross assets and liabilities) into a single net positive or negative fair value (i.e., net asset or liability) with that counterparty.⁴ Such netted derivative assets and liabilities across a bank's counterparties is the primary metric that the Office of the Comptroller of the Currency uses

²Swaps are a type of derivative; other derivatives include futures, options, and forwards. Counterparty credit risk is the potential for financial losses resulting from the failure of a borrower or counterparty to perform on an obligation. Liquidity risk is risk to an institution's financial condition from its inability to meet its contractual obligations. Market risk is the risk of financial loss resulting from movements in market prices, such as interest rates, commodity prices, stock prices, or the relative value of currencies (foreign exchange).

³Such data are reported on Schedule RC-L—Derivatives and Off-Balance-Sheet Items.

⁴The fair value of a derivative contract is the price at which the contract would be transferred in an orderly transaction—one that occurs under sufficient time and exposure to the market to allow for usual or customary marketing activities to unfold—between market participants in its principal (or most advantageous) market. On a daily basis, bank swap dealers recalculate the fair market value of their derivatives contracts based on current market prices (called marking to market).

to evaluate banks' counterparty credit risk from their derivatives. In Call Reports, banks report net derivative assets and liabilities of their trading derivatives in aggregate and not by type of underlying (i.e., interest rate, foreign exchange rate, equity, or credit derivative contracts).⁵ Because interest rate and foreign exchange swaps were not covered under the original section 716, such data cannot be used to measure a bank's counterparty credit or liquidity risk on a net basis for only its swaps covered under that version of the provision.

In light of the data limitations, we took two approaches to measure the 11 banks' counterparty credit and liquidity risks from their trading derivatives. For the four largest bank swap dealers, which account for around 90 percent of all derivatives held by U.S. banks, we used a methodology to estimate net derivative assets and liabilities for the swaps covered and not covered under the original section 716.⁶ As mentioned earlier, interest rate and foreign exchange derivatives were not covered by the original section 716 but in September 30, 2016, accounted for over 90 percent of each of the four banks' total derivatives notional amounts. Thus, not excluding such derivatives from our counterparty credit and liquidity risk measures would significantly overestimate risks arising solely from section 716 covered swaps. For the 7 other bank swap dealers, we used a simpler but less precise approach that included their interest rate and foreign exchange derivatives.

Four Largest Bank Swap Dealers

For the four largest bank swap dealers (Bank of America, N.A., Citibank, N.A., Goldman Sachs USA Bank, and JPMorgan Chase Bank, N.A.), we developed a methodology using the gross derivative assets and liabilities of their trading derivatives as reported in the September 30, 2016, Call Reports to estimate net derivative assets and liabilities by type of underlying. Our methodology included the following steps.

⁵Such data are reported on Schedule RC-D—Trading Assets and Liabilities. A bank's trading account typically includes derivatives entered into by the bank as part of its derivatives dealing, or market making, activities. Banks may classify assets and liabilities as trading if the bank applies fair value accounting and manages these assets and liabilities as trading positions, subject to the controls and applicable regulatory guidance related to trading activities.

⁶Bank of America, N.A.; Citibank, N.A.; Goldman Sachs Bank USA; and JPMorgan Chase Bank, N.A., were the four U.S. bank swap dealers with the largest notional value of total derivatives as of September 30, 2016.

- Of the four banks, only one of their bank holding companies (BHC) reports gross trading derivative assets and liabilities by type of underlying in its annual and quarterly filings with the Securities and Exchange Commission (SEC).⁷ We divided the reported BHC's net assets and liabilities for its interest rate, foreign exchange, equity, commodity, and credit derivatives by their respective gross assets and liabilities to develop "netting ratios" for each type of underlying, covering data from 2009 through 2016. For example, to calculate the netting ratios for interest rate derivative assets and liabilities, we did the following: We divided (1) interest rate derivative net assets by interest rate derivative gross assets, and (2) interest rate derivative net liabilities by interest rate derivative gross liabilities.
- We calculated the minimum, median, and maximum netting ratios over the selected period, resulting in three netting ratios for derivative assets under each type of underlying (i.e., interest rate, foreign exchange equity, commodity, and credit derivatives) and three netting ratios for derivative liabilities under each type of underlying. We calculated minimum, median, and maximum netting ratios over the time period, because the banks' netting ratios may differ from the BHC's netting ratios.
- For each bank, we multiplied the minimum, median, and maximum netting ratios by the bank's respective gross derivative assets or liabilities by type of underlying (as reported in the September 30, 2016, Call Reports). These calculations produced a range of minimum, median, and maximum estimates of net trading derivative assets and liabilities by type of underlying for each bank. We summed the minimum, median, and maximum estimates to produce three estimates of total net derivative assets and liabilities for each bank.
- To determine whether we should use the minimum, median, or maximum estimate, we compared each estimated total against the total net derivative assets and liabilities for each bank's trading derivatives, as reported in the September 30, 2016, Call Reports. We selected the estimates closest in value to the actual reported values. We used the minimum estimated totals for Goldman Sachs USA Bank, the median estimated totals for JPMorgan Chase Bank N.A., and the maximum estimated totals for Citibank N.A., and Bank of America N.A. We also compared each bank's actual netting ratios and our estimated netting ratios on a portfolio basis (e.g., total net

⁷JPMorgan Chase & Co. is the only large section 716 banks' BHC that reports net derivative assets and liabilities by type of underlying in its quarterly filings with SEC.

derivative assets and liabilities divided by total gross derivative assets and liabilities). JPMorgan Chase Bank N.A.'s, Citibank N.A.'s, and Bank of America N.A.'s actual and estimated netting ratios differed by less than a half of a percentage point. Our estimated netting ratios for Goldman Sachs USA Bank were 2.0 percentage points and 1.5 percentage points higher than its actual netting ratios.

- After selecting the estimates of the net derivatives assets and liabilities for each bank's total trading derivatives that was closest in value to the bank's actual reported values, we then used the estimates to measure the bank's net exposures to swaps covered under the original section 716. For derivative assets and liabilities, each total net estimate is comprised of net estimates of the bank's interest rate, foreign exchange, equity, commodity, and credit derivatives. We added the estimated net derivative assets of each bank's equity, commodity, and credit derivatives to estimate each bank's counterparty credit exposure associated with section 716 originally covered swaps. Similarly, we added the estimated net derivative liabilities of each bank's equity, commodity, and credit derivatives to estimate each bank's liquidity exposure associated with section 716 originally covered swaps.
- Our methodology assumes that the four banks' netting ratios are comparable to the netting ratios of the BHC that reported gross and net derivatives assets and liabilities by underlying. To the extent this assumption does not hold true, such as because of differences in the composition of the banks' derivatives trading portfolios or counterparties, our estimates would be adversely affected. As discussed earlier, to assess the reasonableness of our assumption and estimates, we compared our estimates of each bank's total net derivative assets and liabilities with each bank's actual total net derivative assets and liabilities. Also, we recognize that our estimates likely overestimate the banks' counterparty credit and liquidity exposures associated with section 716 originally covered swaps, in part because they do or likely include (1) swaps that were used for hedging and, thus, would have been permissible under the original section 716, (2) swaps that the banks entered into before section 716 would have taken effect and thus could have been retained by the banks, and (3) swaps that were not covered by the original section 716, such as commodity swaps referencing bullion or cleared credit default swaps.

Seven Other Bank Swap Dealers

For the other seven bank swap dealers that would have had to stop engaging in swaps activity for swaps covered by the original section 716 had it not been amended, in order to retain access to federal assistance, we used the total net derivatives trading assets and liabilities as reported in the September 30, 2016, Call Reports. As discussed earlier, such data include interest rate and foreign exchange derivatives that were not covered by the original section 716. As with the four largest bank swap dealers, the majority of the derivatives of the other seven dealers are interest rate and foreign exchange derivatives.⁸ However, they hold significantly less derivatives than the four largest bank swap dealers. Because of such differences, we could not use our netting ratios to estimate the net derivative assets and liabilities of the seven banks' equity, commodity, and credit derivatives based on their reported gross derivative assets and liabilities. As a result, our measures of the derivatives-related counterparty credit and liquidity risks associated with section 716 originally covered swaps for these seven bank swap dealers overestimate the actual counterparty credit and liquidity risk they face from those swaps.⁹

Estimates of Counterparty Credit Risk Associated with Swaps Covered under the Original Section 716

Counterparty credit risk is the potential for financial losses resulting from the failure of a borrower or counterparty to perform on an obligation. For the 11 U.S. banks, our analyses indicate that the banks held the capital needed to support counterparty credit exposures (accounting for netting but not collateral) from their equity, commodity, or credit derivatives as of September 30, 2016. Our analyses also show that the fair value of the

⁸For the seven banks, interest rate and foreign exchange derivatives accounted from 80 percent to 100 percent of the banks' total derivatives notional values as of September 30, 2016. One bank with almost all interest rate and foreign exchange derivatives told us it was a dealer in swaps covered by the original section 716.

⁹Even if we could have estimated the net derivative assets for the seven banks' equity, commodity, and credit trading derivatives, those estimates would have been overestimates. This is, in part, because the estimates would have included (1) swaps that were used for hedging and, thus, would have not been covered by the original section 716, (2) swaps that the banks entered into before banks became subject to section 716 and thus could have been retained by the banks, and (3) swaps that were not covered by the original section 716, such as commodity swaps referencing bullion or cleared credit default swaps.

collateral held by banks in relation to their over-the-counter (OTC) trading derivative counterparties was, on average, sufficient to cover at least 68 percent of net current credit exposures of their derivatives. These results indicate that the banks had capital to absorb potential losses from their swaps covered by the original section 716 and that such losses likely would have been mitigated to a significant degree with the collateral received from bank OTC derivative counterparties.¹⁰

- For the four largest bank swap dealers, our analyses indicate that their estimated net counterparty credit exposures from their swaps covered by the original section 716 comprise from around 1 percent to 10 percent of their total capital as of September 30, 2016. In addition, the four largest bank swap dealers on average collectively held collateral against 99 percent of their collective net current credit OTC derivatives exposures (see table 9).¹¹ However, this percentage does not mean that almost all current credit exposure would be mitigated with collateral, as some counterparties overcollateralize and others undercollateralize exposures, and collateral is not fungible across swap counterparties.

¹⁰Prudential regulators' collateral requirements mandate the exchange of initial and variation margin for noncleared swaps between bank swap dealers and certain counterparties. Initial margin protects the collecting party from the potential future exposure that could arise from changes in the mark-to-market value of the contract in the event that the margin-posting party defaults. Variation margin protects the collecting party from the current exposure that has already been incurred from changes in the mark-to-market value of the contract after the transaction has been executed. For example, a bank swap dealer is required to post and collect initial margin to and from other swap entities and financial end-users with material swaps exposure (i.e., \$8 billion or more), but not with other financial end-users or nonfinancial end-users (for whom the bank may require margin at its own discretion). See appendix III for more details on the rules.

¹¹The net current credit exposure in a bank's call report (schedule RC-R) includes exposures from OTC derivatives held for trading. We do not use net trading derivative assets because these may include derivatives that are centrally cleared (i.e., not OTC).

Appendix IV: Estimating Certain Risks for U.S. Banks That Would Have Been Affected by the Original Section 716

Table 9: Over-the-Counter Derivatives' Fair Value of Collateral as a Percentage of Net Current Credit Exposure by Counterparty Type for the Four Largest U.S. Banks That Would Have Been Affected under the Original Section 716 (from the First Quarter of 2015 through the Third Quarter of 2016)

Quarter	Fair Value of Collateral as a Percent of Net Current Credit Exposure by Type of Counterparty				Fair value of collateral as a percent of total net current credit exposure
	Hedge funds	Banks & securities firms	Corporations & all other counterparties	Sovereign governments	
2016Q3	509.9	105.5	82.5	25.6	99
2016Q2	534.3	102.1	70.5	25.4	91
2016Q1	455.8	95.6	71.8	20.4	88
2015Q4	528.3	103.6	71.0	15.8	94
2015Q3	437.0	101.5	71.0	15.4	92
2015Q2	526.4	97.0	67.8	11.4	89
2015Q1	503.3	98.2	55.8	12.8	82

Source: GAO analysis of Federal Financial Institutions Examination Council data. | GAO-17-607

Note: One of the four banks held positive net current credit exposures to monoline financial firms (the other three held no exposures). These exposures represented at most 0.1 percent of the bank's total net current credit exposures during the time period.

- For the seven other bank swap dealers, our analyses shows that their net counterparty credit exposures from all of their trading derivatives—including swaps not covered under the original section 716—comprised from around 4 percent to 16 percent of their total capital as of September 30, 2016.¹² In addition, these banks, on average, collectively held collateral against 68 percent of their collective net current credit OTC derivatives exposures (see table 10). Again, this percentage does not mean that 68 percent of their current credit exposure would be mitigated with collateral, as some counterparties over-collateralize and others under-collateralize exposures, and collateral is not fungible across swap counterparties.

¹²As discussed earlier, the total includes interest rate and foreign exchange derivatives, which were not covered by the original section 716 and typically comprise the majority of the banks' trading derivatives.

Table 10: Over-the-Counter Derivatives' Fair Value of Collateral as a Percentage of Net Current Credit Exposure by Counterparty Type for the Seven Smaller U.S. Banks That Would Have Been Affected Under the Original Section 716 (from the First Quarter of 2015 through the Third Quarter of 2016)

Quarter	Fair Value of Collateral as a Percent of Net Current Credit Exposure by Type of Counterparty				Fair value of collateral as a percent of total net current credit exposure
	Hedge funds	Banks & securities firms	Corporations & all other counterparties	Sovereign governments	
2016Q3	183.7	156.5	34.0	45.5	68
2016Q2	76.1	142.2	31.9	41.6	60
2016Q1	96.2	99.8	32.5	9.0	53
2015Q4	106.9	78.6	38.7	2.1	54
2015Q3	149.4	98.4	37.4	0.7	60
2015Q2	108.3	83.5	42.7	0.3	60
2015Q1	116.5	95.1	36.6	1.3	58

Source: GAO analysis of Federal Financial Institutions Examination Council data. | GAO-17-607

Note: Two of the seven banks held positive net current credit exposures to monoline financial firms (the other five held no exposures). These exposures represented at most 0.6 percent and 2.4 percent of each banks' total net current credit exposures during the time period.

Estimates of Liquidity Risk Associated with Swaps Covered under the Original Section 716

Liquidity risk is risk to an institution's financial condition from its inability to meet its contractual obligations. Derivatives liabilities expose banks to liquidity risk, in part because the derivative contracts typically require the banks to make regular payments as agreed in the contracts and post collateral to counterparties as the value of the contracts moves in the counterparties' favor.¹³ Net derivative liabilities, however, do not take into account collateral that the bank may have already posted to its counterparties (and thus would be available to counterparties to absorb losses).

¹³Certain derivatives contain provisions that require a company to post additional collateral or immediately settle any outstanding liability balances upon the occurrence of a specified credit event, such as a credit downgrade of the bank or its holding company. Such contingent features increase liquidity risks. In their SEC filings, the four largest banks' BHCs reported that a single-notch downgrade of the long-term issuer ratings of the BHC or its subsidiaries as of September 30, 2016, would require between \$0.7 billion and \$1.7 billion in additional collateral or settlement of derivative transactions. This accounts for 1 percent of less of each of the four largest section 716 banks' liquid assets.

For the 11 U.S. banks, our analyses indicate the banks held high-quality liquid assets needed to support their equity, commodity, or credit derivatives' payment and collateral obligations as of September 30, 2016. This result suggests that the banks would have had liquidity to meet the obligations from their equity, commodity, and credit derivatives. To assess liquidity risk, we used estimated or reported net derivative liabilities for banks' trading derivatives as our measure of the banks' derivatives liquidity risk, and we compared those values with the banks' high-quality liquid assets.

- For the four largest bank swap dealers, our analyses indicate that the estimated net derivative liabilities for their equity, commodity, and credit derivatives (not accounting for posted collateral) constituted from less than 1 percent to about 5 percent of the banks' high-quality liquid assets as of September 30, 2016. Because banks have posted collateral for some of these derivatives and because our analyses do not account for such posted collateral, our percentages overestimate the actual derivatives-related liquidity risk exposures.
- For the other seven bank swap dealers, our analyses show that the actual total net trading derivative liabilities (including swaps not covered under the original section 716 but not accounting for collateral) constituted from about 1 percent to about 9 percent of their banks' high-quality liquid assets as of September 30, 2016. The total includes interest rate and foreign exchange derivatives, which were not covered by the original section 716 and typically comprise the majority of the banks' trading derivatives.

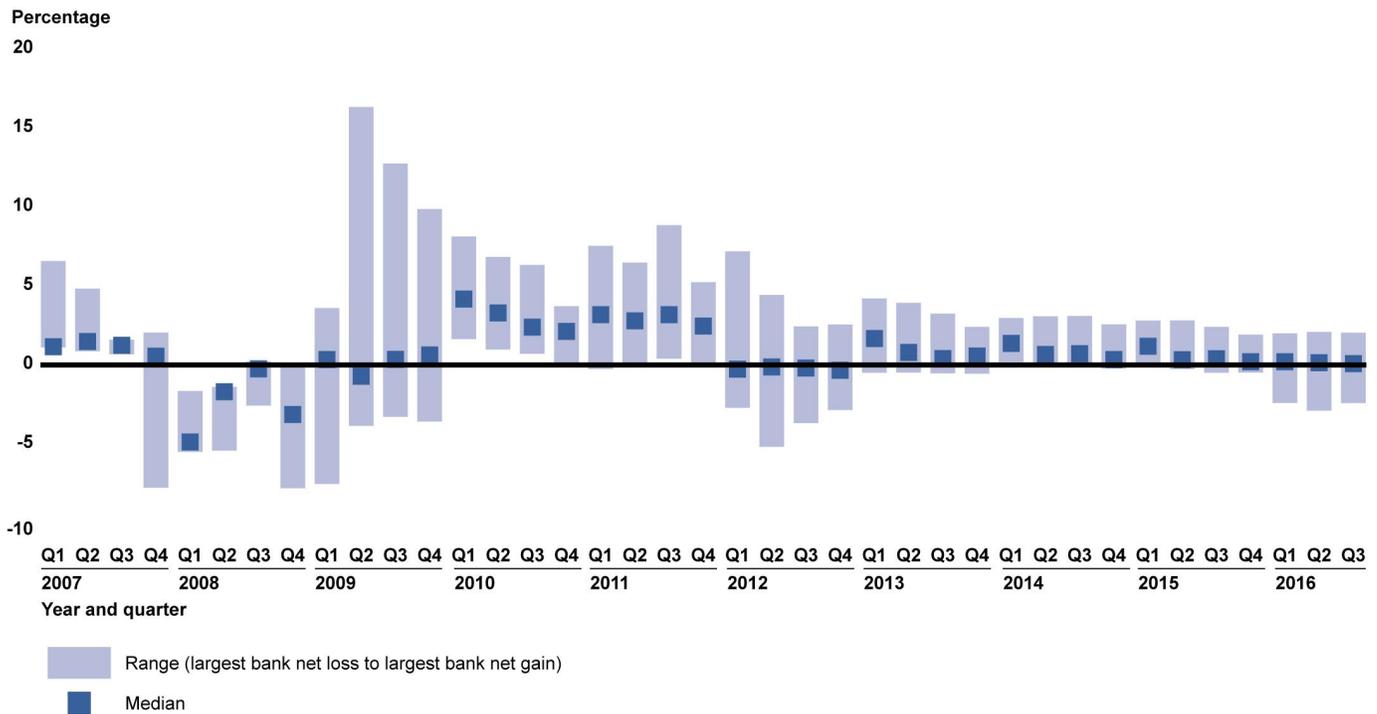
Estimates of Market Risk Associated with Swaps Covered under the Original Section 716

Market risk is the potential for financial losses due to the increase or decrease in the value or price of an asset or liability resulting from broad movements in prices such as changes in interest rates, foreign exchange rates, equity prices, or commodity prices. To estimate market risks associated with swaps, we analyzed the quarterly net gains or losses from trading commodity, equity, and credit derivatives and cash instruments for the 11 banks that would have been required to stop engaging in activity for such swaps, or lose access to federal assistance, under the original section 716 from the first quarter of 2007 through the third quarter of 2016. Our analyses of the 11 banks' quarterly mark-to-market losses from trading equity, commodity, and credit derivatives

between the first quarter of 2007 and the third quarter of 2016 show that banks held the capital needed to support related trading losses.

- For the four largest bank swap dealers, our analysis found that quarterly net losses did not exceed 7.6 percent of any of the bank’s capital from the first quarter of 2007 through the third quarter of 2016 (see fig. 8).¹⁴

Figure 8: Four Largest U.S. Swap Dealer Banks’ Recognized Net Gains or Losses from Exposures That Include Swaps Covered by the Original Section 716 as a Percentage of Bank Capital (from the First Quarter of 2007 through the Third Quarter of 2016)



Source: GAO analysis of Federal Financial Institutions Examination Council data. | GAO-17-607

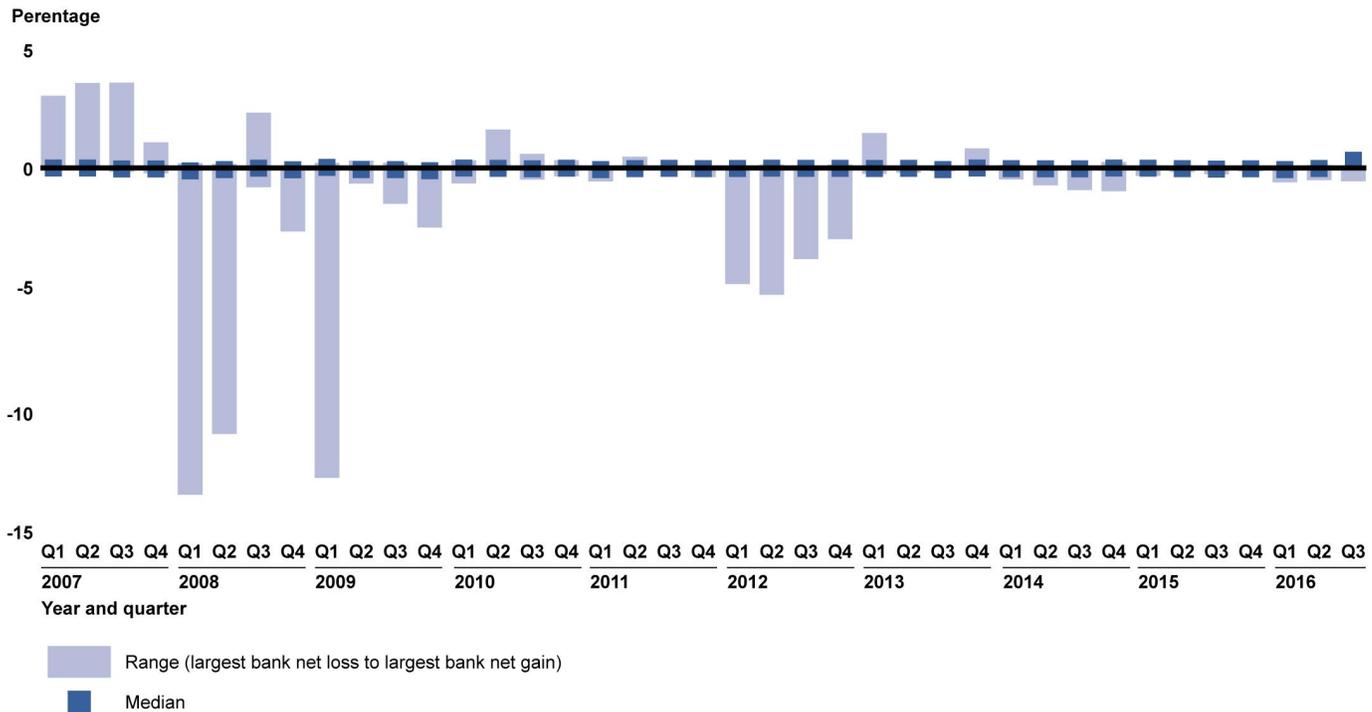
Note: Goldman Sachs Bank USA did not begin reporting data until the fourth quarter of 2008. The Goldman Sachs Group Inc. became a bankholding company in September 2008.

- For the other seven bank swap dealers, our analysis found that their quarterly net losses ranged from 0 percent to about 2 percent of any bank’s capital for six of the seven banks between the first quarter of

¹⁴Losses ranged between 5 percent and 7.6 percent of any bank’s capital; gains ranged between 2.2 percent and 6.8 percent of any bank’s capital.

2001 and third quarter of 2016. For the other bank, its largest loss during a quarter was around 14 percent of its capital (see fig. 9).

Figure 9: Seven Smaller U.S. Swap Dealer Banks' Recognized Net Gains or Losses from Exposures That Include Swaps Covered by the Original Section 716 as a Percentage of Bank Capital (from the First Quarter of 2015 through the Third Quarter of 2016)



Source: GAO analysis of Federal Financial Institutions Examination Council data. | GAO-17-607

More forward-looking measures of market risk posed by derivatives suggest that the expected losses from derivatives may be relatively small under regular and stressed market conditions. First, banks primarily control market risk in trading operations by establishing limits against potential losses using value-at-risk models (VaR).¹⁵ The models use historical data to quantify the potential losses from adverse market moves in normal markets. The reported VaR measures for the BHCs of the four

¹⁵A VaR model simulates the value of a portfolio under a range of scenarios in order to generate a distribution of potential gains and losses. VaR represents the loss a portfolio is not expected to exceed more than a certain number of times per period, based on a specified holding period, confidence level, and window of historical data. For example, a VaR statistic equivalent to a 99 percent confidence level means that for a VaR with a 1-day holding period, there should not be losses in excess of VaR, on average, 99 out of 100 trading days.

largest bank swap dealers indicate that the market risk from each BHC's trading activities, which includes its section 716 bank's derivatives activities, is less than 1 percent of their capital: for example, ranging from 0.02 percent to 0.22 percent of their capital in the third quarter of 2016.¹⁶

Second, as discussed in appendix III, the Board of Governors of the Federal Reserve System's (Federal Reserve) supervisory stress tests estimate losses that large BHCs may suffer, including from their derivatives, under stressed market conditions. The BHCs of the 11 bank swap dealers are subject to the Federal Reserve's stress tests, which evaluate the BHCs' revenues and losses and ultimately their capital levels under baseline, adverse, and severely adverse scenarios. In its 2015 and 2016 reviews, the Federal Reserve did not object on quantitative or qualitative grounds to any of the capital plans, including the supervisory stress test results, of the 11 BHCs. All 11 BHCs were able to maintain at least minimum regulatory capital requirements under stressed scenarios and had no significant deficiencies in their capital planning processes. In addition, 6 of the 11 BHCs are subject to the additional global market shock component, and 8 of the 11 BHCs are subject to the counterparty default component in their adverse and severely adverse scenarios.¹⁷

¹⁶The Office of the Comptroller of the Currency's analyses of the VaR for the four largest bank swap dealers' BHCs indicates that the market risk from their trading activities generally is a small percentage of the BHCs' capital (less than 0.1 percent of their equity capital in the third quarter of 2016).

¹⁷The BHCs of the four largest bank swap dealers are subject to both the global market shock and the counterparty default components in stress test scenarios. See appendix III for more details.

Appendix V: Dodd-Frank Act Resolution Reforms and Largest U.S. Bank Swap Dealers

Prudential regulators are implementing the Dodd-Frank Wall Street Reform and Consumer Protection Act's (Dodd-Frank Act) resolution reforms to help ensure that large bank holding companies (BHC), including their banks, can be resolved in an orderly manner, if necessary. These reforms, if successful, can help BHCs with banks that are large swap dealers wind-down their swaps in an orderly manner and preserve their value.¹ Fifteen U.S. banks are provisionally registered as swap dealers with the Commodity Futures Trading Commission. However, four U.S. bank swap dealers—Bank of America, N.A.; Citibank, N.A.; Goldman Sachs Bank USA; and JPMorgan Chase Bank N.A.—account for the large majority of derivatives held by U.S. banks. These bank swap dealers are subsidiaries of BHCs that the Board of Governors of the Federal Reserve System (Federal Reserve) has identified as global systemically important BHCs (GSIB) in light of the threat their failure or material financial distress would pose to U.S. financial stability.² This section's discussion and analyses primarily focus on the four U.S. GSIBs and their bank swap dealers.

Resolution Plans under the Dodd-Frank Act

In the event of their failure, the four BHCs with the largest U.S. bank swap dealers plan to enter bankruptcy but keep their operating subsidiaries (e.g., banks and broker-dealers) solvent, in part to help them wind-down their swaps in an orderly manner. The Dodd-Frank Act requires certain

¹A BHC can wind-down its derivatives through a number of strategies, including by transferring (or novating) derivatives to a third party, packaging and selling derivative portfolios, terminating derivatives, or allowing derivatives to reach contract maturity and expire.

²The Federal Reserve identified eight BHCs as GSIBs. 80 Fed. Reg. 49,082 (Aug. 14, 2015).

institutions, including the four BHCs, to develop resolution plans for rapid and orderly resolution in the event of material financial distress or failure.³ According to the Federal Reserve and the Federal Deposit Insurance Corporation (FDIC), resolution planning cannot guarantee that a BHC's resolution would be executed smoothly, but the preparations can help ensure that the BHC could be resolved under bankruptcy without requiring government support or imperiling the broader financial system.⁴ We concluded in 2016 that whether the largest BHCs' resolution plans would facilitate their rapid and orderly resolution under the U.S. Bankruptcy Code is uncertain, in part because none has used its plan to go through bankruptcy.⁵

Since 2012, the four U.S. BHCs with the largest swap dealers, along with other large U.S. BHCs, have submitted resolution plans annually to the Federal Reserve and FDIC. Through their review of the plans, the regulators have provided additional guidance and feedback based on their review and expectations. Based on their review of the 2015 plans submitted by these four BHCs, the regulators jointly determined that two of the plans were not credible or would not facilitate an orderly resolution under the U.S. Bankruptcy Code.⁶ The regulators sent these two BHCs feedback letters that identified the plan deficiencies and required

³Under the Dodd-Frank Act, U.S. BHCs with \$50 billion or more in total consolidated assets and nonbank financial companies designated by the Financial Stability Oversight Council are required to submit resolution plans to the Federal Reserve, FDIC, and Financial Stability Oversight Council. 12 U.S.C. § 5365(d). In 2011, the Federal Reserve and FDIC jointly issued a final rule to implement the resolution plan requirement. 76 Fed. Reg. 67,323 (Nov. 1, 2011). Under the Dodd-Frank Act and the implementing rule, the Federal Reserve and FDIC must review each plan and if they jointly determine that a plan is not credible or would not facilitate an orderly resolution of the company under the Bankruptcy Code, the regulators will jointly notify the company and request resubmission of a plan that remedies the deficiencies. If a company does not ultimately remedy the deficiencies identified by the Federal Reserve and FDIC, the regulators may jointly impose more stringent capital, leverage, or liquidity requirements on the company or any of its subsidiaries or restrictions on the company's or any of its subsidiaries' growth, activities, or operations.

⁴Board of Governors of the Federal Reserve System and Federal Deposit Insurance Corporation, *Resolution Plan Assessment Framework and Firm Determinations* (2016) (Washington, D.C.: Apr. 13, 2016).

⁵GAO, *Resolution Plans: Regulators Have Refined Their Review Processes but Could Improve Transparency and Timeliness*, [GAO-16-341](#) (Washington, D.C.: Apr. 12, 2016).

⁶Eight U.S. BHCs were required to submit resolution plans by July 1, 2015.

corrective actions.⁷ In addition, in their feedback letters, the regulators identified shortcomings in all four of the BCHs' resolution plans and directed them to address the shortcomings in their plans submitted by July 1, 2017.⁸ As summarized in table 11, the regulators jointly identified in their feedback letters to the four BHCs a deficiency or shortcoming with each one's 2015 plan to wind-down its derivatives in an orderly manner.

Table 11: 2015 Resolution Plans' Derivatives-Related Deficiencies or Shortcomings Jointly Identified by the Board of Governors of the Federal Reserve System and the Federal Deposit Insurance Corporation

Derivatives-related deficiency or shortcoming	Actions taken or to be taken
<p>In their April 12, 2016, letter to JPMorgan Chase & Company, the regulators identified a deficiency in the firm's 2015 resolution plan regarding its derivatives and trading activities. The plan did not contain analysis of how trading portfolios could be managed down in an orderly manner should counterparties choose to cease transacting with certain of the firm's subsidiaries or provide a contingency plan. The regulators stated that the firm must remediate its deficiency by October 1, 2016.</p>	<p>In their December 13, 2016, letter, the regulators stated that the firm's 2016 submission reflects that the firm has adequately remedied the derivatives and trading deficiency identified in the April 2016 letter. The 2016 submission provided an analysis and rating agency playbooks for maintaining, reestablishing, or establishing investment-grade ratings for relevant material entities. The firm also provided estimates of the financial resources required to support an active wind-down of the derivatives portfolio, as well as a narrative describing at least one pathway for segmenting, packaging, and winding down the derivatives portfolio.</p>
<p>In their April 12, 2016, letter to Bank of America Corporation, the regulators identified a shortcoming regarding the firm's 2015 resolution plan to wind down its derivatives portfolio. Although the 2015 plan explored options and potential strategies to wind down the derivative portfolios, it lacked detailed portfolio information and specificity regarding implementation of the wind-down. The 2015 plan also did not fully address the material financial interconnections among the banking entities and the broker-dealers (including associated risks) in the wind-down of the trading portfolios. The regulators stated that they plan to review the firm's plan due on July 1, 2017, to determine if the firm has satisfactorily addressed this and other identified shortcomings.</p>	<p>Firm was instructed to address the shortcoming in its July 1, 2017, plan submission.</p>

⁷The Federal Reserve and FDIC jointly determined that the plans submitted by five of the BHCs were not credible or would not facilitate an orderly resolution under the U.S. Bankruptcy Code. The regulators stated that the firms must remediate their deficiencies by October 1, 2016. In December 2016, the regulators reported that four of the five BHCs, including the two BHCs with large bank swap dealers, had adequately remedied their plan deficiencies. A deficiency is an aspect of a firm's resolution plan that presents a weakness that individually or in conjunction with other aspects could undermine the feasibility of the firm's plan.

⁸A shortcoming is a weakness or gap that raises questions about the feasibility of a firm's plan but does not rise to the level of a deficiency for both agencies.

**Appendix V: Dodd-Frank Act Resolution
Reforms and Largest U.S. Bank Swap Dealers**

Derivatives-related deficiency or shortcoming	Actions taken or to be taken
<p>In their April 12, 2016, letter to Citigroup, the regulators stated that the firm's 2015 resolution plan provided important details about the firm's strategies for reestablishing investment grade status and winding down its cleared and noncleared over-the-counter (OTC) derivatives but identified a shortcoming. The firm made optimistic assumptions about its continued access to bilateral OTC derivative markets to hedge its portfolio risk and about the ability to novate bilateral OTC derivatives without sufficient specificity on the nature, concentration, and illiquidity of the bilateral OTC derivatives. The regulators stated that they plan to review the firm's plan due on July 1, 2017, to determine if the firm has satisfactorily addressed this and other identified shortcomings.</p>	<p>Firm was instructed to address the shortcoming in its July 1, 2017, plan submission.</p>
<p>In their April 12, 2016, letter to Goldman Sachs Group, the regulators identified a shortcoming regarding the firm's 2015 resolution plan to wind down its derivatives portfolio. Although the 2015 plan explored options and potential strategies to wind down the derivative portfolios, the 2015 plan lacked specificity regarding implementation of the wind-down. The 2015 plan also did not address material financial interconnections among the banking entities and the broker-dealers (including associated risks) in the wind-down of the trading portfolios, or provide sufficient detail on the target reduction levels for OTC derivatives and their systemic risk profile. In effect, the 2015 plan leaves unaddressed a significant volume of derivatives and fails to explain how it would maintain, sell, or wind down these exposures to achieve an orderly resolution. The regulators stated that they plan to review the firm's plan due on July 1, 2017, to determine if the firm has satisfactorily addressed this and other identified shortcomings.</p>	<p>Firm was instructed to address the shortcoming in its July 1, 2017, plan submission.</p>

Source: GAO analysis of April 12, 2016, letters and December 13, 2016, letters sent by the Board of Governors of the Federal Reserve System and the Federal Deposit Insurance Corporation to the resolution plan filers. | GAO-17-607

Following their review of the 2015 resolution plans, the Federal Reserve and FDIC issued new guidance to all of the BHCs required to submit resolution plays by July 1, 2017. As part of the guidance, the regulators included a section on derivatives and trading activities that applied to the four U.S. BHCs with the largest bank swap dealers. According to the guidance, a dealer's plan to stabilize and wind down a large derivative portfolio in an orderly manner following the BHC's bankruptcy raises a number of significant issues that the four U.S. BHCs should address in their 2017 plans.⁹ As summarized in table 12, the four U.S. BHCs reported in the public sections of their 2016 plan filings a high-level summary of selected actions that they have taken.

⁹The guidance on derivatives applied to Bank of America, Citigroup, Goldman Sachs, JPMorgan Chase, and Morgan Stanley. We excluded Morgan Stanley from our discussion because its bank generally was not a swap dealer in swaps covered under the original or amended section 716 of the Dodd-Frank Act.

Table 12: Summary of Selected Actions Taken by Four U.S. Bank Holding Companies to Address the Board of Governors of the Federal Reserve System and the Federal Deposit Insurance Corporation’s Derivatives-Related Guidance for the 2017 Resolution Plans

Area	Actions taken in response to derivatives-related guidance
Capabilities: A dealer should have the ability to provide timely transparency into the risks associated with derivatives trading, including on a legal entity basis, by broker-dealers and banks, and other derivatives entities.	Bank of America is in the process of changing its derivative booking policy, including by reducing interaffiliate derivative trades Goldman Sachs simplified its booking model
Stabilization: A dealer should have well-developed rating agency playbooks to facilitate the stabilization of each trading entity, following the bankruptcy filing of the parent company.	Bank of America plans to develop a rating agency playbook. Goldman Sachs prepared a communication strategy and rating agency and other playbooks. JPMorgan Chase developed credit rating agency playbooks
Active wind-down analysis: A dealer should estimate the financial resources required to support an orderly and active wind-down of the derivatives portfolio and include an analysis of the risk profile of the portfolio that remains at the end of this period.	Bank of America is expanding its capabilities to forecast an active wind-down strategy. Citigroup developed an active solvent wind-down pathway for its derivatives portfolio that accounts for hedging costs and potential losses. Goldman Sachs modeled a preferred pathway for segmenting, packaging, and selling derivatives portfolios and calculating the financial resources, including capital and liquidity, required to execute its wind-down strategy. JPMorgan Chase conducted a detailed analysis of an orderly active wind-down of derivatives and trading portfolios and demonstrated that it has the resources, including capital and liquidity, to fully absorb the costs of the active wind-down.
Passive wind-down analysis: A dealer should estimate the financial resources required to support a passive run-off of the trading book in the event that investment-grade ratings for the trading entities are not maintained or reestablished following the bankruptcy filing and include an analysis of the risk profile of the portfolio, if any, that remains at the end of this period.	Bank of America is in the process of expanding capabilities to forecast a passive wind-down strategy. Goldman Sachs performed preliminary analysis on the effect of a passive wind-down of derivatives portfolios. JPMorgan Chase is in the process of improving its passive wind-down analysis.

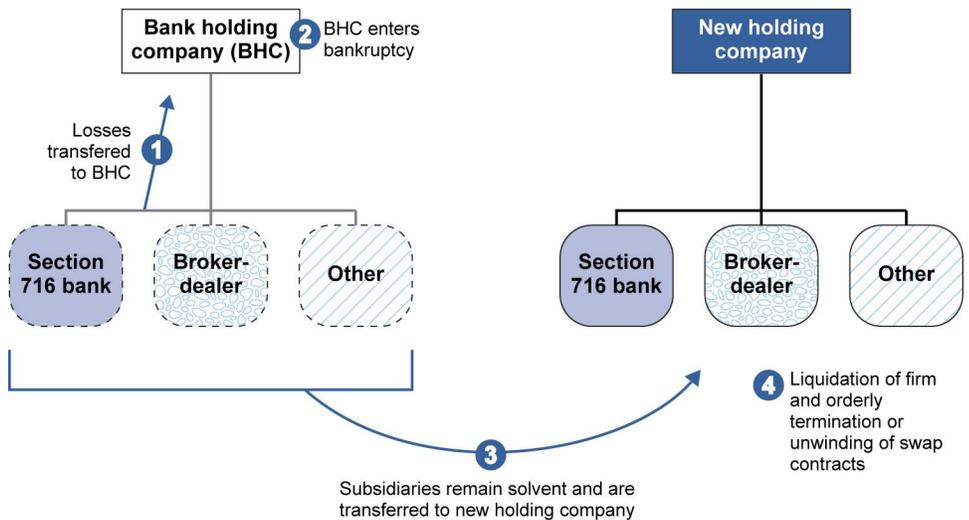
Source: GAO analysis of the public sections of the 2016 plan filings submitted by Bank of America, Citigroup, Goldman Sachs, and JPMorgan Chase. | GAO-17-607

Single Point of Entry Resolution Strategy

In the public sections of their resolution plans, the four U.S. BHCs with the largest bank swap dealers generally have adopted the Single Point of Entry (SPOE) strategy as their preferred resolution strategy under the U.S. Bankruptcy Code. Under the SPOE strategy, only the top-tier BHC would enter bankruptcy. The BHC would use its financial resources, as needed, to recapitalize and support its operating subsidiaries to keep them solvent and preserve their going-concern value. For example, a loss that caused a BHC to fail would be passed up from the subsidiary that incurred the loss and would be absorbed by the BHC’s equity holders and unsecured creditors, which would have the effect of recapitalizing the BHC’s subsidiary. As shown in figure 10, the SPOE resolution approach serves to enable a BHC’s subsidiaries to continue to operate while the

BHC enters bankruptcy, reducing the potential for negative impact on its customers and the overall economy. In the example, the bank transfers losses up to its BHC in the event of distress, and only the BHC enters bankruptcy. As permitted by the bankruptcy court, the BHC transfers its subsidiaries to a new BHC, and these subsidiaries are then sold or wound down in an orderly manner.

Figure 10: Overview of a Bank Holding Company's Bankruptcy Process for Implementing the Single Point of Entry Strategy



Source: GAO. | GAO-17-607

While the four U.S. BHCs face a number of obstacles or challenges in implementing their SPOE strategies, they and prudential regulators are taking actions to address such obstacles or challenges. For example, the Federal Reserve has finalized a rule to help ensure that the BHCs have sufficient financial resources to implement their SPOE strategies. Also, the regulators and BHCs are reducing the ability of swap counterparties to a BHC's bank swap dealer to terminate their swaps early in the event of the BHC's filing for bankruptcy and cause a disorderly wind-down of the bank swap dealer's swaps and other qualified financial contracts.

Total Loss-Absorbing Capacity. To implement their SPOE strategies, the four U.S. BHCs with the largest bank swap dealers must have sufficient financial resources to absorb losses by their banks or other operating subsidiaries and prevent them from failing. In January 2017, the Federal Reserve finalized its total loss-absorbing capacity rule, the objective of which is to reduce the financial impact of a failure by requiring

companies to have sufficient loss-absorbing capacity.¹⁰ The rule requires, among other things, covered BHCs to maintain an outstanding minimum level of eligible external total loss-absorbing capacity comprised of capital issued by the BHC and eligible external long-term debt.¹¹ The term “external” conveys that the requirement would apply to loss-absorbing instruments issued by the GSIB to third-party investors, and the instrument would be used to pass losses from the BHC to the third-party investors in bankruptcy or other resolution.¹² For example, while a bank or other subsidiary would pass up its losses to its BHC in the event of distress, the BHC would pass its losses in the event of distress to its equity holders and unsecured creditors, including external long-term debt holders.

Cross-Default Rights and ISDA Stay Protocol. Even if the four U.S. BHCs with the largest bank swap dealers had sufficient financial resources to keep their banks solvent under their SPOE strategies, the potential for their banks’ counterparties to terminate their swaps early under their International Swaps and Derivatives Association (ISDA) Master Agreements could undermine the banks’ ability to wind down or sell their swaps in an orderly manner.¹³ Under an ISDA Master Agreement, a solvent bank’s counterparties may exercise their cross-default rights to terminate their swaps with the bank early if the bank’s

¹⁰82 Fed. Reg. 8266 (Jan. 24, 2017). The final rule requires a U.S. top-tier BHC identified as a GSIB to maintain outstanding a minimum amount of loss-absorbing instruments, including a minimum amount of unsecured long-term debt. The final rule applies similar requirements to the top-tier U.S. intermediate holding company of a global systemically important foreign banking organization with \$50 billion or more in U.S. nonbranch assets.

¹¹Under the final rule, a covered BHC is required to maintain outstanding external total loss-absorbing capacity in an amount not less than the greater of 18 percent of the covered BHC’s total risk-weighted assets and 7.5 percent of the covered BHC’s total leverage exposure. A covered BHC also is required to maintain outstanding eligible external long-term debt in an amount not less than the greater of 6 percent plus the surcharge applicable under the GSIB surcharge rule of total risk-weighted assets and 4.5 percent of total leverage exposure.

¹²In contrast, “internal” loss-absorbing capacity could be used to transfer losses among legal entities within a BHC.

¹³The ISDA Master Agreement is an umbrella agreement that sets out the overarching terms between the parties who want to trade over-the-counter derivatives. The agreement is divided into sections that outline the contractual relationship between the parties. Under the agreement, a party to a swap generally has the right to take certain actions if its counterparty defaults on the contract, including terminating the contract.

BHC files for bankruptcy.¹⁴ As illustrated by the failure of Lehman Brothers, such counterparty actions could result in a disorderly unwinding of the bank's swaps that causes the bank to suffer avoidable losses on its swaps and contributes to its failure.¹⁵ For example, counterparties to whom the bank owes money may terminate their swaps early, and counterparties that owe the bank money may not terminate their swaps but may suspend their swap-related payments—exposing the bank to price risk and reducing the bank's liquidity.

Banking regulators and derivatives market participants have taken steps to address the threat that early terminations of swaps can pose to a BHC's orderly resolution. Working with its members, U.S. and foreign regulators, and others, ISDA published protocols in 2014 and 2015 that enable parties to ISDA Master Agreements and certain other financial contracts to amend their financial contracts, in effect, to recognize the applicability of special resolution regimes (including Orderly Liquidation Authority discussed subsequently) and to restrict cross-default provisions to facilitate orderly resolution under the U.S. Bankruptcy Code.¹⁶ For example, provided certain conditions are met, parties that adhere to the 2015 protocol generally would be prohibited from exercising their cross-default rights to terminate early with a BHC's bank if the bank's BHC entered bankruptcy.

In 2016, the Federal Reserve, FDIC, and OCC separately proposed rules that generally require a U.S. GSIB and its subsidiaries to amend their

¹⁴For example, a BHC might guarantee the swaps of its bank subsidiary, and those swaps could contain cross-default rights against a subsidiary of the BHC that would be triggered by the BHC's bankruptcy filing even though the bank subsidiary continues to meet all of its financial obligations. The Bankruptcy Code's automatic stay does not prevent the exercise of cross-default rights against an affiliate of the party entering resolution.

¹⁵At the time of its failure, Lehman was party to large volumes of financial contracts, including over-the-counter derivatives. When its holding company declared bankruptcy, Lehman's counterparties exercised their default rights. Lehman's default caused disruptions in the swaps and derivatives markets and a rapid, market-wide unwinding of trading positions. According to Lehman's bankruptcy examiner, the bankruptcy resulted in the loss of 70 percent of \$48 billion of receivables from derivatives that could otherwise have been unwound.

¹⁶In November 2015, ISDA published the ISDA 2015 Universal Resolution Stay Protocol, which enables parties to amend the terms of their protocol-covered agreements to contractually recognize the cross-border application of special resolution regimes applicable to certain financial companies and to support the resolution of certain financial companies under the U.S. Bankruptcy Code. ISDA also developed the ISDA 2014 Resolution Stay Protocol, which was replaced by the ISDA 2015 Universal Protocol.

swaps (and other qualified financial contracts), so that their counterparties would be stayed from exercising their cross-default rights based on the GSIB's or its subsidiary's entry into resolution.¹⁷ The proposed rules would require GSIBs and their subsidiaries to amend the contractual default provisions of the financial contracts, including by adhering to the ISDA 2015 protocol. The four U.S. BHCs with the largest bank swap dealers (and their bank swap dealers) have adhered to the protocol in order to enhance their ability to implement their SPOE strategy and avoid a disorderly wind-down of their swaps.¹⁸

FDIC Could Use Its Authority to Transfer Swaps from a Failed Bank to Help Preserve the Value of the Swaps

Although the four U.S. BHCs with the largest bank swap dealers plan to keep their banks solvent under their SPOE strategies, circumstances could arise in which a BHC lacks the financial resources to absorb losses suffered by its bank.¹⁹ If the BHC's bank is insolvent and cannot be recapitalized by the BHC, the bank would be resolved by FDIC under the Federal Deposit Insurance Act.²⁰ Federal assistance backed by taxpayers could be needed to help temporarily support FDIC's Deposit Insurance Fund if the failed bank's losses, for example, were large enough to

¹⁷81 Fed. Reg. 55,381 (Aug. 19, 2016) (OCC); 81 Fed. Reg. 29,169 (May 11, 2016) (Federal Reserve); and 81 Fed. Reg. 74,326 (Oct. 26, 2016) (FDIC). The agencies' proposed rules are substantively identical but cover different GSIB entities. In addition to covering U.S. GSIBs and their affiliates, the proposed rules generally cover the U.S. subsidiaries of foreign GSIBs.

¹⁸Although the four BHCs have adhered to the ISDA 2015 Stay Protocol, the protocol's provisions regarding cross-default restrictions in the bankruptcy context do not become effective until regulations requiring all qualified financial contracts to have stay language are implemented by U.S. regulators.

¹⁹Complementing the 165(d) resolution plan requirement, FDIC adopted a final rule in January 2012 requiring an insured depository institution with \$50 billion or more in total assets to periodically provide FDIC with a contingent plan for the resolution of such institution in the event of its failure. 77 Fed. Reg. 3075 (Jan. 23, 2012).

²⁰See 12 U.S.C. § 1821(c), (e)(8)-(10).

deplete the fund.²¹ However, FDIC could use its authority under the Federal Deposit Insurance Act to help preserve the value of the bank's swaps and reduce taxpayer risk. For example, under its statutory authority, FDIC may transfer a failed bank's swaps and other derivatives to a bridge bank or other financial company within 1 business day after the bank's failure, preventing the exercise of the default rights of the bank's counterparties to terminate their swaps.²² As a result, FDIC could avoid the selective terminations of swaps by the failed bank's counterparties and, in turn, the value destruction that such terminations could produce, as was the case in Lehman's failure.

FDIC and the Dodd-Frank Act's Orderly Liquidation Authority

In cases where the failure of a large BHC and its resolution under the U.S. Bankruptcy Code would have serious adverse effects on U.S. financial stability, the Dodd-Frank Act's Orderly Liquidation Authority serves as the backstop alternative.²³ Orderly Liquidation Authority gives FDIC the authority, subject to certain constraints, to resolve large financial

²¹FDIC's Deposit Insurance Fund has been supported by assessments on insured banks and had a balance of approximately \$83 billion at year-end 2016. According to FDIC officials, when multiple bank failures have depleted fund resources in the past, FDIC has turned to the banking industry to replenish the fund by raising assessment rates, charging special assessments, or requiring banks to prepay assessments to meet fund liquidity needs. During one period in its history (from 1991 to 1993), FDIC relied on funds borrowed from the U.S. Treasury (through the Federal Financing Bank) for temporary working capital, which was repaid with proceeds from the disposition of assets acquired from failed banks. The banking industry must repay through assessments any funds borrowed from the U.S. Treasury not repaid out of proceeds from the sale of failed bank assets.

²²See 12 U.S.C. § 1821(e)(8)-(10). According to FDIC officials, if the failed bank's swaps were the source of the bank's losses and posed a systemic risk, FDIC may seek to use the Federal Deposit Insurance Act's systemic risk exception to resolve the bank and would not necessarily transfer the swaps. Under a systemic risk exception, FDIC is not bound to identify and follow the least-cost resolution strategy and may provide assistance (such as debt or deposit guarantees) that protects uninsured depositors and creditors, who otherwise might suffer losses under a least-cost method.

²³Pub. L. No. 111-203, § 204, 124 Stat. 1376, 1454 (codified at 12 U.S.C. § 5384).

companies outside of the bankruptcy process.²⁴ Since 2012, FDIC has been developing a SPOE strategy to implement its Orderly Liquidation Authority.²⁵ Under its SPOE strategy, FDIC would be appointed receiver of the top-tier U.S. holding company and establish a bridge financial company into which it would transfer the holding company's assets to preserve their value.²⁶ The bridge company would continue to provide the holding company's functions, and the company's subsidiaries would remain operational. As its SPOE strategy has evolved, FDIC has focused on developing multiple options for liquidating the subsidiaries, such as by winding down or selling subsidiaries or selling a subsidiary's assets. Title II authorizes FDIC to transfer swaps and other qualified financial contracts to the bridge company or another solvent financial company.²⁷ To give FDIC time to make such transfers and to avoid a disorderly wind-down of swaps, Title II generally prohibits counterparties to qualified financial contracts from exercising their default rights with the holding company or its subsidiaries.²⁸ By keeping the holding company's

²⁴12 U.S.C. § 5382(a). Before the Secretary of the Treasury, in consultation with the President, makes a decision to seek the appointment of FDIC as receiver of a financial company, at least two-thirds of those serving on the Board of Governors of the Federal Reserve System and at least two-thirds of those serving on the Board of Directors of FDIC must vote to make a written recommendation to the Secretary of the Treasury to appoint FDIC as receiver. 12 U.S.C. § 5383(a)(1)(A). For additional information on Orderly Liquidation Authority, see GAO, *Bankruptcy: Agencies Continue Rulemakings for Clarifying Specific Provisions of Orderly Liquidation Authority*, [GAO-12-735](#) (Washington, D.C.: July 12, 2012).

²⁵See 78 Fed. Reg. 76,614 (Dec. 18, 2013).

²⁶FDIC would apportion the holding company's losses according to the order of statutory priority among the claims of the former equity holders and unsecured creditors, whose equity and certain debt would remain in the receivership. Through a securities-for-claims exchange, the claims of the creditors in the receivership would be satisfied by issuance of securities representing debt and equity in the new holding company.

²⁷See Pub. L. No. 111-203, § 210(c)(9), 124 Stat. 1376, 1460 (codified at 12 U.S.C. § 5390(c)(9)).

²⁸From the time the FDIC is appointed as receiver until 5:00 p.m. (Eastern time) on the business day following the date of the appointment, a qualified financial contract counterparty is prohibited from exercising any contractual rights, including termination, triggered by the appointment of the receiver. 12 U.S.C. § 5390(c)(10)(B)(i)(I). FDIC also may enforce the contracts of subsidiaries or affiliates of a covered financial company that are guaranteed or otherwise supported by or linked to the covered financial company, notwithstanding any contractual right to cause the termination, liquidation, or acceleration of such contracts based solely on the insolvency, financial condition, or receivership of the financial company, as long as FDIC takes certain steps to protect the counterparties' interests by the end of the business day following the appointment of FDIC as receiver. 12 U.S.C. § 5390(c)(16); 12 C.F.R. § 380.12.

subsidiaries solvent and preventing swap terminations, FDIC could minimize market disruptions and preserve the value of the swaps.

According to FDIC, the agency intends to maximize the use of private funding in an Orderly Liquidation Authority resolution and expects the bridge financial company and its subsidiaries to obtain funding from customary sources of liquidity in the private markets. If private-sector funding cannot be obtained, the Dodd-Frank Act provides for an Orderly Liquidation Fund to serve as a back-up source of liquidity support that would be available only on a fully secured basis. Ultimately any Orderly Liquidation Fund borrowings are to be repaid either from recoveries on the assets of the failed firm or, in the event of a loss on the collateralized borrowings, from assessments against the eligible financial companies.²⁹ The law expressly prohibits taxpayer losses from the use of Orderly Liquidation Authority.³⁰

²⁹See 12 U.S.C. § 5390(n). The Dodd-Frank Act defines an “eligible financial company” as any BHC with total consolidated assets of \$50 billion or more and any nonbank financial company supervised by the Federal Reserve as a result of its designation by the Financial Stability Oversight Council. 12 U.S.C. § 5390(o)(1)(A).

³⁰Some argue that Orderly Liquidation Authority could lead to indirect losses for taxpayers. For example, if eligible financial companies must pay assessments to cover losses to the Orderly Liquidation Fund, the companies would pass the cost of the assessments onto their customers in the form of higher fees on financial products and services. See, for example, *Who is Too Big to Fail: Does Title II of the Dodd-Frank Act Enshrine Taxpayer-Funded Bailouts?: Hearing before the Subcomm. on Oversight and Investigations of the H. Comm. on Financial Services*, 113th Cong. 9, 17 (2013) (statement of John Taylor, Mary and Robert Raymond Professor of Economics, Stanford University).

Appendix VI: Regulators' Oversight of Section 716 Compliance

As amended, section 716 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act)—also known as the “swaps push-out rule”—effectively required banks registered as swap dealers or security-based swap dealers to stop engaging in certain types of swaps or security-based swap activities, or be prohibited from receiving federal assistance.¹ Officials from four banks told us that they engaged in structured finance swaps activity and moved such activity to their nonbank swap dealer affiliates by July 2015, when their 2-year extension periods expired. These four banks are supervised by the Office of the Comptroller of the Currency (OCC) or the Board of Governors of the Federal Reserve System (Federal Reserve). Regulators and the four banks told us they have not had major difficulties overseeing or implementing the amended section 716, respectively. Regulators stated that they assess compliance, including with section 716 requirements, through ongoing supervision and examinations.

¹Pub. L. No. 111-203, § 716, 124 Stat. 1376, 1648 (2010) (codified as amended at 15 U.S.C. § 8305). Specifically, section 716 provides that no federal assistance may be provided to any swaps entity with respect to any swap, security-based swap, or other activity of the swaps entity for the purpose of (1) making any loan to, or purchasing any stock, equity interest, or debt obligation of, any swaps entity; (2) purchasing the assets of any swaps entity; (3) guaranteeing any loan or debt issuance of any swaps entity; or (4) entering into any assistance arrangement (including tax breaks), loss sharing, or profit sharing with any swaps entity. 15 U.S.C. § 8305(b)(1). For purposes of section 716, “swaps entity” means any registered swap dealer, security-based swap dealer, major swap participant, or major security-based swap participant, but does not include any major swap participant or security-based swap participant that is a covered depository institution. 15 U.S.C. § 8305(b)(2). For purposes of this report, unless otherwise specified, we use the term “swap dealer” to refer to both swap dealers and security-based swap dealers, and we use the term “swap” to refer to both swaps and security-based swaps.

Regulators Have Not Issued Any Rules to Implement the Amended Section 716, but Banks Told Us That They Have Not Faced Any Major Compliance Challenges

Unlike section 619 (also referred to as the Volcker rule) and some other Dodd-Frank Act provisions, section 716 does not require prudential regulators to issue any rules.² Federal Reserve and OCC told us that they chose not to issue any rules to implement the amended section 716 because they perceive the provision's requirements to be sufficiently clear. For example, the amended section 716 defines the term "structured finance swap" as a swap or security-based swap based on an asset-backed security (or group or index primarily comprised of asset-backed securities); as a result, Federal Reserve and OCC said that they did not need to issue a rule to define the term.³ Although the amended section 716 does not require the prudential regulators to issue rules, it permits them to issue a joint rule to make additional exemptions to section 716 restrictions on structured finance swap activity.⁴ However, the regulators told us that they do not currently plan to issue any such rules.

The four bank swap dealers told us that they have not encountered any major challenges in complying with the amended section 716 and do not need guidance from the prudential regulators. Similarly, bank swap dealers that engaged in structured finance swaps activity told us that they were able to move their structured finance swaps activity to their affiliated broker-dealers to comply with the amended provision. The banks relied on their legal teams to identify which units within their banks traded covered swaps and on their operations teams to implement controls to prevent these units from trading impermissible swaps. Banks told us that, because they also must comply with Volcker Rule restrictions, they use

²See Pub. L. No. 111-203, §§ 619, 716, 124 Stat. 1376, 1620, 1648 (codified as amended at 12 U.S.C. § 1851 and 15 U.S.C. § 8305).

³15 U.S.C. § 8305(d)(2)(A).

⁴The amended section 716 allows the prudential regulators to issue joint rules that further exempt swaps from section 716 restrictions. In particular, a bank would be permitted to act as a swap entity for structured finance swaps if each asset-backed security underlying such structured finance swaps is of a credit quality and of a type or category with respect to which the prudential regulators have jointly adopted rules authorizing swap or security-based swap activity by covered depository institutions. 15 U.S.C. § 8305(d)(1)(C)(ii).

the Volcker Rule's definition of risk-mitigating hedging to interpret section 716's exemption.⁵

Regulators Assess Compliance with Statutory Requirements, including Amended Section 716, through Their On-site Supervision and Examinations

Regulators conduct onsite supervision of banks within their jurisdiction, including those affected by the amended section 716. The regulators' onsite supervision includes monitoring activities, assessing risks, completing core assessments, and communicating with bank management throughout the supervisory cycle. Examiners regularly review management information system reports and profit and loss reports from bank dealers' trading desks to identify any structured finance swap activity requiring further investigation. For example, Federal Reserve and OCC staff told us that they can detect compliance issues related to section 716 through their supervision of the banks' and bank holding companies' (BHC) compliance with, among other things, the Volcker Rule's reporting requirements.⁶ Federal Reserve and OCC told staff us that they take a risk-based supervisory approach and would weigh the volume and complexity of trades associated with section 716 in that overall approach.

OCC conducts targeted examinations in various areas, including for section 716. These targeted examinations generally include reviewing the banks' policies, associated controls, and governance framework for complying with statutory requirements, including section 716, and meeting with key personnel across the bank's affected business lines and independent control functions to assess bank readiness.

⁵Banks told us that as a practical matter, structured finance swap trades must be executed under a Volcker exemption so the banks' swap traders rely on one exemption—the Volcker Rule. The Volcker Rule's restrictions on proprietary trading do not apply to risk-mitigating hedging activities in connection with and related to individual or aggregated positions, contracts, or other holdings of a banking entity that are designed to reduce the specific risks to the banking entity in connection with and related to such positions, contracts, or other holdings. 12 U.S.C. § 1851(d)(1)(C).

⁶Regulations implementing the Volcker Rule include documentation requirements with respect to the purchase or sale of financial instruments for risk-mitigating hedging purposes. 12 C.F.R. § 44.5(c) (OCC); 12 C.F.R. § 248.5(c) (Federal Reserve); 12 U.S.C. § 351.5(c) (FDIC); 17 C.F.R. § 75.5(c) (CFTC); 17 C.F.R. § 255.5(c) (SEC).

Appendix VII: GAO Contact and Staff Acknowledgments

GAO Contact

Lawrance L. Evans, (202) 512-8678 or evansl@gao.gov

Staff Acknowledgments

In addition to the contact name above, Richard Tshara (Assistant Director), Silvia Arbelaez-Ellis (Analyst-in-Charge), Jessica Artis, Rachel DeMarcus, Risto Laboski, Courtney L. LaFountain, Marc W. Molino, Patricia Moye, Jennifer Schwartz, and Kwame Som-Pimpong made significant contributions to this report.

Appendix VIII: Accessible Data

Data Tables

Figure 1: Section 716 Timeline and Covered Swaps, from July 2013 through July 2015 (Two-year Section 716 transition period granted by federal bank regulators upon banks' requests)

<p>July: Original version of Section 716 takes effect Prohibited unless used for hedging: - Equity swaps - Commodity swaps (except for precious metals) - Noncleared credit default swaps</p>	<p>December: Section 716 amended Prohibited unless used for hedging: - Structured finance swaps</p>	<p>July: Most covered banks to comply with amended Section 716</p>
---	---	---

Source: GAO analysis of original and amended section 716 of the Dodd-Frank Act. | GAO-17-607

Figure 4: Key Information about the Derivatives Holdings of U.S. Banks Registered as Swap Dealers, as of September 30, 2016

U.S. Bank Swap Dealer	Bank's Total Derivatives (notional value in \$ billion)	Bank's Share of Total Derivatives Held by the Banks	Percent of BHC's Total Derivatives Held in the Bank
JPMorgan Chase Bank, N.A.	\$51,077	28.8%	101%
Citibank, N.A.	\$48,140	27.1%	93%
Goldman Sachs Bank USA	\$38,053	21.4%	84%
Bank of America, N.A.	\$21,973	12.4%	62%
Wells Fargo Bank, N.A.	\$7,364	4.1%	101%
HSBC Bank USA, N.A.	\$4,327	2.4%	38%
Morgan Stanley Bank, N.A.	\$1,572	0.9%	6%
State Street Bank and Trust Company	\$1,290	0.7%	99%
Bank of New York Mellon	\$958	0.5%	98%
PNC Bank, N.A.	\$351	0.2%	101%
SunTrust Bank	\$273	0.2%	101%
U.S. Bank N.A.	\$269	0.2%	99%
Northern Trust Company	\$266	0.1%	100%
KeyBank N.A.	\$77	0.0%	86%

U.S. Bank Swap Dealer	Bank's Total Derivatives (notional value in \$ billion)	Bank's Share of Total Derivatives Held by the Banks	Percent of BHC's Total Derivatives Held in the Bank
Fifth Third Bank	\$69	0.0%	98%
Totals	\$176,060	100%	

Figure 5: Credit, Equity, and Commodity and Other Derivatives Held by the 11 Bank Swap Dealers That Would Have Been Affected by the Original Section 716 as a Percentage of the Notional Value of Their Total Derivatives, as of September 30, 2016

Derivatives not covered by the original section 716 (i.e., interest rate and foreign exchange swaps)	93.9%
Derivatives covered by the original section 716 (i.e., equity, credit, and commodity and other derivatives)	6.1%

Figure 7: Select Dodd-Frank Act's Prudential and Other Requirements That Help Mitigate Swap-Related Risks Faced by U.S. Bank Swap Dealers

	Requirements that address:		
	Counterparty credit risk	Market risk	Liquidity risk
Requirements applicable to all Section 716 covered banks and/or their bank holding companies	Minimum capital and leverage requirements		Minimum liquidity requirements
	Capital conservation buffer		
	Capital plans and stress testing		
	Swap margin rules	Market risk capital rule	
	Single counterparty credit limits	Volcker rule	
Requirements applicable to section	Capital surcharge		Liquidity stress

	Requirements that address:		
	Counterparty credit risk	Market risk	Liquidity risk
716 covered banks that are subsidiaries of an advanced approaches or a global systemically important bank holding company and/or their bank holding companies			testing
	Countercyclical capital buffer		
	Supplemental leverage requirements		

Source: GAO analysis of the Dodd-Frank Act, Federal Register documents, and documents by the Board of Governors of the Federal Reserve System, the Office of the Comptroller of the Currency, and the Federal Deposit Insurance Corporation. GAO-17-607

Figure 8: Four Largest U.S. Swap Dealer Banks' Recognized Net Gains or Losses from Exposures That Include Swaps Covered by the Original Section 716 as a Percentage of Bank Capital (from the First Quarter of 2015 through the Third Quarter of 2016)

Quarter	MIN	MAX	MEDIAN
2007q1	1.306041	6.775295	1.347771
2007q2	1.062563	5.027877	1.681601
2007q3	0.873153	1.797785	1.437901
2007q4	-7.57896	2.246841	0.74831
2008q1	-5.30801	-1.45973	-4.68621
2008q2	-5.22524	-1.2009	-1.50331
2008q3	-2.37484	0.399568	-0.04738
2008q4	-7.60279	0.33998	-2.93844
2009q1	-7.33553	3.796762	0.534808
2009q2	-3.65948	16.52221	-0.52319
2009q3	-3.08732	12.94559	0.543935
2009q4	-3.38621	10.0659	0.830867
2010q1	1.837995	8.327465	4.372702
2010q2	1.172123	7.033309	3.486187
2010q3	0.902766	6.520844	2.58957
2010q4	0.171649	3.918163	2.315432
2011q1	-0.05319	7.730987	3.379743
2011q2	0.131199	6.674551	2.992226
2011q3	0.588681	9.045193	3.376383

Quarter	MIN	MAX	MEDIAN
2011q4	0.225641	5.431791	2.654201
2012q1	-2.51844	7.38082	-0.07616
2012q2	-4.98637	4.626014	0.064427
2012q3	-3.48524	2.631837	-0.00464
2012q4	-2.6611	2.752736	-0.13975
2013q1	-0.29955	4.400299	1.865424
2013q2	-0.28481	4.126873	0.988989
2013q3	-0.33756	3.447875	0.599093
2013q4	-0.35928	2.607329	0.756368
2014q1	0.387536	3.163545	1.555597
2014q2	0.198233	3.275051	0.857998
2014q3	0.11559	3.290682	0.909096
2014q4	-0.02298	2.760159	0.533987
2015q1	0.361228	2.999422	1.375046
2015q2	-0.06272	3.011518	0.532165
2015q3	-0.30095	2.601369	0.588355
2015q4	-0.28394	2.11537	0.394795
2016q1	-2.20933	2.191388	0.397302
2016q2	-2.69264	2.281046	0.334518
2016q3	-2.22044	2.236261	0.282455

Figure 9: Seven Smaller U.S. Swap Dealer Banks' Recognized Net Gains or Losses from Exposures That Include Swaps Covered by the Original Section 716 as a Percentage of Bank Capital (from the First Quarter of 2015 through the Third Quarter of 2016)

	Max	Min	Median
2007q1	3.1155818	0	0.06223999
2007q2	3.6584377	0	0.066218421
2007q3	3.6701448	-0.090951	0.022839028
2007q4	1.1484485	-0.15853	0.028654402
2008q1	0.2697086	-13.72145	-0.054319534
2008q2	0.2330449	-11.15809	0
2008q3	2.4024062	-0.741587	0.059249751
2008q4	0.1267767	-2.613537	-0.006849784
2009q1	0.283861	-13.01163	0.088842332
2009q2	0.3740118	-0.588034	0
2009q3	0.2916939	-1.445659	0

Appendix VIII: Accessible Data

	Max	Min	Median
2009q4	0.0406028	-2.444335	-0.046233669
2010q1	0.3918698	-0.58408	0.064414531
2010q2	1.6901568	-0.041013	0.050383255
2010q3	0.6628714	-0.425535	0.034255326
2010q4	0.3973353	-0.282303	0.055705253
2011q1	0.0637018	-0.49856	0
2011q2	0.5445443	0	0.04065454
2011q3	0.1463009	0	0.053984627
2011q4	0.1365616	-0.317837	0.041857552
2012q1	0.1533828	-4.83133	0.043893341
2012q2	0.2068785	-5.284413	0.061232798
2012q3	0.1465624	-3.780185	0.053556487
2012q4	0.2057175	-2.938814	0.051474102
2013q1	1.543764	-0.178851	0.046097036
2013q2	0.1421334	-0.133683	0.052421626
2013q3	0.1570601	-0.065056	0.00126633
2013q4	0.8942083	-0.045247	0.064414769
2014q1	0.1880717	-0.414973	0.040128209
2014q2	0.1176133	-0.662124	0.029699916
2014q3	0.0853801	-0.865251	0.033091355
2014q4	0.3165765	-0.912208	0.064312942
2015q1	0.1778223	-0.262712	0.058989629
2015q2	0.1360226	-0.097361	0.041657548
2015q3	0.0846467	-0.196388	0.015865462
2015q4	0.0811122	-0.065868	0.030461596
2016q1	0.0765069	-0.539528	-0.0000662547317915596
2016q2	0.1920855	-0.443207	0.043332428
2016q3	0.1481919	-0.489431	0.039088927

GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's website (<http://www.gao.gov>). Each weekday afternoon, GAO posts on its website newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to <http://www.gao.gov> and select "E-mail Updates."

Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's website, <http://www.gao.gov/ordering.htm>.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

Connect with GAO

Connect with GAO on [Facebook](#), [Flickr](#), [LinkedIn](#), [Twitter](#), and [YouTube](#).
Subscribe to our [RSS Feeds](#) or [E-mail Updates](#). Listen to our [Podcasts](#).
Visit GAO on the web at www.gao.gov and read [The Watchblog](#).

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Website: <http://www.gao.gov/fraudnet/fraudnet.htm>
E-mail: fraudnet@gao.gov
Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Katherine Siggerud, Managing Director, siggerudk@gao.gov, (202) 512-4400,
U.S. Government Accountability Office, 441 G Street NW, Room 7125,
Washington, DC 20548

Public Affairs

Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, DC 20548

Strategic Planning and External Liaison

James-Christian Blockwood, Managing Director, spel@gao.gov, (202) 512-4707
U.S. Government Accountability Office, 441 G Street NW, Room 7814,
Washington, DC 20548