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UNITED KINGDOM

FINANCIAL SECTOR ASSESSMENT PROGRAM

June 2016

FINANCIAL SYSTEM STABILITY ASSESSMENT

This Report on the Financial System Stability Assessment on the United Kingdom was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed in June 2016.

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FINANCIAL SYSTEM STABILITY ASSESSMENT

June 1, 2016

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This report is based on the work of the Financial Sector Assessment Program (FSAP) mission that visited the United Kingdom in November 2015 and in January-February 2016. The FSAP findings were discussed with the authorities during the Article IV consultation mission in May 2016. More information on the FSAP may be found at http://imf.org/external/np/fsap/fssa.aspx

- The FSAP team was led by Dimitri Demekas and included Nicolas Arregui, Kelly Eckhold, Pierpaolo Grippa, Eija Holttinen, Sheheryar Malik, Oana Croitoru Nedelescu, Miguel Segoviano, Laura Valderrama, Francis Vitek, Froukelien Wendt (all MCM), Elsie Addo Awadzi (LEG), Mico Mrkaic (EUR), Christopher Calabia, Til Schuermann, and Rodolfo Wehrhahn (external experts). The team met the Economic Secretary and officials of HM Treasury; the Governor and senior management and staff of the Bank of England (BoE) and the Prudential Regulation Authority (PRA); the Chairman, Acting Chief Executive, and staff of the Financial Conduct Authority (FCA); senior staff of the Payments Systems Regulator, the National Audit Office, the Office of National Statistics, the Financial Services Compensation Scheme (FSCS), and the European Banking Authority (EBA); and representatives of private financial sector firms, trade associations, credit rating agencies, consulting companies, real estate companies, academics, and of the accounting and legal professions.
- FSAPs assess the stability of the financial system as a whole and not that of individual institutions. They are intended to help countries identify key sources of systemic risk in the financial sector and implement policies to enhance its resilience to shocks and contagion. Certain categories of risk affecting financial institutions, such as operational or legal risk, or risk related to fraud, are not covered in FSAPs.
- The United Kingdom is deemed by the Fund to have a systemically important financial sector (see Press Release No. 10/357, September 27,2010), and the stability assessment under this FSAP is part of bilateral surveillance under Article IV of the Fund's Articles of Agreement.
- This report was prepared by Dimitri Demekas and Miguel Segoviano, with contributions from the FSAP team members. It draws on a number of Technical Notes and a Detailed Assessment Report on compliance with the Basel Core Principles for Effective Banking Supervision (BCP) that accompany this report.

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Glossary

AC	Additional Criteria
AFS	Available for Sale
AIF	Alternative Investment Fund
AIFMD	Alternative Investment Fund Managers Directive
AML/CFT	Anti-Money Laundering and Combating the Financing of Terrorism
BCBS	Basel Committee for Banking Supervision
BCNs	Broker Crossing Network
BCP	Basel Core Principles for Effective Banking Supervision
BoE	Bank of England
BIS	Bank for International Settlements
BRRD	Bank Recovery and Resolution Directive
CCB	Countercyclical Capital Buffer
CCPs	Central Counterparties
CET1	Common Equity Tier 1 Capital
CMG	Crisis Management Group
CP	Core Principle
CPSS	Committee on Payment and Settlement Systems
CRE	Commercial Real Estate
CVA	Credit Valuation Adjustment
DGSD	Deposit Guarantee Scheme Directive
EAD	Exposure at Default
EBA	European Banking Authority
EC	Essential Criteria
EDF	Expected Default Frequency
EEA	European Economic Area
EIOPA	European Insurance and Occupational Pensions Authority
ELA	Emergency Liquidity Assistance
EMIR	European Market Infrastructure Regulation
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
FCA	Financial Conduct Authority
FMI	Financial Market Infrastructure
FPC	Financial Policy Committee
FSB	Financial Stability Board
FSCS	Financial Services Compensation Scheme
FSR	Financial Stability Report
FATF	Financial Action Task Force
FVO	Fair value option
GFM	Global Macrofinancial Model
G-SIBs	Global Systemically Important Banks
HMT	Her Majesty's Treasury
HVPS	High Value Payments System
ICAAP	Internal Capital Adequacy Assessment Process

IOSCO	International Organization of Securities Commissions
IRB	Internal ratings-based
KAs	Key Attributes of Effective Resolution Regimes for Financial Institutions
LCR	Liquidity Coverage Ratio
LGD	Loss Given Default
LIBOR	London Interbank Offered Rate
MiFID	Markets in Financial Instruments Directive
MREL	Minimum Requirement for Own Funds and Eligible Liabilities
MoU	Memorandum of Understanding
MPC	Monetary Policy Committee
MTF	Multilateral Trading Facility
NIM	Net Interest Margin
PD	Probability of Default
PFMI	CPSS-IOSCO Principles for Financial Market Infrastructures
PiT	Point-in-time
PRA	Prudential Regulation Authority
PRC	Prudential Regulatory Committee
PVA	Prudent Valuation Adjustment
RFB	Ring-Fenced Body
ROSC	Observance of Standards and Codes
RTGS	Real-Time Gross Settlement
RWA	Risk-Weighted Assets
SCB	Sterling corporate bond
SME	Small and Medium-size Enterprise
SMF	Sterling Markets Framework
SMR	Senior Managers' Regime
SRR	Special Resolution Regime
TD	Top-down
TLAC	Total loss-absorbing capacity
UCITS	Undertakings for Collective Investment in Transferable Securities
VAR	Vector Autoregression

EXECUTIVE SUMMARY

Since the last FSAP, the U.K. financial system has put the legacy of the crisis behind it and has become stronger and more resilient. Five years ago, the financial system had stabilized but still faced major residual weaknesses. This FSAP found the system to be much stronger and thus better able to serve the real economy. Like all systems, the U.K. financial system is exposed to risks. Given its size, complexity, and global interconnectedness, if these risks were to materialize they could have a major impact not only on the U.K. but also on the global financial system. Financial stability in the U.K. is thus a global public good. At the same time, understanding, mitigating, and staying a step ahead of the evolving risks in such a complex system is a constant analytical and policy challenge for U.K. policy-makers and regulators.

Its position as a global hub exposes the U.K. financial system to global risks. Regardless of the trigger, global shocks, such as a negative growth shock in emerging markets, a rapid hike in global risk premia, or renewed tensions in the eurozone, would impact significantly U.K. banks and, more broadly, the financial system as a whole. Moreover, as the domestic credit cycle matures while interest rates remain at historic lows, trends in some segments of the U.K. property market—notably buy-to-let and commercial real estate—could become financial stability risks.

In addition, the uncertainties associated with the possibility of British exit from the EU weigh heavily on the outlook. A vote in favor of leaving would usher in a period of uncertainty and financial market volatility during the negotiation of the terms of British exit, which could take years. And the eventual exit deal would have profound effects on trade and the real economy, the "passporting" arrangements for financial institutions, and the location decisions of major international financial firms now headquartered in London. Though highly uncertain, these effects would have major long-term implications for the U.K. financial sector, its contribution to the domestic economy, and its global standing. Needless to say, these economic aspects are only one element of the decision that is for British voters to make.

The main parts of the U.K. financial system appear resilient. At the core of the system, banks have more than doubled their risk-weighted capital ratios from pre-crisis levels, strengthened liquidity, and reduced leverage. Stress tests by both the BoE and the FSAP show that the largest banks would be able to meet regulatory requirements and sustain the capacity to finance the economy in the face of severe shocks. The possible impact of Brexit, however, though potentially significant, is inherently difficult to quantify and has not been covered in the stress tests. U.K. insurers, asset managers, and central counterparties (CCPs) also appear resilient, based on assessments by the BoE, FCA, European financial authorities, and the FSAP.

Despite the apparent resilience of individual sectors, interconnectedness across sectors has the potential to amplify shocks and turn sector-specific distress systemic. New patterns of interconnectedness are emerging due to structural market shifts and new entrants in some markets. These changes are not, by themselves, inherently risky. But they create a major challenge for the supervisors, who should upgrade their capacity and tools to connect the dots across sectors.

This resilience reflects to a large extent a wave of regulatory reforms since the crisis, which are now near completion. These were aimed at strengthening regulation and supervision, thus reducing the probability of failures; and lowering the cost of failures and safeguarding the taxpayer. They are aligned with the global regulatory reform agenda, where the U.K. has played a leading role, and were complemented by steps to enhance the governance and conduct of financial firms, as well as the decision to ring-fence retail banking and related services from riskier activities of U.K. banks. Many of these reforms correspond to the recommendations of the 2011 FSAP (Appendix I).

The first major plank of the reforms was to overhaul financial sector oversight and focus it on systemic stability. The new macroprudential framework provides clear roles and responsibilities, adequate powers and accountability, and promotes coordination across agencies. Its track record to-date, albeit short, is encouraging. Microprudential and conduct oversight have also become more rigorous and hands-on. The focus of supervisory effort and resources on the resilience of the most important firms is appropriate from a systemic perspective, but it inevitably implies less individual attention to small and mid-size companies, for which supervisors rely more on data monitoring, thematic reviews, and outlier analysis. This tradeoff warrants constant vigilance, because the business models of smaller firms tend to be correlated and, regardless of their systemic impact, failures of even small firms can be a source of reputational risk for the supervisor. In view of the downward trend of the ratio of risk-weighted to total assets and methodological inconsistencies across banks, internal models should be reviewed closely. A new, sophisticated framework for annual stress tests of major banks is a key link between the microprudential and macroprudential frameworks, but further investment is needed to ensure it can deliver on its ambitious goals.

The BoE's new liquidity framework is a key shock absorber, and attendant risks seem adequately managed. By ensuring the Bank is "open for business" in the event of distress, the BoE's flexible framework can help stop the propagation of a shock through liquidity contagion. Access by a broader range of entities, including broker-dealers and CCPs, is a major plus, made possible by the fact that all entities with access to the framework are supervised by the BoE and PRA. Because the relative ease of access to BoE liquidity risks distorting over time the incentives of participating firms, the BoE needs to monitor their behavior for signs of moral hazard or regulatory arbitrage.

The other major plank of the agenda was to ensure that the failure of a financial firm, regardless of its size, would not compromise financial stability or burden the taxpayer. The transposition of the EU Bank Recovery and Resolution Directive has completed the reform of the U.K.'s Special Resolution Regime for banks, which is now broadly aligned with global standards. The resolution powers, tools, and coordination arrangements for crisis management domestically and cross-border are now much stronger. The key challenge now is to complete the process that will facilitate the resolvability of U.K. financial firms. This is a complex, multi-year task that involves, *inter alia*, the implementation of ring-fencing and Minimum Requirements for Own Funds and Eligible Liabilities (MREL). The authorities should also build on current arrangements to develop operational principles for funding of firms in resolution and establish an effective resolution regime for insurance companies whose failure could be systemic. Finally, given the systemic role played by U.K. banks in smaller jurisdictions that are not part of the Crisis Management Groups (CMGs), the U.K. authorities should develop appropriate cooperation arrangements with such host countries.

Table 1. United Kingdom: FSAP Key Recommendations	
Recommendations	**Time Frame[1]**
Financial stability policy framework	
Extend the Financial Policy Committee's (FPC) powers of direction to the buy-to-let market. [Her Majesty's Treasury (HMT)] (¶4, ¶21, Box 2)	Near term
Extend perimeter of concurrent stress tests to cover large foreign subsidiaries. [BoE, PRA] (¶41)	Medium term
Complete core data template and enhance analytical infrastructure for concurrent stress tests. [BoE, PRA] (¶41)	Medium term
Develop a set of cross-sector interconnectedness indicators using flow of funds data, cross sector exposures, market based indicators, and information produced by thematic analyses. [BoE, FCA] (¶15)	Medium term
Financial sector oversight	
Increase the supervisory intensity on less systemically important banks, for example through more frequent onsite inspections and greater scrutiny of asset classification and provisioning. [PRA] (¶27)	Near term
Extend, if legally possible, the scope of transparency reporting under the Alternative Investment Fund Managers Directive (AIFMD) to cover non-European Economic Area (EEA) managers and funds, where relevant for systemic risk monitoring, and strive for enhanced international exchange of information. [HMT and FCA] (¶34)	Near term
Ensure that Broker Crossing Networks' (BCNs) activities are sufficiently supervised and monitored. [FCA] (¶33)	Near term
Broaden the review of bank internal models to cover a greater sample of less material models and models of smaller banks. [PRA] (¶28)	Medium term
Introduce agreements similar to those under the European Insurance and Occupational Pensions Authority (EIOPA) requirements for colleges for insurers with significant business outside the EEA. [PRA, FCA] (¶31)	Medium term
Financial markets infrastructures	
Consider alternative structures for the oversight and management of risk within the U.K. High Value Payments system (HVPS) and finalize the self-assessment of the Real Time Gross Settlement System (RTGS) infrastructure against the Principles for Financial Markets Infrastructures. [BoE] (¶38)	Near term
Continue with the de-tiering project for payment systems and EUI and consider, as part of the RTGS review, increasing settlement in central bank money for CCP-embedded payment system transactions by increasing the number of CCP members that are also members of the HVPS. [BoE] (¶37)	Medium term
Crisis management and resolution	
Build on current arrangements to develop operating principles for funding of firms in resolution. [HMT, BoE, and the FSCS] (¶51)	Near term
Work with international partners to develop an effective resolution regime for insurance firms that could be systemically significant at the point of failure. [HMT, BoE, PRA] (¶47)	Medium term
Establish an approach for engaging with countries that are not members of CMGs but where U.K. banks and CCPs have a systemic presence. [BoE] (¶39, ¶52)	Medium term
[1] Near term is one year. Medium term is 2–3 years.	

BACKGROUND

1. The U.K. has a large, complex, and globally interconnected financial system. At about GBP 20 trillion, the sum of financial assets owned by all financial institutions (excluding the BoE) is over ten times U.K. annual GDP. About half of this is accounted for by banks. This compares with a ratio of 8.8 in the Netherlands, 5.6 in Switzerland, 6.4 in Japan, and 3.9 in the U.S.; it is exceeded only by Hong Kong SAR and some offshore financial centers. Four banks and two insurers are classified as globally systemically important. Its insurance sector is the largest in Europe and third largest in the world. It hosts the largest fund management industry and many of the most important equity trading platforms in Europe, as well as two of the largest central counterparties (CCPs) in the world. The U.K. is a global financial hub: according to the BoE, nearly a fifth of global banking activity worldwide is booked in the U.K., and around half of the world's largest financial firms, including banks, insurers, asset managers, and hedge funds, have their European headquarters in the U.K. British banks also have a major presence abroad, especially in the Americas and Asia. Box 1 reviews some empirical work by the BoE on the relationship between size and financial stability.

Box 1. Size of the Financial System and Financial Stability

The empirical evidence on the relationship between the size of a country's financial system and financial stability is limited and mixed.[1] In principle, size could affect financial stability via its effect on the probability of financial crises (i.e., if larger financial systems are likely to lead to more frequent episodes of financial instability) or its impact on the cost of such crises (i.e., output loss, fiscal costs, etc.). However, given the different dimensions of size and the multitude of factors affecting financial stability, testing these hypotheses empirically is not straightforward.

Recent research by the BoE, focusing on the banking sector, concluded that a large system *per* se does not lead to a higher crisis probability or worse post-crisis output performance.[2] Specifically:

- Once credit booms and leverage are taken into account, there is no statistically significant relationship between banking system size and the probability of a banking crisis.
- Evidence from the recent financial crisis suggests that bigger banking systems were not associated with lower output growth post-crisis.
- On the other hand, larger banking systems may impose higher fiscal costs in the event of a crisis.

While not conclusive, these results underscore that capital resilience, proper oversight, and a proper resolution framework are much more relevant for financial stability than the size of the financial system. The degree of leverage and the existence of credit bubbles are better predictors of financial crises than the size of financial system assets. Regulators should focus on ensuring that financial institutions have the capacity to absorb losses and continue serving the economy if hit by adverse shocks. Increasing resilience and putting in place a sound resolution framework would also reduce the need for government intervention in failing financial institutions and lower fiscal costs.

[1] The Staff Discussion Note (SDN/15/08) on *Rethinking Financial Deepening* contains a useful review of the literature.
[2] Bush, O., S. Knott, and C. Peacock (2015), *Why is the UK banking system so big and is that a problem?*, Bank of England Quarterly Bulletin 2014 (Q4).

2. The banking sector is concentrated but competitive pressures have recently been increasing. The seven largest U.K. banks represent over 75 percent of total system assets. By this measure, concentration is higher than in Japan (71 percent), Switzerland (71 percent), Germany (48 percent), and the U.S. (48 percent), though lower than in France (91 percent). Nevertheless, this is an increasingly contested market: smaller "challenger" banks, focusing on certain market segments (especially retail), are growing, although they still represent only about 5 percent of lending market share.

3. The FSAP took place against the backdrop of continued economic expansion and ongoing balance sheet repair. The U.K. economy has continued to grow, the output gap is now almost closed, and inflation projected to rise gradually toward the 2 percent target (Table 2). Nonfinancial private sector indebtedness is estimated at below 160 percent of GDP at end-2014, down from almost 190 percent at end-2009. The current account deficit is large and, though comfortably financed until now, is a source of concern; but staff projections suggest a modest improvement under current policies over the medium-term. Banks' fundamentals have also strengthened: asset quality has improved, with the average NPL ratio down to 1.4 percent; Basel III Common Equity Tier 1 (CET1) capital stands at 12.6 percent of risk-weight assets (RWA); funding metrics have strengthened; and efficiency ratios are improving (Table 3). However, bank profitability remains lackluster, reflecting low interest rates, balance sheet de-risking, declining trading income, and—mainly for the largest banks—high legacy conduct and litigation provisions. This may have held back credit supply, dampening somewhat the financial sector's contribution to the recovery.

RISKS, RESILIENCE, SYSTEMIC RISK, AND SPILLOVERS

A. Key Risks Facing the U.K. Financial System

4. The key macrofinancial tail risks identified by the FSAP are not rooted in the last crisis but reflect new, emerging sources of vulnerability (Table 4). They are broadly consistent with the risks identified in the BoE's latest (December 2015) Financial Stability Report (FSR).

- A sharp downturn in China and other emerging markets, leading to a dampening of global growth.
- A sudden and sizeable increase in rates and steepening of the yield curve in the U.K. and globally—possibly triggered by an unexpected or larger-than-anticipated hike in policy rates in the U.S.—provoking abrupt asset price corrections and broad-based financial market dislocation.
- A correction in the U.K. property markets. As Box 2 and the accompanying Technical Note show, the aggregate property price trends reflect mostly long-standing demand-supply imbalances, and there is no clear evidence of a credit-fueled boom. However, certain segments—notably buy-to-let and commercial real estate (CRE)—appear more vulnerable to price reversals, which could potentially spread to other segments. This would be a source of credit risk for banks, as well as of broader disruption for the U.K. economy, as CRE is used as collateral by many firms.

Table 2. United Kingdom: Selected Economic Indicators, 2012–17

	2012	2013	2014	2015	2016	2017
					Projections	
Real Economy (change in percent)						
Real GDP	1.2	2.2	2.9	2.3	1.9	2.2
Private final domestic demand	2.1	2.3	3.4	3.1	2.5	2.6
CPI, end-period	2.7	2.0	0.9	0.1	1.3	1.9
Unemployment rate (in percent) 1/	8.0	7.6	6.2	5.4	5.0	5.0
Gross national saving (percent of GDP)	12.9	12.1	12.3	12.0	13.2	14.0
Gross domestic investment (percent of GDP)	16.2	16.6	17.4	17.2	18.4	18.7
Public Finance (fiscal year, percent of GDP) 2/						
Public sector overall balance	-6.7	-5.9	-5.0	-3.9	-3.0	-2.1
Public sector cyclically adjusted primary balance (staff estimates) 3/	-3.0	-2.7	-2.8	-2.0	-1.2	-0.3
Public sector net debt	78.9	81.1	83.4	83.9	83.2	82.0
Money and Credit (end-period, 12-month percent change)						
M4	-0.9	0.2	-1.1	0.2	...	...
Net lending to private sector	-0.2	0.9	1.5	2.0	3.0	4.0
Interest rates (percent; year average)						
Three-month interbank rate	0.8	0.5	0.5	0.6	...	...
Ten-year government bond yield	1.9	2.4	2.6	1.9	...	...
Balance of Payments (percent of GDP)						
Current account balance	-3.3	-4.5	-5.1	-5.2	-5.2	-4.7
Trade balance	-2.0	-2.0	-1.9	-2.0	-2.1	-2.1
Net exports of oil	-0.9	-0.6	-0.6	-0.4	-0.3	-0.3
Exports of goods and services (volume change in percent)	0.7	1.2	1.2	5.1	4.1	4.2
Imports of goods and services (volume change in percent)	2.9	2.8	2.4	6.3	3.9	3.7
Terms of trade (percent change)	0.8	1.7	1.1	0.7	-0.8	-0.2
FDI net	-1.3	-2.4	-4.5	-3.5	-2.6	-2.2
Reserves (end of period, billions of US dollars)	105.2	108.8	109.1	...	...	...
Fund Position (as of November 30, 2015)						
Holdings of currency (in percent of quota)						88.6
Holdings of SDRs (in percent of allocation)						95.5
Quota (in millions of SDRs)						10,738.5
Exchange Rates						
Exchange rate regime						Floating
Bilateral rate (December 14, 2015)						US$1 = £0.6616
Nominal effective rate (2010=100) 4/	103.5	101.0	107.4	114.4	...	...
Real effective rate (2010=100) 4/ 5/	106.8	105.8	113.8	121.8	...	...

Sources: Bank of England; IMF's International Finance Statistics; IMF's Information Notic System; HM Treasury; Office for National Statistics; and IMF staff estimates.

1/ ILO unemployment; based on Labor Force Survey data.

2/ The fiscal year begins in April. Data exclude the temporary effects of financial sector interventions. Debt stock data refers to the end of the fiscal year using centered-GDP as a denominator. There is a break in the series from 2014 on, reflecting the reclassification of housing associations as part of the public sector.

3/ In percent of potential output.

4/ Average. An increase denotes an appreciation.

5/ Based on relative consumer prices.

Table 3. United Kingdom: Financial Soundness Indicators, 2008–2015

	2008	2009	2010	2011	2012	2013	2014	2015[2/]
Capital Adequacy								
Basel III common equity Tier 1 capital ratio[1/]	...	...	...	7.2	8.4	10.0	11.3	12.6
Simple leverage ratio[1/]	2.9	4.6	5.0	5.1	5.1	5.6	5.9	6.7
Basel III leverage ratio (2014 proposal)[1/]	...	...	...	...	...	...	4.4	4.8
Credit Risk								
Non-performing Loans Net of Provisions to Capital	8.6	14.8	16.9	16.1	13.9	9.5	5.4	4.5
Non-performing Loans to Total Gross Loans	1.6	3.5	4.0	4.0	3.6	3.1	1.8	1.4
Foreign-Currency-Denominated Loans to Total Loans	61.2	53.9	52.6	58.0	52.9	55.4	56.1	55.0
Spread Between Reference Lending and Deposit Rates[3/]	...	...	225.0	258.0	272.0	291.2	290.0	...
Sectoral Distribution of Total Loans								
Residents	49.5	55.3	52.6	50.6	52.9	55.4	50.9	52.5
Deposit-takers	11.8	16.6	13.2	14.4	14.9	16.3	11.5	12.0
Other Financial Corporations	15.6	15.4	14.4	2.4	12.4	13.3	11.9	12.3
General Government	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nonfinancial Corporations	8.4	8.7	8.0	3.1	7.1	7.1	7.3	7.3
Other Domestic Sectors	13.5	14.4	16.8	30.6	18.5	18.5	20.1	20.6
Nonresidents	50.5	44.7	47.4	49.4	47.1	44.6	49.1	47.5
Geographic Distribution of Total Loans								
Domestic Economy	56.7	60.9	52.6	50.6	52.9	55.4	55.2	52.5
Advanced Economies	36.8	33.2	33.0	32.3	32.4	30.7	32.5	31.4
Other Emerging Market and Developing Countries, including China	6.5	6.0	14.4	17.2	14.6	13.9	16.5	16.2
Africa	1.2	1.2	1.2	1.2	1.2	1.1	1.3	1.3
Central and Eastern Europe	0.4	0.0	0.5	0.3	0.2	0.3	0.7	0.6
Developing Asia, including China	2.2	2.1	3.0	3.5	3.5	4.2	4.7	4.4
Middle East	1.3	1.2	1.3	1.2	1.3	1.2	1.5	1.5
Western Hemisphere	1.3	1.3	1.7	1.7	1.7	1.5	1.7	1.5
Profitability								
Return on Assets	-0.1	0.0	0.3	0.3	0.2	0.2	0.8	0.4
Return on Equity	-2.5	-0.1	6.9	6.1	3.4	4.2	13.9	6.7
Return on assets before tax[1/]	-0.2	0.2	0.4	0.4	0.2	0.3	0.5	0.4
Price-to-book ratio[1/]	64.0	93.0	86.0	57.0	81.0	106.0	96.0	76.0
Interest Margin to Gross Income	53.0	44.1	50.4	44.2	49.3	50.9	48.4	48.9
Non-interest Expenses to Gross Income	65.4	61.2	69.1	61.1	76.1	81.0	64.1	62.3
Trading Income to Total Income	-3.6	17.5	14.2	9.4	9.1	8.9	7.9	12.5
Personnel Expenses to Non-interest Expenses	43.5	44.3	46.7	45.1	42.3	43.9	53.2	54.6
Liquidity								
Liquid Assets to Total Assets (Liquid Asset Ratio)	29.8	20.5	21.0	20.5	22.5	22.7	21.3	20.3
Liquid Assets to Short Term Liabilities	42.3	38.0	37.9	40.9	36.8	35.7	35.7	36.8
Customer Deposits to Total (non-interbank) Loans	94.5	100.8	106.2	108.4	101.2	115.5	117.2	116.5
Loan-to-deposit ratio[1/]	133.4	123.9	114.1	108.9	103.1	99.1	95.9	96.7
Short-term wholesale funding ratio[1/]	25.9	19.7	19.6	18.8	16.4	14.1	12.5	10.4
Average senior CDS spread[1/]	...	...	...	2.7	1.5	1.0	0.6	0.8
Foreign Currency Denominated Liabilities to Total Liabilities	73.8	66.8	67.4	69.3	15.8	16.1	64.8	61.3
FX, Equity, and Derivative Risk								
Net Open Position in Foreign Exchange to Capital	29.2	1.0	5.6	3.3	-6.1	-10.5	8.3	0.6
Net Open Position in Equities to Capital	52.6	85.9	82.1	158.0	123.4	120.8	73.6	68.1
Gross Asset Position in Financial Derivatives to Capital	937.3	705.2	721.9	842.8	684.1	539.1	692.7	517.1
Gross Liability Position in Financial Derivatives to Capital	924.8	695.0	717.5	842.7	683.3	536.3	639.8	513.1

Sources: BoE FPC Core Indicators, IMF Financial Soundness Indicators.

1/ The coverage of banks is as defined in the BoE's 2015 December Financial Stability Report.

2/ 2015 latest available data.

3/ For 2014, the value is as of Q2 2014.

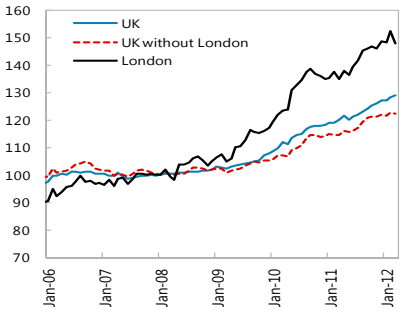
Table 4. United Kingdom: Risk Assessment Matrix

Source of risk	Overall Level of Concern	
	Likelihood of severe realization in 1–3 years	**Expected impact on financial stability**
British voters elect to leave the EU	***High***	***High***
	• Opinion polls suggest a close outcome.	• A decision to leave the EU, with subsequent renegotiation of cross-border trade, financial and migration relationships could cause high uncertainty, triggering high volatility with potential contagion to financial markets.
A sharp downturn in China and other EMs leading to a substantial dampening of global growth	***Medium***	***High***
	• A hard-landing in China would contribute to a global slowdown and re-ignite volatility in EMs. • Weak demand from China would dampen activity in EMs, commodity exporters, and economies with large external financial needs. Lower demand from EMs would lead to a structural decline in global trade. • The global downturn would impact the U.K. through falls in export demand, financial linkages, and confidence effects.	• A global recession would adversely affect bank earnings. Borrowers' creditworthiness would be affected, leading to greater than expected defaults, write-offs, and loan impairment charges. • The adverse effect on net income from a sharp slowdown could be amplified by large currency fluctuations and disruptions in capital flows. • Major U.K. international banks would be particularly exposed to a global recession, especially in Asia.
A premature and/or disorderly steepening of the yield curve in the U.K., triggering abrupt asset price corrections and market dislocations	***High***	***Medium***
	• The trigger could be related to various sources, including an unexpected or faster-than-anticipated monetary policy normalization in the U.S., a reassessment of fundamental risks amid vulnerabilities in EMs, low market liquidity or a resurgence of the euro area sovereign debt crisis. • Over the past few years, there has been a gradual reduction in average trade sizes, turnover, and market depth of some corporate and sovereign bond markets, with short-lived significant market corrections.	• Bank earnings and capital would be eroded due to reassessments of underlying fundamentals, lack of market liquidity driving valuations lower, and decompression of risk premia. • Banks' ability to borrow from other financial institutions or engage in funding transactions would be hampered by market disruptions. • U.K. banks have started to exit low profitability businesses, including some of their global investment banking activities. Securities held for trading by the large U.K. banks at end-2014 were almost 35 percent lower than in 2007. Banks have reduced reliance on wholesale funding.
A large correction in the U.K. property markets, including both residential and commercial real estate segments	***Medium***	***Medium***
	• A correction in certain segments of the property market where there is some evidence of overheating, notably buy-to-let and commercial real estate, could spill over to other segments. • An unanticipated house price correction would generate a domestic demand-driven economic contraction.	• The banking system would be affected by a generalized and substantial fall in property prices in the U.K. A fall in real estate prices would lead to higher impairment, with negative impact on capital as loss given default (LGD) rates increase. • In addition, higher interest rates or increased unemployment could lead to higher impairments. • Recent measures have reduced the debt burden on the most highly-indebted households and boosted bank resilience.

Box 2. Recent Developments in the U.K. Property Market

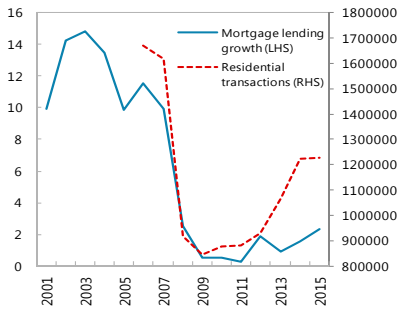
U.K. residential property prices reflect mostly long-standing supply-demand imbalances. While annual house-price growth slowed substantially between mid-2014 and mid-2015, it has accelerated again more recently, outpacing the growth of nominal GDP. This price growth largely reflects the realignment of relative prices of housing in light of tight supply constraints and growing demand. There is little evidence of a credit-fueled boom: the growth of mortgage lending and the number of housing transactions still remain well below their pre-crisis levels.

House Price Levels
(2008=100)



Sources: Haver Analytics and Fund Staff Calculations.

Mortgage Lending Growth and Residential Transactions
(Mortgage Growth in Percent per Year)

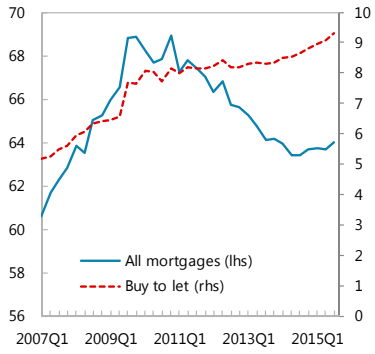


Sources: Bank of England and HM Revenue and Customs.

At the same time, two particular segments of the property market show signs of overheating.

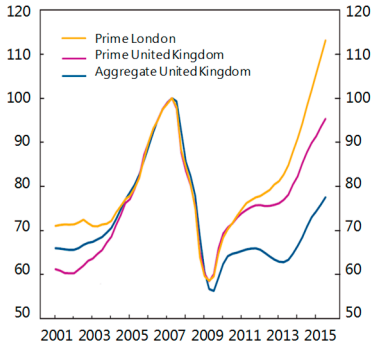
- Lending in the ***buy-to-let*** sector has grown from 4 percent of mortgage stock in 2002 to 16 percent in mid-2015. In view of this, the FPC requested powers of direction over this sector. As the FPC already has these powers over the buy-to-own market, this would level the regulatory playing field for residential mortgages.

Outstanding Mortgage Balances
(In percent of GDP)



Sources: Council of Mortgage Lenders and Fund staff calculations.

U.K.: Commercial Real Estate Prices
(Indices: 2007:Q2 = 100)



Sources: MSCI and Bank of England.

- The ***commercial real estate*** (CRE) market, has also been buoyant, with annual price growth around 10 percent as of mid-2015, although it has slowed somewhat in early 2016. The prices of prime U.K.—and especially prime London—CRE properties have grown rapidly since 2013. Although a recent analysis by the BoE shows that the overvaluation of CRE properties is limited to certain prime locations, continued rapid price growth could further reduce rental yields and increase the probability of price reversals. Credit risks to domestic banks from a CRE price reversal are reduced in comparison to the run-up to the 2008 crisis: U.K. banks have reduced their commercial real estate exposure, and international investors now account for more than half of CRE financing flows. But the sector can pose a macroeconomic risk since the majority of small and medium firms rely on CRE as collateral.

5. The authorities have also identified cyber risk as a potential financial stability risk and are at the forefront of global initiatives to mitigate it. Cyber risk, like other operational risks, was not covered by the FSAP. But the BoE has emphasized the potential for cyber crime to result in severe disruptions of the operations of major financial firms, possibly threatening the stability of the system as a whole, and the authorities have taken a number of steps to mitigate it (Box 3).

6. Last but not least, the uncertainties associated with the possibility of British exit from the EU weigh heavily on the outlook. A vote in favor of leaving would usher in a transitional period of heightened macroeconomic uncertainty and financial market volatility during the negotiation of the terms of British exit, which could take years. This could have real economic costs and complicate macroeconomic policy-making. Moreover, the shape of the eventual exit deal is highly uncertain, and there are elements of it that would be critical for the long-term strength of the British financial sector, its contribution to the local economy, and its global standing (Appendix II).

B. Financial Sector Resilience

Banks

7. The resilience of the U.K. banks was assessed by a battery of stress tests conducted by both the BoE and the FSAP team.

- The *solvency stress tests* reported here cover the seven major banks and building societies included in the BoE concurrent stress test exercise on a global consolidated group basis,[1] representing over 80 percent of PRA-regulated banks' lending to the economy. The FSAP solvency stress test is based on end-2015 data and covers 2016-20. The BoE concurrent stress test, published in December 2015, is based on end-2014 data and covers 2015-19.

- *Liquidity stress tests* cover ten U.K. firms, including the seven assessed in the solvency tests plus three large subsidiaries of major foreign banks. The tests are based on end-December 2015 data and were performed by the BoE using scenarios provided by the FSAP team.

8. Both sets of solvency stress tests focus on exploring vulnerabilities of U.K. banks to international shocks. The 2015 BoE scenario focuses on a synchronized global downturn and a correction in market risk appetite affecting mainly Asia and the euro area.[2] The FSAP scenario features a broad-based dislocation in financial markets, with jumps in yield curves and spillovers to vulnerable emerging markets. This scenario, which could be triggered *inter alia* by a faster-than-anticipated monetary policy normalization in the U.S., explores in some detail the impact from valuation losses from shocks in credit spreads and term premia. Both scenarios have a major impact on the U.K. economy, including on activity, employment, and prices of housing and financial assets, which in turn have knock-on effects on bank balance sheets. Although the severity of the two scenarios as measured by domestic GDP turned out to be similar, the initial trigger,

[1] Except for Santander U.K. plc, whose parent is supervised by a foreign authority.

[2] This followed the 2014 BoE stress tests, which emphasized domestic risks, particularly those in the property market.

persistence of the shocks, and transmission channels are very different, allowing the tests to assess different facets of resilience (Box 4, Appendix III, and the accompanying Technical Note on bank stress tests provide the details). The risks to the financial sector from Brexit, though significant (Appendix II), are inherently difficult to quantify and have not been incorporated into a specific stress test scenario.

Box 3. Cyber Risk and Financial Stability in the U.K.

Cyber risks are a threat to financial stability. Technology failures and cyber attacks can threaten financial stability by disrupting the provision of critical functions from the financial system to the real economy. As with exposures to other forms of operational risk, firms cannot protect against technological failures through capital and liquidity buffers, but require other lines of defense.

Several factors compound the risks associated with cyber security and information technology compared to other forms of operational risk.

- The increasing reliance on IT systems and networks across the financial sector means that financial institutions face more potential points of operational failure. Similarly, firms may face significant increases in complexity arising from system incompatibilities or rapid obsolescence.
- Cyber risks can be amplified by interconnectedness. A technological disruption at a large, interconnected firm or at a critical technology vendor can lead to disruption or financial losses for a large number of counterparties.
- Cyber crime risks may be difficult to counter. Unlike some forms of operational risk, cyber attacks represent deliberate assaults on a firm's infrastructure. Financial gain may not be the sole motivation: the goal may be to extract information, disrupt services, or serve as a means of protest.
- Finally, cyber attacks are rapidly evolving and readily scalable, detection is not easy, the capacity to recover may be threatened, and attacks may originate anywhere around the globe.

Awareness of this risk has risen in recent years, both globally and within the U.K. At the international level, many institutions, including the Financial Stability Board (FSB), the Bank for International Settlements (BIS), and International Organization of Securities Commissions (IOSCO), view cyber security as a top financial stability concern. In the U.K., the government has identified cyber attacks as a top priority for action.

To tackle this threat, several initiatives have been implemented and more work is underway.

- Following an FPC recommendation in June 2013, two diagnostic exercises were conducted to assess the vulnerability of the U.K. financial sector to a cyber attack: a cyber risk management questionnaire and a bespoke voluntary vulnerability testing of firm's defensive capabilities, called CBEST. The latter was intended to improve the authorities' understanding of individual firms' preparedness to address cyber security concerns by employing penetration testing. In 2015, the FPC recommended that the BoE, the PRA, and the FCA work with firms at the core of the financial system to ensure that they complete CBEST tests and adopt individual cyber resilience action plans. Such tests should become one component of regular cyber resilience assessment within the U.K. financial system.
- The FPC has recognized that more work is needed, including on promoting recovery capabilities and effective governance. It has therefore endorsed a work plan to develop a clear set of capabilities that will enhance cyber resilience of the U.K. financial system and improve the capability of the sector to recover from a major cyber attack. The program will require coordination with international authorities. In this context, in November 2015, U.K. and U.S. authorities conducted a joint exercise with major global financial firms to enhance their and the authorities' cooperation and ability to respond to cyber attacks.

Box 4. The Bank of England and the FSAP Solvency Stress Tests

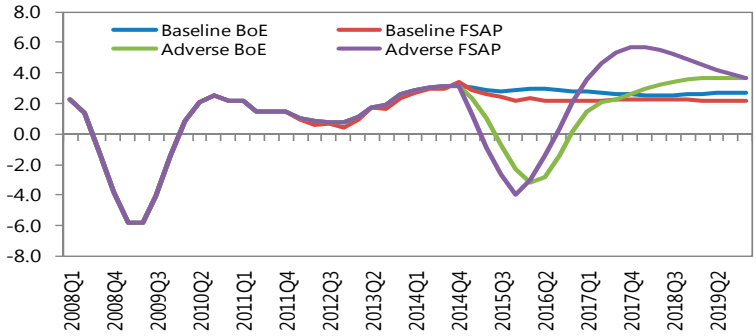
The BoE and the FSAP solvency stress tests share key similarities:

- Both incorporate a high degree of granularity to capture stress from international exposures. Key variables in 15 jurisdictions are modeled separately to assess the impact of all material exposures of U.K. banks. Under the BoE stress test, credit risk exposures in all jurisdictions are assessed.
- Both scenarios incorporate a comparable impact on U.K. GDP, equivalent to a 2.1 standard deviation shock on two-year cumulative real GDP growth during the first two years of the test horizon.
- Both are based on a dynamic balance sheet assumption, whereby banks are restricted in their ability to deleverage. This ensures that they would be able to support the real economy in the stress scenario.
- Both incorporate a traded risk scenario, which is linked to the macroeconomic scenario.
- Both use the same Basel III hurdle rate for risk-weighted capital and a similar leverage hurdle ratio.

At the same time, the BoE and the FSAP stress tests differ in a number of ways:

- *Approach*: The BoE uses a hybrid approach, challenging the banks' bottom-up submissions and synthesizing outputs of different models. The FSAP test is based on a single top-down (TD) model. The two tests use different methodologies to calculate funding stress, traded risk losses, and stressed RWA.
- *Scenarios*: The BoE scenario is characterized by long-lived shocks, featuring a U-shape in key variables; the FSAP scenario incorporates a V-shape shock, with a speedier recovery for key variables.
- *Risk coverage*: In addition to macroeconomic and traded risk elements, the BoE stress scenario incorporates stressed projections for potential misconduct costs, as well as pension risk. The FSAP approach does not explicitly project misconduct costs, but the methodology used to project expenses means that the results incorporate a material impact from misconduct. The traded risk component of the FSAP scenario is focused on market risk losses in the trading book and valuation losses from available for sale (AFS) and fair value option (FVO) in the banking book, whereas the BoE scenario includes a broader set of risk factors, counterparty credit risk losses, stressed credit valuation adjustment (CVA), and stressed prudent valuation adjustment (PVA).4
- *Management actions*: The BoE projects capital ratios before and after the impact of strategic management actions and additional Tier 1 conversion. The FSAP test excludes management actions. For consistency, the comparison of the results of the two tests is made on a pre-management action basis.

U.K. Real GDP Growth
(In Percent)



Source: staff calculations. To facilitate comparisons, projections of the FSAP scenario have been rolled back by a year.

9. The results suggest that the major U.K. banks would be resilient to a global economic downturn and to broad-based corrections in financial markets. In both tests, the global shocks have a major impact on bank capitalization, but all covered banks remain above regulatory minima.

- In the FSAP stress scenario, the aggregate Core Equity Tier 1 (CET1) ratio of the covered banks falls by 3.9 percentage points (from 12.6 percent at end-2015 to a low point of 8.7 percent in 2017) before starting to recover. The Tier 1 leverage ratio[3] falls from 5.3 percent to 4.0 percent in 2017 (Figure 1).

- In the BoE stress scenario, on a pre-management action basis, the aggregate CET1 ratio is reduced by 4.0 percentage points (from 11.2 percent at end-2014 to a low point of 7.2 percent in 2016). The PRA Tier 1 leverage ratio falls to a low of 3.4 percent (Figure 2).

- Not surprisingly, given the focus of both scenarios, international banks appear relatively more vulnerable than U.K. domestic banks. In a global downturn, internationally active banks are hit by larger impairment charges and larger mark-to-market losses in their securities portfolio. They are also more affected by corrections in asset prices and by counterparty credit risk, as they are more active in financial markets and more interconnected. The CET1 ratio of major U.K. international banks in the FSAP test decreases by 4.3 percentage points at the peak of the stress, compared to 2.6 percentage points for U.K. domestic banks. This is similar to BoE's results, showing decreasing CET1 ratios of U.K. international banks by 3.7 percentage points, compared to 2.6 percentage points for U.K. domestic banks.[4]

10. Liquidity stress tests show that the largest U.K. banks could withstand sudden, sizeable withdrawals of funding. A suite of liquidity stress tests were carried out by the BoE on scenarios calibrated by the FSAP team on ten large banks, including three large U.K. subsidiaries of major foreign investment banks, covering over 80 percent of total sector assets. The tests included (i) Liquidity Coverage Ratio (LCR) tests run on three different scenarios: a Basel III LCR scenario; a "retail stress" scenario, with deposit runoff parameters exceeding the peak stress observed during the 2007 Northern Rock run; and a "wholesale stress" scenario, replicating the stress in wholesale markets observed during the global financial crisis; (ii) two implied cash-flow tests simulating a gradual outflow of funding over 5 consecutive days and over a 30-day horizon, with more severe assumptions than the money market conditions observed during the global financial crisis; and (iii) a maturity mismatch test, calibrated on six different maturity buckets, ranging from less than one week to over one year. The details are presented in Appendix III and the accompanying Technical Note. The results show that:

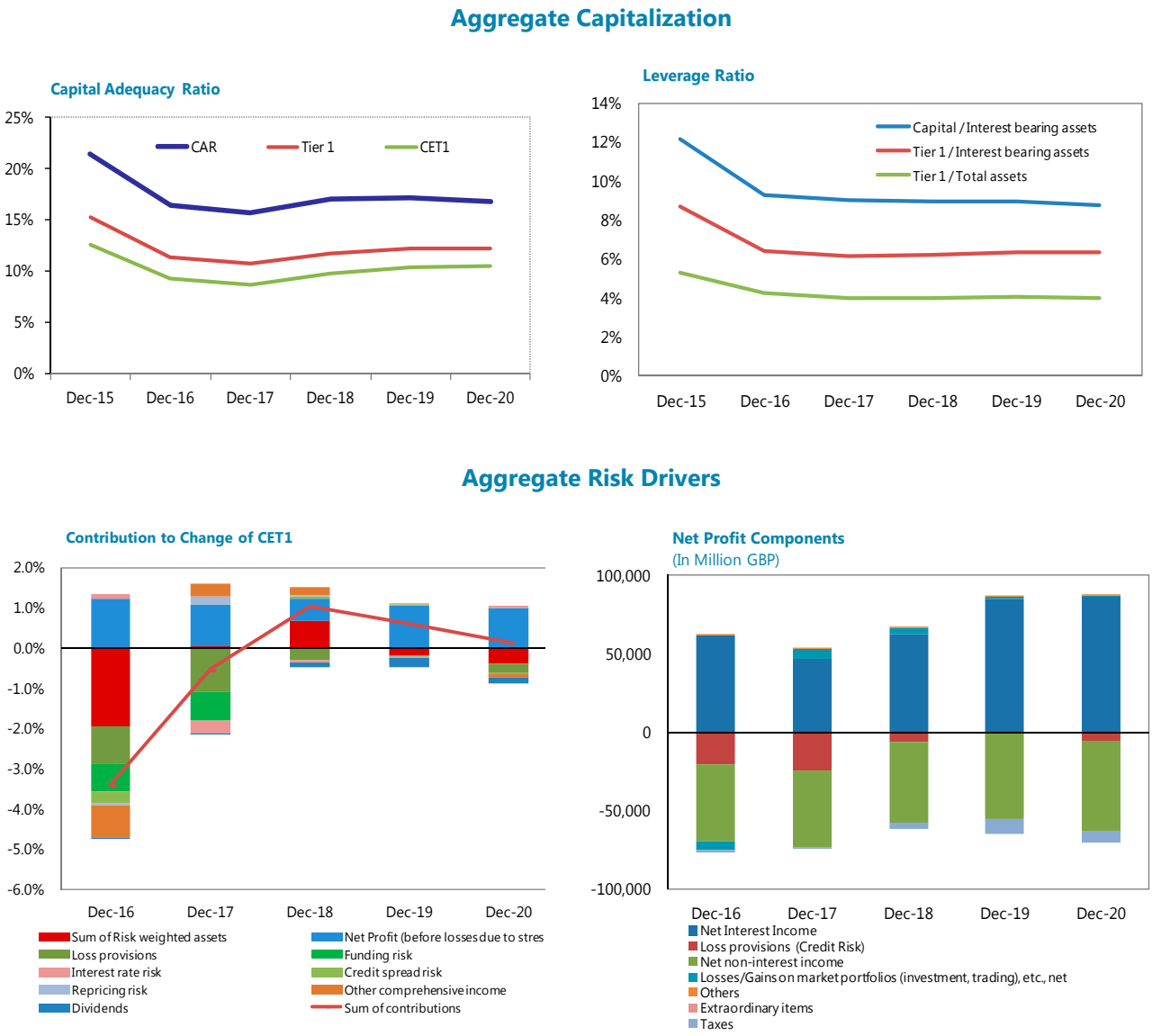
- All banks pass the LCR stress test for all three scenarios under the current LCR hurdle rate requirement in the U.K.

[3] Defined as Tier 1 capital (end-point definition for CET1 and Basel III transitional definition for Additional Tier 1) relative to total assets.

[4] In contrast to the 2014 BoE stress test, in which domestic banks were more severely affected.

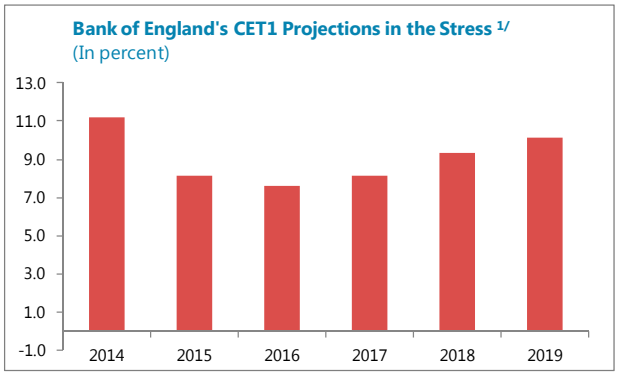
- All banks pass the 5-day and 30-day cash flow tests.
- Five of the ten banks show a shortfall in the one-to-four week bucket in the maturity mismatch analysis. This is driven by the extremely severe assumptions that all securities-related flows, including U.K. gilts, can only be realized when the securities mature.

Figure 1. United Kingdom: FSAP Stress Test Results

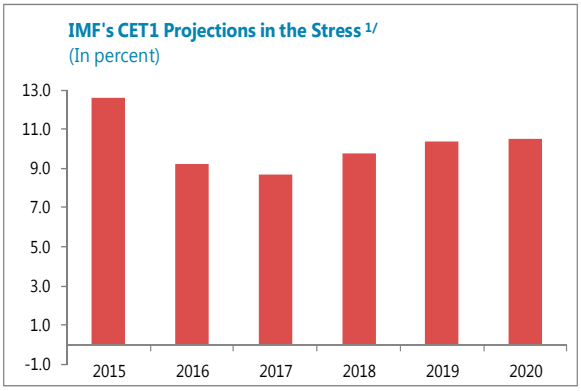


Source: IMF staff calculations.

Figure 2. United Kingdom: FSAP and BoE Stress Test Results



Source: Bank of England.
[1] The CET1 capital ratio is defined as CET1 capital expressed as a percentage of RWAs, where these are defined in line PRA Rulebook. The CET1 ratio is reported after the impact of banks' management actions.



Sources: IMF Staff calculations.
[1] The CET1 capital ratio is defined as CET1 capital expressed as a percentage of RWAs, where these are defined in line with the PRA Rulebook.

Nonbank sectors

11. A number of assessments, using different analytical approaches, suggest that the key nonbank sectors of the U.K. financial system are also resilient to shocks. Though not necessarily as detailed or comprehensive as the bank stress tests, separate analyses by the BoE, PRA, FCA, EU financial authorities, and the FSAP paint a relatively reassuring picture of the underlying strength and resilience of U.K. insurers, asset managers, and CCPs. In each of these areas, however, there is scope to improve the set of available data, analytical models, and supervisory risk monitoring tools.

12. U.K. *insurance firms* have made efforts to adapt to a very challenging environment but vulnerabilities remain, requiring close supervisory oversight in the period ahead.

- The low yield environment has eroded returns, but life insurers have largely maintained the rating of their investments, with only a small shift to lower-rated bonds. They have tightened their asset-liability duration matching, lowered the guarantees offered, and moved into unit-linked products, where the policyholder carries the return risk. Nonlife insurers, facing strong competition, have also improved results and reduced underwriting losses. Partly as a result, separate analyses by the BoE and EIOPA in 2013 and 2014 suggest that U.K. insurers are resilient to shocks, notably to sharp upwards snapbacks in long-term interest rates (similar to the hypothetical shock in the bank stress tests by the FSAP).

- However, as the attractiveness of life products diminishes and the low yield environment persists, the search for new business creates new risks. And while Solvency II—implemented this year—has increased the risk sensitivity of the prudential framework, its effectiveness remains untested. In the life sector, the use of the volatility and matching adjustments, in particular, requires close

monitoring by supervisors. In nonlife, the one-year horizon of the Solvency II framework may be insufficient for some of the risks that are insured in the London market. The PRA should remain vigilant, especially in the period ahead, and mitigate some of these shortcomings by conducting multi-year stress testing; monitoring closely the Solvency II transitional measures and developing a framework of steps that could be taken in case of non-compliance; and, in collaboration with the FPC, assessing the extent to which macroprudential tools could be useful in managing cyclical risks for insurers.

13. In the *asset management industry*, there is some evidence that U.K. sterling corporate bond (SCB) funds would not amplify contagion in the event of a market shock. Attention has focused on corporate bond funds because these are generally considered the most vulnerable to large-scale investor redemptions. While encouraging, however, this finding is based on a partial assessment.

- Analysis by the BoE and the FCA shows that monthly outflows from a sample of SCB funds would need to exceed the highest level ever observed in order for sales of SCBs to begin to add to market disruption.[5]

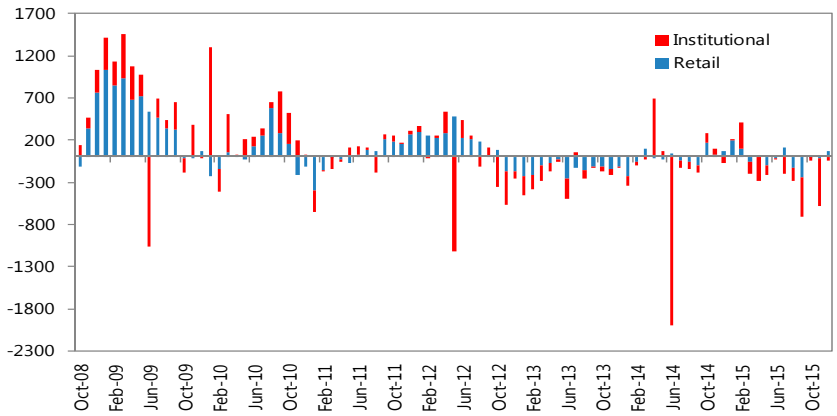
- In contrast to many other jurisdictions, U.K. funds are able to apply various pricing tools, such as swing pricing, aimed at addressing the "first-mover advantage" of redeeming investors. Such tools can be expected to mitigate the risk of spillovers to the rest of the system.

- The authorities are in the process of upgrading their analytical toolkit by formulating comprehensive stress tests for the asset management sector as a whole. These tests should cover a broad range of asset classes; analyze redemptions and the associated market impact under stressed market conditions; and account for fund managers' liquidity risk management practices. In addition, these stress tests would benefit from differentiated assumptions for the investment behavior and redemption profiles of different investors, i.e., retail and institutional. Evidence for SCB funds indicates that net flows of retail investors have in general been more stable than those of institutional investors (Figure 3). This may result from asset allocation shifts triggered by the risk management protocols of institutional investors and is not necessarily related to market fragilities.

[5] These inferences were based on normal market conditions.

Figure 3. United Kingdom: Net Flows into SCB Funds

(In million GBP)



Source: Investment Association, FCA.
Note: The date refers to U.K.-authorized unit trusts and open-ended investment funds.

14. The risk management and resilience of *CCPs* have been strengthened in recent years.

- At an international level, requirements for CCPs have been strengthened through the adoption and implementation of the CPSS-IOSCO Principles for Financial Market Infrastructures (PFMI) and the implementation of the European Market Infrastructure Regulation (EMIR). At a national level, the BoE took over the supervisory responsibilities for CCPs and strengthened their compliance with PFMI requirements. However, given that the PFMI do not necessarily prescribe detailed requirements for all risks, the U.K. authorities are encouraged to continue leading the international efforts to increase the robustness of CCPs, eventually adopting standards beyond the PFMI.

- Reflecting this progress, the recent EU-wide stress test exercise shows that U.K. CCPs could withstand an extreme but plausible market scenario. The stress tests, conducted by the European Securities and Markets Authority (ESMA) and published in April 2016, show that U.K. CCPs would be able to cover losses from the default of the top two clearing members with their pre-funded resources. Here, too, however, the analysis does not capture fully the interconnectedness between CCPs, financial institutions, and markets, which could be important shock transmission pathways.

C. Systemic Risk and Spillovers

15. The assessment of systemic risk and resilience in a financial system as complex as that in the U.K. should go beyond the assessment of individual sectors. Analyzing the resilience of individual sectors, as in the previous section, is necessary but not sufficient. Structural market changes are creating new channels of interconnectedness across firms and sectors that can not only transmit shocks across firms and sectors but also amplify them. Therefore, the analysis of interconnectedness and spillovers at various levels (i.e., between firms and between sectors) is an essential part of a comprehensive assessment of systemic resilience.

16. The FSAP used a cross-sector model to complement the sector-by-sector approaches considered in the previous section. There are various models that analyze interconnectedness and systemic risk. The framework employed here characterizes the financial system as a portfolio of entities, spanning bank and nonbank sectors.[6] The particular model specification, presented in the accompanying Technical Note on systemic risk analysis, incorporates five banks and four life insurance companies during the period August 2007 to March 2016 using market price data. Though limited, this model still highlights some aspects of the evolution of systemic risk that are not captured by sector-specific approaches.[7] Results were consistent when cross-checked with alternative frameworks.[8]

- The overall systemic risk indicator calculated by this model shows a decline to pre-crisis levels, about 40 percent below its peak value (Figure 4). This decline is in line with other measures of systemic risk, e.g., SRISK, which currently stands at around half of its crisis level. It reflects to a significant degree improved sector-specific resilience, consistent with the findings of sector-by-sector approaches.

- Declining distress dependence among banks is an important facet of banking sector resilience highlighted by this model. The probability that distress in any one bank spills over to the rest of the banking sector is currently much lower than the peaks reached around the global financial crisis, as well as the euro area crisis (Figure 5). This, of course, reflects improved capital, leverage, and liquidity in individual banks, as already established in the previous section; but it also reflects a sizeable decline in direct interconnectedness among individual bank balance sheets (Figure 6).

- Despite increased individual sector resilience, the likelihood of distress spillovers between banks and life insurers has not abated significantly over the same period. There is no evident downward trend in the probability that distress in the insurance sector may spill over to the banking sector (Figure 7). This may tentatively, and in part, be the result of convergence between business models of the two sectors, e.g., as insurers increasingly engage in direct lending activities to households and the corporate sector.

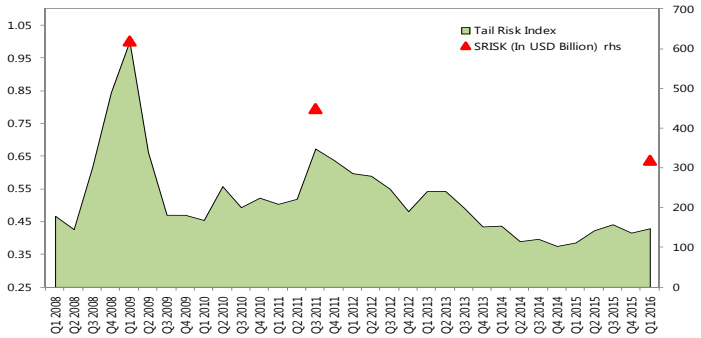
17. Going beyond this specific model, the FSAP discussed how structural market changes, some precipitated by regulatory changes, may affect the likelihood and channels of spillovers across sectors.

[6] Segoviano M., and Goodhart, C., 2009. "Banking Stability Measures," IMF Working Paper No. 09/4, International Monetary Fund; and Segoviano, M., Cortes, F., Lidner, P., Malik, S. Forthcoming 2016. "Multisector Framework for Surveillance of Systemic Risk and Interconnectedness (SyRIN)." IMF Working Paper, International Monetary Fund.

[7] For a discussion of the strengths and limitations of systemic risk models using market price data see Demekas, D., 2016, "Designing Effective Macropudential Stress Tests: Progress So Far and the Way Forward," IMF Working Paper No. 15/146, International Monetary Fund.

[8] For example SRISK (Acharya, V., R. Engle and M. Richardson, 2012. "Capital Shortfall: A New Approach to Ranking and Regulating Systemic Risks," *American Economic Review*, 102, 3, 59–64); and CoVaR (Adrian, T. and Brunnermeier, M. K., 2016. "CoVaR," *American Economic Review,* forthcoming).

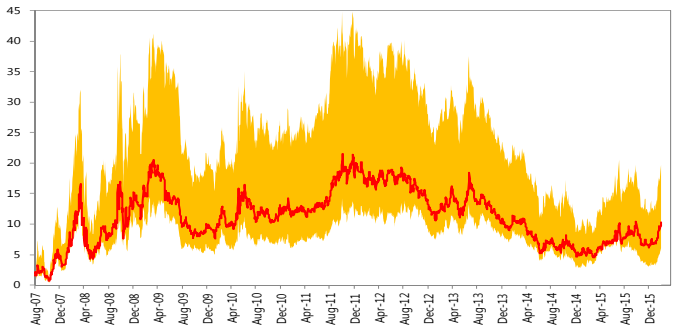
Figure 4. United Kingdom: Systemic Risk Measure



Sources: Bloomberg, Bankscope, V-Lab, and IMF staff estimates.
Note: The Tail Risk Index measures the expected shortfall from the system's simulated portfolio loss distribution normalized by the historical maximum reached during the global financial crisis. SRISK measures the expected capital shortfall of the financial system, if equity values were to decline to levels seen during the crisis.

Figure 5. United Kingdom: Distress Dependence Among Banks

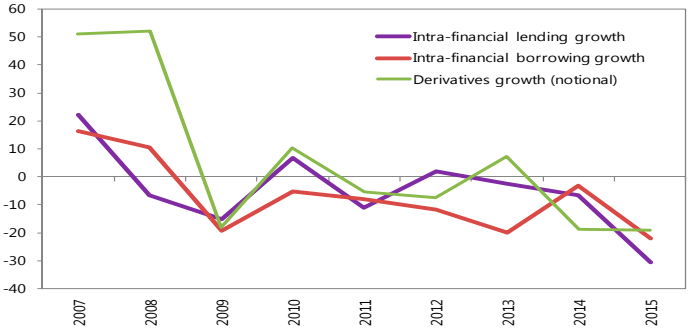
(In percent)



Sources: Bloomberg, Bankscope, and IMF staff estimates.
Note: The swathe represents heterogeneity across banks in the conditional probability of banking sector distress given distress in any one bank. The red line tracks the average of this measure across banks.

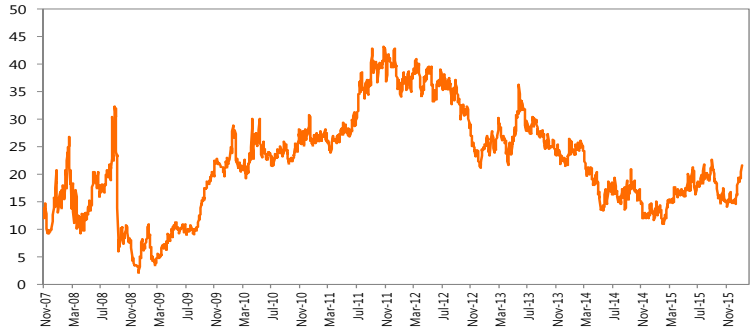
Figure 6. United Kingdom: Banking Sector Balance Sheet Interconnectedness

(In percent, year-on-year)



Source: Bank of England.

Figure 7. United Kingdom: Distress Dependence Between Banks and Insurers
(In percent)



Sources: Bloomberg, Bankscope, and IMF staff estimates.

- Evidence suggests some hedge funds are increasingly attempting to supplant functions thus far provided by banks in the repo market, reflecting banks' diminished participation. Distress in one hedge fund may spread network-wide.

- Links between insurers and pension funds are growing through rising longevity swaps, and new links between insurers, hedge funds, and pension funds are developing as a result of their participation in the Alternative Capital[9] market.

- Liquidity in some dealer-intermediated markets, such as the corporate bond market, may have become more fragile due to regulatory constraints impacting market-making activity (Box 5). While the new regulatory regime may result in improved sectoral resilience, it may also cause higher volatility. Higher volatility *per se* does not represent increased systemic risk, but spikes in an environment of low liquidity could trigger adverse feedback loops. The apparent resilience of the U.K. asset management sector, notably SCB funds—discussed in the previous section—would, in theory, help limit such spillovers. However, the partial and tentative nature of that assessment underscores the need for continuous monitoring of trends in market liquidity, as well as more in-depth analysis of its potential behavior during periods of market stress.

18. The likelihood of cross-border spillovers has declined, reflecting the reduction of foreign exposures of U.K. banks. After reaching elevated levels around the global financial crisis and the euro area crisis, the likelihood of distress spillovers (i.e., the probability that distress in one country may spill over to the other) is currently relatively subdued. Needless to say, macroeconomic linkages may still create cross-border spillovers with effects on the financial sector (Figure 8).

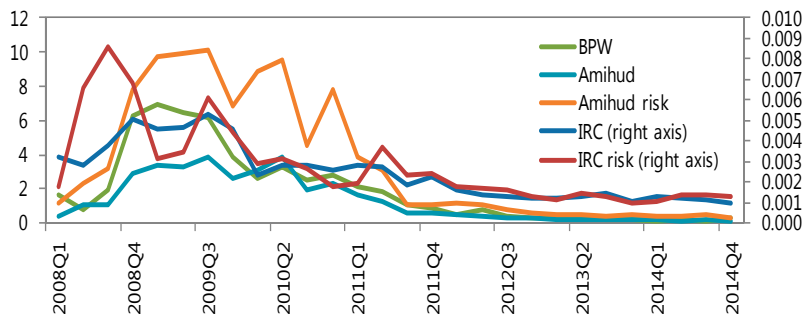
[9] Alternative Capital is a term used to describe a mechanism that allows capital markets to invest in specific catastrophe risk insurance (Bank of England, *Financial Stability Report*, December 2015).

Box 5. Market Liquidity: Structural Shifts and Potential Risks

Liquidity is essential for the orderly functioning of financial markets but can be affected by regulation and technology. Recent episodes of high volatility in some markets, albeit short-lived, raised concerns about the increasing fragility of market liquidity. Regulation implemented to safeguard the safety of core intermediaries, while necessary, has resulted in these entities rolling back market-making activities, thus impacting market liquidity.

While some metrics indicate stable liquidity in the SCB market in spite of declines in dealer inventories, this does not imply that liquidity will be continuously available, especially in cases of market stress. Analysis by the FCA[1] suggests that while U.K. primary dealers' inventories held on trading books have declined (from GBP 400 billion in mid-2008 to GBP 250 billion at end-2014), standard measures of liquidity, e.g., Amihud, round-trip costs, turnover ratio, and magnitude of price reversals, have remained stable since end-2011. Transaction volumes have also been largely unaffected. Higher frequency analysis using these metrics shows no meaningful reactions to global shocks, such as the 2012 'taper tantrum.' However, there is some evidence that financial markets are becoming increasingly sensitive to news, thus raising the probability of more frequent volatility spikes.[2] Higher volatility does not represent increased systemic risk *per se*, but such spikes in an environment of low liquidity could be amplified, leading to sharp corrections in liquidity premia and triggering large-scale redemptions from open-ended funds and other investors. The negative feedback loop thus created could cause liquidity to deteriorate rapidly, with potentially destabilizing effects.

Measures of Liquidity
(Index units)

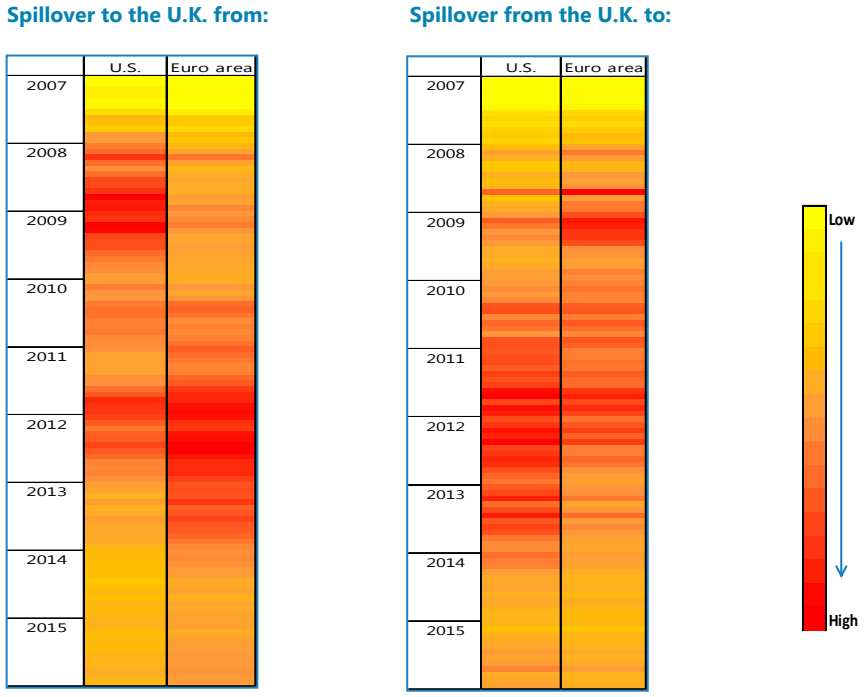


Sources: FCA, and Aquilina and Suntheim (2016).
Note: Lower values of all the measures imply a more liquid market. All the measures are quarterly averages. IRC: imputed round-trip costs. BPW: Bao, Pan and Wang (2011) measure of price reversals. 'Amihud risk' and 'IRC risk' measures refer to standard deviations in daily underlying liquidity measures. These indend to account for the fact that investors may not only care about the level of liquidity at a given point in time, but also about its variability.

The comprehensive stress tests for the asset management sector planned by the authorities would be an important tool to assess and monitor these risks going forward. The analysis by the BoE and FCA suggesting that SCB funds are resilient to sudden large redemptions and would thus not act as amplifiers in a market shock is encouraging. But as discussed in the previous section, the analytical toolkit underpinning this finding needs to be expanded and improved, along the lines planned by the authorities.

[1] Aquilina, M. and F. Suntheim, "Liquidity in the U.K. Corporate Bond Markets: Evidence from Trade Data," Financial Conduct Authority Occasional Paper 14, March 2016.
[2] Bank of England, *Financial Stability Report*, July 2015.

Figure 8. United Kingdom: Likelihood of Cross Border Distress Spillovers—Banking Sector



Source: Bank of England, Office of National Statistics, Bloomberg, Bankscope, and IMF staff estimates.
Note: The likelihood of cross border spillovers of distress from the U.K. to U.S. and euro area banking sectors is currently subdued relative to crisis periods. After reaching elevated levels around the GFC and euro area crisis, the likelihood of distress spillovers as depicted in the heat map below, is currently within relatively subdued range relative to historical crisis periods.

19. In addition to cross-border spillovers across financial firms and sectors, the U.K. authorities should be aware of the potential spillovers from their financial sector policies to other countries. Policy spillovers are very hard to estimate and even harder to predict ahead of specific policy measures, driven by real-world events and often implemented under uncertainty. But the size and global importance of the U.K. financial sector means that policies intended to safeguard its resilience may have unintended consequences on other financial sectors. Appendix IV presents some staff estimates of the cross-border impact of changes in the U.K. countercyclical capital buffer (CCB). The results suggest that even if the policy spillovers are low, their impact may be concentrated in a small number of countries. It should be emphasized, however, that these estimates of negative spillovers ignore the positive impact of these measures on the resilience of the U.K. financial sector which, in turn, has benefits for the global system.

RISK MONITORING AND MITIGATION

20. A major wave of financial sector reforms has fundamentally re-shaped the U.K. regulatory landscape since the crisis. Some reforms were aimed at enhancing the resilience of the financial system and strengthening its oversight, thereby lowering the probability of failures, while others were aimed at lowering the cost of failures and safeguarding the taxpayer. These reforms are aligned with the global regulatory reform agenda, where the U.K. has played a leading role, and were complemented

by steps to enhance the governance of financial firms—a crucial step for restoring the confidence of the British public to the financial system. These reforms are well established—many are embedded in EU Directives and Regulations—although key components will require more time to be fully implemented.

A. Macroprudential Policy Framework

21. The reforms placed financial stability at the center of the institutional framework. Roles and responsibilities are clearly defined, powers have been expanded, accountability is firmly established, and substantial progress has been made toward an effective operational framework (for details, see accompanying Technical Note).

- The BoE has been given a financial stability mandate, centered on the FPC. The FPC's mandate is to identify, monitor, and take action to mitigate systemic risk. The framework provides a number of channels to promote the cooperation between the FPC and the Treasury, while safeguarding the FPC's independence.

- Legislation grants the FPC the power to make recommendations, including to HMT, on the perimeter of regulation and the macroprudential toolkit; and on a comply-or-explain basis to the microprudential regulators. The FPC also has powers of direction over specific macroprudential tools that are prescribed by HMT (and approved by Parliament). Information collection powers and data sharing provisions are adequate.

- Accountability is ensured by a broad range of required communication tools, inquiries by the Treasury Committee of Parliament, and reviews by the Oversight Committee (BoE).

- The framework provides mechanisms to foster coordination across different agencies whose actions have a material impact on financial stability. The heads of the PRA and the FCA are members of the FPC and these agencies' mandates are aligned with the BoE's stability goal.

- The FPC has established a process for identifying systemic risk and mapping this into policy action. Risk assessment is conducted as a regular (quarterly) surveillance process, drawing on a broad range of indicators, market intelligence, supervisory insights, and staff analysis. An annual dedicated discussion on the regulatory perimeter has been established, and work is underway to develop a better understanding (and enhance the monitoring framework) of risks beyond the banking sector. Direction powers have been established over tools that mainly target risks from excessive leverage and credit growth (including tools going beyond Basel III).[10] The FPC has requested powers of direction for buy-to-let lending and will continue to re-assess its need for further tools as risks evolve. For managing liquidity and structural risks, the FPC relies mainly on its broad powers of recommendation.

[10] To date, these tools encompass the CCB under Basel III, sectoral capital requirements, loan-to-value ratios and debt-to-income ratios on owner-occupied mortgage lending, and the leverage ratio, including a countercyclical leverage ratio buffer and a leverage surcharge for systemically important institutions.

22. The U.K. authorities have shown due regard for the cross-border aspects of macroprudential policies. The authorities have been actively involved in international fora, such as the FSB and the European Systemic Risk Board (ESRB). To mitigate the cross-border leakages of macroprudential policy, EU legislation (applicable in the U.K.) sets out formal co-ordination arrangements for the CCB starting in 2016, and the FPC has already recognized foreign CCB rates ahead of schedule. For tools other than the CCB, where reciprocity works on a voluntary basis, the FPC has stated its intention to reciprocate foreign macroprudential capital actions where appropriate.

23. While the track record is short, the experience so far has been encouraging. The BoE clearly recognizes the interactions between its different policy functions and the need for coordination, as demonstrated by the recent measures, coordinated by different agencies, to mitigate housing market risks.

24. Looking ahead, the effectiveness of the framework will largely depend on continuing to maintain a strong focus on financial stability. While the framework establishes firmly the "ability to act," the challenge of maintaining the "willingness to act" should not be underestimated. As memories of the crisis fade, external resistance to action is likely to rise. Within the agencies, resources on financial stability issues could potentially be squeezed due to competing demands. The Treasury Committee has an important role to play in watching for these risks. But the authorities need to continue their efforts to promote a better understanding by the general public of the FPC's role and responsibilities.

B. Microprudential Oversight

Banking

25. The U.K. authorities are advanced in the implementation of the international post-crisis reform agenda for banking regulation—which they have actively helped shape. As a member of the EU, the U.K. is implementing the 'single rulebook', whose backbone is represented by the 2013 Capital Requirements Directive and Regulation. It is preparing to adopt the FSB standard on Total Loss-Absorbing Capacity (TLAC) in the form of the European MREL. Remuneration rules were introduced in 2009 in response to the FSB Principles & Standards on Sound Compensation practices and came into effect in January 2010. These reforms, coupled with a more rigorous supervisory approach (see below), underpin the very high degree of compliance with the Basle Core Principles for Effective Banking Supervision (BCP) established during this FSAP: the U.K. has been assessed to be Compliant or Largely Compliant with all Core Principles (see accompanying Detailed Assessment Report).

26. These reforms were accompanied by a number of national initiatives, notably ring-fencing and governance reforms in the financial industry.

- British banks are preparing to implement the requirement to ring fence their retail banking operations by 2019 (Box 6). Ring-fencing is expected to reduce systemic risk, improve resolvability, and lower the risk to the taxpayer by segregating core retail activities from riskier parts of the group. It may also spur further increases in the capital base of U.K. banks.

Box 6. Structural Reform in U.K. Banking

Following the Report of the Independent Commission on Banking ("Vickers Commission"), the Banking Reform Act of 2013 required the U.K. authorities to implement the ring-fencing of core U.K. financial services. Banks with core deposits greater than GBP 25 billion are required to create by 2019 a ring-fenced body (RFB) for all their U.K." core activities and services" (basically, core retail deposit-taking and related payment services). Except for limited exemptions, all remaining activities and services—in particular, investment banking—must be provided by separate entities. Strict rules will regulate the legal structure of the banking groups; the governance of RFBs; intragroup transactions and exposures; and continuity of services. To protect the provision of core activities and services, the RFB (or RFB sub-group) would be subject to a systemic risk buffer between 0 and 3 percent on top of the other minimum requirements.

The goal of ring-fencing is to reduce the likelihood that core activities and services get disrupted as a consequence of risks materializing in other business segments. It should also facilitate orderly resolution in case of failure by protecting the critical functions related to retail activities (which proved impossible for many banks during the financial crisis because of overly complex and opaque group structures). As a by-product of the reform, the implicit subsidy enjoyed by large, systemic banks—already limited by other measures, such as the new resolution regime—would be further reduced.

At the moment, six U.K. banks are expected to be subject to the ring-fencing regime: HSBC, Barclays, Lloyds, RBS, Santander U.K., and Co-op. Based on its analysis of the 'near-final' plans, the PRA will indicate to banks whether they can start preparing for the next phase of the reform—the so called 'Part VII' transfer—during which a detailed proposal on the split of accounts and contracts between the entities on the two "sides of the fence" will have to be presented to the High Court.

Implementation of ring-fencing will be a challenge for both the banks and the authorities. It requires significant investment by banks, especially those with sizeable non-ring-fenced activities, which in some cases may lead to a re-evaluation of the business model. Similarly, it requires adequate preparation and follow-up by the U.K. authorities until the entry into force of the reform, involving a wide range of activities (policy, supervision, central bank operations, reporting, and communication). Finally, the complexity of the transfer process is also a source of uncertainty, especially given the magnitude of the transfers: the High Court is supposed to verify whether persons other than the transferor are likely to be adversely affected by the scheme and, if so, whether the effect is likely to exceed what is "reasonably necessary" to achieve the purposes of the reform.

- Following a series of episodes of misconduct in major U.K. financial firms, a number of policy initiatives have been taken to strengthen governance and conduct. These include subjecting London Interbank Offered Rate (LIBOR) and other benchmarks to regulation by the FCA; the Fair and Effective Markets Review by the BoE, FCA, and HMT in 2015 that focused on restoring trust in fixed income, commodity, and currency markets; and, crucially, a new Senior Managers Regime (SMR) that came into force in March 2016, aimed at reinforcing the accountability of individuals in the most senior roles in financial institutions (Box 7). Although still untested, the new SMR is a major and welcome improvement.

- The need to re-establish public trust in the financial industry is also recognized by the industry: in 2014, a group of banks created the Banking Standards Board, an independent body tasked with helping banks to improve corporate culture, competence, and behavior.

- In addition to the new, stronger regulatory framework, the U.K. authorities have made important progress in adopting a more rigorous, hands-on, and systemic risk-focused approach to

Box 7. Governance Reforms

The PRA and the FCA undertook a reform of bank governance that came into force in March 2016. This reform followed the 2013 report of the U.K. Parliamentary Commission on Banking Standards, which recognized the lack of personal responsibility as "commonplace throughout the industry" and one of the root causes for misconduct, and includes:

- a new Senior Managers Regime (SMR) for individuals subject to regulatory approval (a Senior Insurer Managers Regime is also under discussion for insurers);
- a Certification Regime that requires relevant banks to assess the fitness and propriety of certain employees below senior manager, who perform functions that could pose a risk of significant harm to the bank or any of its customers; and
- new Conduct Rules applying to banks (and Solvency II to insurers) that establish the responsibility of senior managers for oversight of any delegated activities.

The SMR identifies a number of senior management functions, defined as functions relevant for managing one or more aspects of a firm's affairs that may involve a risk of 'serious consequences' for the firm or for its business or other interests in the U.K. Each regulator specifies which functions fall in this category in the entities they supervise.[1] In addition, both regulators detail certain responsibilities that represent 'Prescribed Senior Management Responsibilities', such as the responsibility for safeguarding the independence and overseeing the performance of the internal audit function; responsibility in relation to financial crime (for the FCA); and responsibility for the firm's proprietary trading activities (for the PRA).

Individuals under the Certification Regime are not subject to approval by the supervisor but will have their fitness and propriety assessed and "certified" by their firms at least annually. A Senior Manager at the firm will to be formally accountable for its Certification process.

[1] For example, for the PRA these include: Chairman; Senior Independent Directors; Chairs of the Audit, Risk and Remuneration Committee; Chief Executive Officer; Chief Finance Officer; Chief Risk Officer; Head of Internal Audit; Head of Key Business Areas; Group Entity Senior Manager; and Head of Overseas Branch.

supervision. The new supervisory approach is now more clearly aligned with the overarching objective of promoting and preserving systemic resilience. There is greater focus on the assessment of risks and the adequacy of capital and liquidity of—and continuous direct engagement with—the largest and most systemically-important firms. Oversight on less systemically-important banks relies relatively more on data monitoring, outlier analysis, and thematic reviews.

27. This supervisory approach creates tradeoffs that need to be carefully monitored. It entails a relatively higher tolerance for risks arising from mid-size and small firms. But while their failure would have lesser systemic implications, these institutions may be concentrated in particular regions or particular classes of customers, and their risks may be correlated. Moreover, dealing with the failure of a mid-size bank may be more challenging until the MREL is fully in place. Offsite monitoring and the use of thematic reviews and data analysis can help detect the build-up of risks, but cannot fully substitute for direct probing and validation.

28. Furthermore, closer scrutiny of some critical activities of all banks is needed. Given the persistent downward trend of the ratio of RWAs to total assets and methodological inconsistencies across institutions, the review of banks' internal models should be intensified.

29. Effective cooperation and collaboration arrangements have been established with foreign supervisory and resolution authorities. This allows the U.K. authorities, in their capacity as both home and host supervisors of cross-border banking groups, to share information and cooperate with foreign authorities for the effective supervision of banks and banking groups. At the same time, the implementation of the international post-crisis reform agenda and national initiatives may have implications for correspondent banking relationships and for the provision of financial services by U.K. banks to certain categories of customers, notably money transmitters and non-profit organizations. In this context, applying effective, proportionate, and dissuasive sanctions for misconduct, including for AML/CFT violations, should enhance compliance, promote financial integrity, and prevent unnecessary curtailment of legitimate financial activities.

30. Significant progress has been made since the U.K.'s 2006 Anti-Money Laundering and Combating the Financing of Terrorism (AML/CFT) assessment, although there is room for further improvements. The authorities are currently bringing their regime in line with the revised 2012 Financial Action Task Force (FATF) standard and the Fourth EU AML Directive, which must be transposed by June 2017. The recently implemented AML/CFT supervisory framework for higher-risk banks (irrespective of size) seems adequate, though still relatively new. However, the backstop for ensuring that lower-risk firms are effectively assessing and managing their ML risks appears to be limited, with supervisors relying largely on thematic reviews and information from whistleblowers, media reports, law enforcement agencies, and international AML supervisors. Moreover, the authorities have recently adopted a comprehensive set of reforms to enhance corporate transparency, including the establishment of a register for individuals with significant control of U.K. companies and limited liability partnerships and the abolition of bearer shares and corporate directors. Additional steps should be taken to ensure the availability of adequate information on ultimate beneficial ownerships, notably across additional forms of legal entities and arrangements present in the U.K.

Insurance

31. The insurance supervisory assessment in the FSAP targeted selected areas particularly relevant for systemic stability in the current conjuncture. These included the new supervisory approach of the PRA and the FCA; the level of implementation of Solvency II, including the internal model approval process, group supervision, and reporting requirements (see Technical Note).

- Insurance supervision is shared between the PRA and the FCA under robust cooperation arrangements. The supervisory approach is forward-looking and risk-based, and is supported by comprehensive stress tests that follow international best practice. Supervision focuses on the most systemic firms, with the smaller PRA-regulated firms and most FCA-regulated firms supervised on a more reactive basis, based on thematic and outlier methodologies. This approach, however, requires granular high-frequency data that are not available for all activities.

- Despite the progress made, challenges remain in how group supervision is conducted in the EU under Solvency II. These include establishing a clear definition of responsibilities around joint decisions over group internal model applications and group model changes; capital transferability

across jurisdictions; and reaching agreements on colleges for insurers with significant presence outside the EEA.

- Supervisory arbitrage remains a risk, even within the EU. While regulation is equivalent in all EU jurisdictions, important differences remain in supervisory practices. The U.K. should contribute to EU-wide coordination mechanisms to monitor any potential supervisory arbitrage.

Securities

32. The FSAP focused on the regulation and supervision of fund management and equity trading platforms due to the sectors' size and potential for cross-border spillovers. The U.K. has the largest fund management market in Europe. The total authorized investment fund assets under management (AUM) by U.K. fund managers amount to some 95 percent of U.K. GDP; more than half of these assets belong to foreign-domiciled funds. The U.K. also hosts some of the most important European equity trading platforms: 11 U.K.-based exchanges and multilateral trading facilities (MTFs) conduct almost half of all on-platform equity trading in Europe. At the same time, the eight U.K. based "dark" (non-pre-transparent) trading platforms dominate European dark trading with a market share of about 85 percent. In addition, many U.K.-based brokers (banks and investment firms) operate their own over-the-counter electronic crossing networks—BCNs.

33. The U.K. regulatory and supervisory approach is generally sound, but would benefit from certain enhancements (for details, see accompanying Technical Note). The FPC and FCA have conducted timely work on liquidity risk management of corporate bond funds, and U.K. fund managers are permitted to use a suite of tools to manage risk from large redemptions. U.K. funds are subject to detailed valuation requirements and depositaries are responsible for monitoring compliance and reporting pricing errors to the FCA. Nevertheless, the FCA should ensure its supervision of investment funds' compliance with valuation requirements is sufficient. The recently-adopted changes to the FCA's risk-based approach to supervision appear to strike the right balance between firm-specific and market-based supervision. Potential risks lie in the extent this approach is used in authorizing new entrants and reacting to events in the large number of firms that are subject to market-based supervision. Pending the application of the revised Markets in Financial Instruments Directive (MiFID II), the FCA should ensure that BCN activities are sufficiently monitored and supervised.

34. The authorities' ability to assess fund management risks would benefit from improvements in access to data and international cooperation. The authorities should extend, if legally possible, the scope of transparency reporting under the AIFMD and strive for enhanced international exchange of information to improve data availability on alternative investment funds and their managers that operate on a cross-border basis. The authorities also need to continue to contribute to international work on the adoption of a globally harmonized calculation method for fund leverage.

Financial market infrastructures

35. Supervision of financial market infrastructures (FMIs) in the U.K. has been significantly strengthened in recent years. The decision to make the BoE the lead supervisor for all FMIs enabled a consistent implementation of the PFMI across all types of FMIs. The combination of FMI supervision, the PRA's prudential supervision of FMI participants, and central bank services under one roof also allows for a more comprehensive view of FMI resilience.

36. As a result, the risk management of U.K. FMIs has improved, contributing to their greater safety and soundness. As documented in the accompanying Technical Note on FMI oversight, the BoE has required improvements in the governance structure of all types of FMIs. CCPs' models for credit and liquidity risks have been upgraded and model validation procedures have been strengthened. The largest retail payment systems have introduced prefunding as a tool to mitigate settlement risk.

37. FMIs' dependence on bank services should be further reduced through de-tiering and—ideally—through settlement in central bank money for CCP-embedded payment systems. The largest indirect participants of CHAPS and EUI have in recent years been successfully transformed into direct participants. There is scope to reduce further credit and liquidity risks by targeting other large banks that are still indirect participants. Although the BoE provides CCPs with access to its balance sheet and to settlement in central bank money, CCPs are still dependent on commercial banks for operation of their embedded payment systems. A default of a settlement bank could thus create operational and financial stress for a CCP. CCPs should therefore increase the number of transactions that settle entirely in central bank money using the U.K.'s High Value Payment System (HVPS). The forthcoming strategic review of the Real-Time Gross Settlement System (RTGS) by the BoE should take into account de-tiering and direct settlement of CCP transactions.

38. The current arrangements for the supervision of the U.K. HVPS have shortcomings. The BoE supervises the CHAPS system, which is operated by CHAPS Clearing Company Limited (CHAPS Co), which in turn outsources the provision of its infrastructure to the BoE via the RTGS. But CHAPS Co has limited powers to assess whether the RTGS meets requirements and induce change, if needed, due to the unique position of the BoE as provider of the infrastructure. A self-assessment of the RTGS infrastructure by the BoE, which would complement the self-assessment of CHAPS Co, is underway. However, in the absence of formal oversight arrangements of the RTGS system, pressure to increase compliance may be weak. The BoE recognizes these shortcomings and is considering alternative options.

39. International cooperation for the supervision of FMIs is well established, although crisis management arrangements could be further developed. The BoE is leading international colleges for U.K. CCPs. Although the Memoranda of Understanding (MoUs) governing these colleges contain escalation procedures, more is needed for effective cooperation and coordination in times of crisis. Crisis Management Groups (CMGs) set up for resolution purposes should also establish information-sharing arrangements with authorities that are not represented in the college, but whose jurisdictions' financial stability may be impacted by a default of an FMI.

C. The Bank of England's Concurrent Stress Testing Framework for Banks

40. In 2015, the BoE launched an annual stress testing framework for banks aimed at supporting both its microprudential and macroprudential objectives. The framework is designed to assess the capital adequacy of the U.K. banking system as a whole (macroprudential); and, together with established supervisory tools, that of the covered individual firms (microprudential). The test covers banks and building societies with retail deposits of GBP 50 billion or more and has a five-year horizon.[11] The BoE issues the scenarios, assesses the banks' projections, and employs a suite of tools to cross-check the banks' results and assess sensitivities around the outcomes. The disclosure regime provides information that can promote market discipline and enhance credibility. From 2016 onward, the annual stress scenario will be explicitly countercyclical, and will be complemented by a biennial exploratory scenario to test the resilience of the banking system to a wider range of risks. The results will have a direct—though not mechanical—impact on setting buffers under the new capital framework.

41. This ambitious project has the potential to make a major contribution to systemic risk mitigation in the U.K., but implementation poses important challenges. The concurrent stress tests are expected to provide insights into systemic stability; an assessment of the individual capital adequacy of the covered banks; and a tool to help the BoE "lean against the wind" in setting capital requirements. The framework is well thought out and builds on the BoE's deep analytical expertise. Nevertheless, delivering on all these fronts is a big challenge. As the BoE continues to develop and refine its approach further, it should place priority on:

- *Improving the analytical infrastructure*. The analytical infrastructure, encompassing data, models, and processes, will require substantial additional efforts to fulfill the goals set out by the BoE. The format of data submission—notably the Firm Data Submission Framework—and the organization of other stress test-relevant data elements, e.g., from firm Internal Capital Adequacy Assessment Process (ICAAP) submissions, need to be settled as soon as practicable to allow for investments in infrastructure, both by the BoE and the banks.

- *Building up the supervisory model and analysis infrastructure*. To ensure robust quality assurance of bank submissions, the BoE has three types of models: (i) granular models using data submitted by the firms; (ii) product- or sector-specific models using industry or other data sources; and (iii) "system-wide" models that examine interconnectedness and spillovers. Investment in all these should be accelerated, and the BoE should develop its own TD supervisory stress testing models to complement the results of the concurrent stress tests.

- *Coverage*. Eight of the 15 biggest U.K. banks are foreign, mainly investment bank subsidiaries. Given London's role as a global financial hub, the contribution of the stress testing exercise to the FPC's overall assessment of financial stability is likely hampered by leaving out these banks, notwithstanding the fact that insights into these supervised entities would necessarily be partial.

[11] For further details on the framework, see "The Bank of England's Approach to Stress Testing the UK Banking System," Bank of England, October 2015, as well as the accompanying staff Technical Note.

D. Liquidity Framework

42. The BoE has built an appropriately wide-ranging and flexible liquidity provision framework, to match the diverse liquidity needs of a global financial center. The framework was broadened in the wake of the crisis to cover CCPs and large broker dealers and the range of eligible collateral was widened (for more details, see accompanying Technical Note). This expanded and more flexible framework—in line with the recommendations of the 2011 FSAP—can be more effective in stopping the propagation of a shock through liquidity contagion. The framework now encompasses the tools required for monetary policy implementation; for backstopping the liquidity needs of individual institutions and the wider system (liquidity insurance); and for providing emergency liquidity when needed. It consists of two broad sets of facilities: the Sterling Markets Framework (SMF) (Table 5); and the—largely unpublished—Emergency Liquidity Assistance (ELA) framework. These facilities are well organized, forward looking, flexible, and operationally sound. The BoE has appropriately maintained the capacity to conduct covert ELA, and has available foreign exchange from a number of sources that allow for the provision of FX ELA.

Table 5. United Kingdom Overview of the Bank's Sterling Monetary Framework

	Monetary Policy Implementation	Liquidity Insurance	Emergency Liquidity Assistance
Objective	Implement Monetary Policy Committee (MPC) decisions to meet inflation target	Reduce cost of disruption to key financial and payment services to the U.K. economy	Reduce cost of disruption to key financial and payment services to the U.K. economy
Governance	MPC	BoE	Chancellor and BoE Court
Guiding principle	Maintain risk-free interest rates in line with MPC target	The market should be the first/prime source of liquidity	The market should be the first/prime source of liquidity
Tools	Level of Bank Rate Remunerate reserves at Bank Rate Operational Standing Facilities (OSF) Asset Purchase Facility FX Intervention	Systemic: Indexed Long Term Repos Contingent Term Repos Individual entities: Discount Window Support of market functioning: Market Maker of Last Resort	Collateral swaps and/or secured loans FX ELA

Source: Bank of England and IMF.

43. The authorities are aware that the BoE's wide and flexible liquidity framework and its "open for business" approach has benefits and risks. The major benefit is a larger and more vibrant financial sector, better protected against shocks and able to continue operating under liquidity stress. The risks include reduced incentives for firms with access to the BoE facilities (including CCPs, which have been given access to the discount window) to self-insure against liquidity risk; global liquidity arbitrage; and the risk that over time, certain financial activities could become more concentrated in the U.K. to take advantage of its more accommodating framework.

44. There is no evidence that these risks have so far materialized, largely reflecting the safeguards in place. As supervisors, the BoE and PRA are in a position to monitor closely the liquidity

plans and risk management of all entities able to access BoE liquidity which aids the assessment of counterparty creditworthiness and provides early warning of any waning trends towards reduced self insurance. The risks of global liquidity arbitrage and over-reliance are managed through the BoE's close links with foreign supervisors, the discretion the BoE retains in providing liquidity, and because the cost of liquidity increases with demand. Nevertheless, these risks could potentially have serious consequences on the BoE, and increased vigilance is warranted to mitigate them.

45. Ongoing work on quantifying the implications of the liquidity framework on the BoE's balance sheet and capital should be a priority. A new division is working on developing a deeper and more forward-looking capacity to evaluate the impact of a range of scenarios on the BoE's balance sheet. This work would also be a key input to the Bank's capital adequacy framework, which may in the future need adjustments to ensure the BoE's operational independence (Box 8).

Box 8. The Bank of England's Capital Framework

Central banks typically need some level of capital—but for different reasons than banks. Central banks can become balance sheet insolvent but cannot be wound up. However, some level of capital is required to enable them to carry out their policy functions independently and credibly. There is no universal benchmark for this level, as it is a function of the central bank's policy mandate, the risks it faces, and the operational environment.[1]

Of greater importance for a central bank is policy solvency, where realized revenues—notably seignorage—exceed costs.[2] Policy solvency allows the central bank to undertake its functions without recourse to HMT for funding. The income stream from the proceeds of issuing currency (seignorage) usually covers operating and policy costs. If net losses accrue (e.g., due to exceptional operations or market conditions) they would be covered by capital, thus preserving credibility and independence. Some central banks have successfully continued to operate pursuing their monetary policy objectives even with negative capital, but in these cases, these central banks had sound prospects of being policy-solvent either immediately or within a reasonable term.[3]

The BoE does not retain its seignorage revenue but has a lower risk profile relative to many central banks. The U.K.'s foreign reserves are not held on the Bank's balance sheet, and the monetary policy framework did not previously require a very large or risky balance sheet. Moreover, many crisis-related operations of recent years, including Quantitative Easing (QE), were indemnified by the Crown, reducing the need for capital.

As its policy and operating environment are changing, the BoE's operational and capital frameworks need to assure future policy solvency. As the Bank exits from QE, the Crown indemnities that supported the expansion of the Bank's risk profile since the financial crisis will wind down. However, the financial system will likely have significant ongoing liquidity needs, implying that the part of the Bank's balance sheet devoted to monetary policy implementation may continue to be large, potentially implying a higher ongoing risk profile. Similarly, the liquidity insurance framework may imply significant contingent balance sheet risks. Accordingly, the design of the future operational framework should ensure policy solvency, be capital efficient[4] provide the BoE sufficient capital buffers to cover a reasonable range of risks faced in pursuing its policy objectives, and allow additional capital to be supplied expeditiously, if needed. Risks that arise from implementing policies for which the Bank has independent authority should be covered, in the first instance, by prudent risk management, and in the second instance, by capital, up to a reasonable level of losses. Other risks arising from extraordinary operations may not need capital but could be backed by Crown indemnities, as it is HMT that ultimately assures the BoE's capital adequacy.

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[1] For an overview, see Adler, G., P. Castro, and C. Tovar (2012), "Does Central Bank Capital Matter for Monetary Policy?," IMF WP/12/60.; Bindseil, U., A. Manzanares, and B. Weller (2004), "The Role of Central Bank Capital Revisited," ECB Working Paper No. 392; and Archer, D. and P. Moser-BoEhm (2013), "Central Bank Finances," BIS Papers No 71.

[2] Stella, P. and Å. Lönnberg (2008), "Issues in Central Bank Finance and Independence," IMF WP/08/37.

[3, 4] BIS (2009), "Issues in the Governance of Central Banks," A Report from the Central Bank Governance Group.

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46. The framework for effective bank resolution in the U.K. is robust.[12] The SRR introduced in 2009 has since evolved, including most recently with the transposition of the EU Bank Recovery and Resolution Directive (BRRD) into U.K. law. At present, the resolution framework is broadly aligned with the FSB Key Attributes of Effective Resolution Regimes for Financial Institutions (KAs). The BoE is well positioned legally and operationally to carry out its resolution mandate, and cooperates closely with HMT, the PRA, the FCA, and the FSCS. A broad range of stabilization options—including bail-in—that can be used to preserve financial stability while avoiding taxpayer bailouts is available, while modified insolvency regimes can be used for resolving less systemic financial institutions. Sufficient legal safeguards are in place to balance the public interest against the rights of shareholders and creditors. Resolution policies have been finalized and transparently explained in many important areas and recovery and resolution planning is well developed.

47. The scope of the resolution framework could be further expanded. The current resolution framework covers banks, building societies, investment firms, holding companies, and CCPs. To complete the framework in line with the KAs, the authorities should work with international partners to develop an effective resolution framework for insurance companies that could be systemically important at the point of failure. Ongoing international and EU work in this area, as well as the completion of the first resolvability assessments for globally systemically important insurers, would be critical inputs into the design of this framework. The BoE should also be provided with an explicit power to depart from *pari-passu* treatment where necessary, in the interest of preserving financial stability, regardless of which stabilization option is used. To maximize synergies and avoid coordination gaps, system-wide contingency planning should be expanded to include the FCA and the FSCS, both in the Crisis Management MoU and in the regular high-level discussions.

48. Implementation of reforms to ensure resolvability is well advanced in many areas. At the domestic level, substantial measures have already been taken to ensure the continuity of depositors' access—an essential factor for preserving confidence. The ring-fencing reforms are already producing operational transformations at the level of large U.K. banks, with the aim of achieving the insulation of their critical retail functions from riskier parts of the group by 2019. Substantial preparatory work has been undertaken to phase in the implementation of the MREL from 2016 to 2019 for the Global Systemically Important Banks (G-SIBs) and to 2020 for other banks, respectively, in a way tailored to the risk profile and resolvability of individual institutions. The BoE estimates that the MREL implementation will require long-term restructuring of liabilities of around GBP 223 billion.

49. The U.K. has been at the forefront of implementing the FSB agenda on cross-border cooperation. For all U.K. G-SIBs, Recovery and Resolution Plans have been shared and discussed within the relevant CMGs, a first round of resolvability assessments was completed in 2015, and operational resolution plans are in the course of being updated. Cooperation Agreements have been discussed within CMGs for all U.K. G-SIBs. The cross-border arrangements are supported by a legal framework

[12] Details of the staff analysis and recommendations are presented in the accompanying Technical Note.

that enables information-sharing and cooperation in resolution. There is automatic and mutual recognition of resolution actions undertaken by EU home authorities. The BoE also has power to recognize and give effect to resolution actions of home jurisdictions of non-EU bank branches operating in the U.K., except in specified circumstances, such as when the stability of the U.K.'s financial system is at risk.

50. Given the size, complexity, and cross-border interconnectedness of the U.K. financial sector, ensuring resolvability is going to be a journey, rather than a destination. A continuous effort will be needed both domestically and in cooperation with international partners to detect and address barriers to resolvability in an ever-changing market environment. Domestically, the BoE will have to strike a balance in setting the MREL proportional to the firms' risk profile and resolvability, and manage the transition, including through close supervisory oversight of medium-size firms, as the preferred resolution strategies may be more challenging to implement in the runup to building sufficient firm-specific MREL. In a cross-border context, the BoE will have to coordinate closely with foreign counterparts in establishing the amount and forms of internal MREL/TLAC, as well as mechanisms for triggering and executing the bail-in in each jurisdiction. Once set, the MREL/TLAC will have to be reassessed periodically to ensure it remains appropriate to facilitate resolvability.

51. Further efforts are needed to develop operational principles for funding in resolution building on the current arrangements. First, the terms and conditions for access to FSCS funds and notional "resolution fund" need to be fully elaborated operationally. The HMT/BoE MoU should be updated to reflect the common understanding on the use of the latter. When ELA is to be provided to support the liquidity of a solvent firm in resolution (e.g., to a recapitalized institution post bail-in), the authorities should consider the provision of an indemnity to the BoE if there are concerns about the length of support, exit strategy, collateral, or scale of the liquidity need. The U.K. authorities should continue to work closely with their foreign counterparts to establish a good understanding of the resolution funding plan of a G-SIB and coordinate on the planned allocation of funding throughout the group. It will be essential to ensure that firms' liquidity risk management information systems are capable of producing accurate and timely information.

52. Maintaining and expanding the engagement with international counterparts will also demand continuous efforts. The U.K. authorities have been global leaders in building a framework based on transparency and close cooperation. Nevertheless, resolving a cross-border bank could still be hampered by significant variations in resolution regimes or differences in approaches to resolution, valuations, and creditor hierarchies. Furthermore, lack of recognition of U.K. resolution actions outside the EU could potentially be a major impediment to orderly resolution of a G-SIB. The authorities should continue their efforts to finalize the framework for contractual recognition of bail-in governed by third-party jurisdiction laws, as well as the regime for independently resolving U.K. branches of non-EEA firms. Over the medium term, they should also establish practical and appropriately tailored cooperation and communication arrangements for engaging with non-CMG hosts where U.K. G-SIBs have a systemic presence.

Appendix I. Implementation of 2011 FSAP Recommendations

Recommendation and Authority Responsible for Implementation	
Overall Financial Sector Oversight	**Status**
Revise the legal framework to clarify mandates and include a specific financial stability mandate for the prudential authorities (Tripartite).	Implemented
Amend legislation to allow for regulatory power over holding companies of regulated entities (HMT).	Implemented
Enhance resources for supervision of banks, insurers and securities firms based on the agreed-upon supervisory operating model and the new macro-prudential overlay (Tripartite).	Implemented
Establish a forum for ensuring good governance and coordination among organizations in the new regulatory structure (HMT).	Implemented
Enforce public disclosure by banks, insurance and securities firms, including publishing prudential returns as appropriate (FSA).	Implemented
Banking Oversight	**Status**
Enhance supervision by: conducting detailed reviews of credit and market risk assessment by banks, and verification and selected model replication reviews on a proactive basis; better integrating specialist work into the supervision program; and enhancing peer analysis (FSA).	Implemented
Adopt a proactive intervention framework through triggers for contacts and coordination actions with other authorities and amend legislation as needed (FSA).	Implemented
Develop a comprehensive plan to enhance prudential reporting and conduct a review to deliver a more systematic approach to data quality (FSA).	Implemented
Insurance Sector Oversight	**Status**
Extend the new intrusive risk-based approach to supervision to a wider range of insurers (FSA).	Implemented
Increase the frequency and number of randomly conducted "transaction examinations" for both the largest and some smaller insurers (FSA).	Implemented
Securities Markets Oversight	**Status**
Clarify in legislation that the remit of the conduct authority includes market integrity and transparency to ensure adequate emphasis on issues other than consumer protection (HMT).	Implemented
Increase intensity of supervision with greater use of "bottom up" analysis of firm operations using on-site examinations, including thematic work, to supplement the "TD" risk analysis (FSA).	Implemented
Payments and Securities systems Oversight	**Status**
Ensure that sufficient and reliable funding options are in place for CCPs, including committed credit lines subjective to presentment (BoE, FSA).	Partially Implemented
Develop contingency plans to deal with the potential failure of a CCP (BoE, FSA).	Implemented
Offer central bank settlement to CCPs that have been classified as systemic institutions (BoE).	Implemented
Establish close monitoring of concentration of banks' payment and settlements activities (BoE, FSA).	Implemented
Undertake a unified assessment of the RTGS infrastructure, including an assessment of the finality of transactions (BoE).	Partially Implemented
Crisis Management	**Status**
Establish appropriate resolution tools and framework for potentially systemically important nonbank firms that are not covered by the SRR (Tripartite).	Partially Implemented
Source: Staff assessment.	

Appendix II. Brexit and the U.K. Financial System

53. The U.K. financial system is important for the domestic economy and heavily interconnected with the rest of the EU. The financial services industry accounts for about 8 percent of U.K. GDP and 3½ percent of employment. EU membership has contributed to further openness of the—already globalized—U.K. financial sector, strengthening its linkages with other EU countries: EU countries now account for about a third of the U.K.'s financial services surplus, which is key for keeping the current account deficit in check. Roughly half of the largest financial institutions in the world—from commercial and investment banks to insurers, asset managers, and hedge funds—have their European headquarters in the U.K. The process of regulatory harmonization across the EU has facilitated closer financial integration between its member countries, while contributing to the high degree of compliance with global regulatory standards in all of them, including the U.K.

54. A vote to leave the EU would inevitably have a major negative impact, albeit of uncertain magnitude, on the U.K. financial system. It would affect the industry both directly and indirectly, through its effects on the domestic economy; and it could usher in a period of renewed regulatory upheaval, as it would almost certainly require replacing current EU regulations with domestic legislation and rule-making.

- In the short term, while the terms of British withdrawal are negotiated—which could take years—the impact on the financial sector would be mostly indirect.
    - As the Selected Issues paper accompanying the 2016 Article IV consultation report illustrates, a vote to leave would likely heighten volatility in financial and foreign exchange markets and lower business investment, due to increased uncertainty about the U.K.'s future economic relations with the EU. Moreover, markets may anticipate some of the expected longer-term economic effects of Brexit (see below), provoking an adverse reaction to a vote in favor of leaving that brings forward the long-term costs. As a result, British banks would face higher impairment losses, lower profitability, and higher funding costs. These could, in turn, curtail credit extension to the economy, further aggravating the adverse economic impact. Valuation losses would also affect other U.K.-based financial companies—e.g., insurers—and investors.
    - Since the U.K. would continue being a member of the EU during this period, U.K.-based financial firms would not face any direct obstacles to accessing other EU markets and no change to the regulatory environment. Nevertheless, U.K.-based financial firms may make investment and/or business restructuring decisions prior to actual exit, in anticipation of the likely changes in the regulatory environment.
- In the long term, a British exit from the EU could have profound effects on the U.K. financial system, its global standing, and its contribution to the economy. Although the comparative advantages of the U.K. financial sector are well established and predate EU membership and its importance as a global hub is underpinned by a wide range of factors, exit would almost certainly reduce market access to the EU of both domestic and foreign financial companies based in the U.K., subject them to regulatory uncertainty for some time, and force them to re-examine their business model,

corporate structure, and location. The ultimate impact would depend on the shape of the U.K.'s relationship with the EU post-exit. It would also be differentiated across segments of the industry. Given the unknowns—notably how financial companies and markets would adjust to the new steady state—it is not possible to quantify the impact. The rest of this Appendix highlights the most likely channels through which exit could affect different parts of the financial system.

55. A key issue is whether the U.K. would maintain membership in the EEA following EU exit. This would have critical ramifications for a wide range of U.K.-based financial companies because it would determine how and to what extent they would continue having access to EU country markets. Membership in the EEA would also minimize the disruption in the regulatory regime post-exit, as it would require the U.K. to harmonize its regulations with those in the EU (but, importantly, without an influence in shaping them). However, even EEA membership for the U.K. may not provide uninterrupted access to the EU markets for certain financial services companies, unless the recent backlogs in incorporating EU legislation into the EEA Agreement are resolved (see below).

56. In *banking*, the long-term impact of exit would hinge crucially on whether the new relationship between the U.K. and the EU would maintain "passporting" rights. "Passporting" allows banks based in any EEA country to provide banking and other services via branch networks in any other EEA country. If Britain loses "passporting" rights post-exit, U.K. banks now operating in the EEA may choose to exit those markets; subsidiarize their local branches, which would imply higher funding costs as a result of the fragmentation of the group capital structure; or, if they already operate through subsidiaries, shift activities to these subsidiaries, which may require regulatory permission. All these options would imply higher costs and less business. Global banks would likely continue to maintain a presence in the U.K., but those with their European headquarters in London would probably relocate. These trends could be reinforced by the regulatory upheaval that would result from the need to replace many banking regulations—especially those embodied in EU legislation—by domestic laws and rule-making. These effects would shrink the banking industry and diminish London's importance as a global banking hub.

57. The asset *management industry,* which is more mobile, would also be negatively affected by exit, unless the U.K. secured EEA membership and all relevant EU legislation is by then incorporated into the EEA Agreement. U.K.-based funds classified as Undertakings for Collective Investment in Transferable Securities (UCITS) by EU regulations would need to be converted to nationally-regulated funds, since UCITS funds can only be domiciled in the EEA. From the perspective of other EEA countries, these funds would become non-EEA alternative investment funds (AIFs) that do not benefit from the "product passport" when marketed to EEA investors, including professional investors. The same would apply to all other U.K. AIFs, including hedge funds and private equity funds. Marketing non-EEA AIFs to EEA investors would require using the National Private Placement Regime (if any) of each EEA member country, which may not provide sufficiently easy access to the EEA investor base. Given these difficulties, a British exit without immediate EEA membership (assuming that, by that point, all relevant EU legislation is incorporated into the EEA Agreement) would lead asset managers to relocate the funds targeted to EEA investors within the EEA. U.K.-based asset managers may also need

to set up subsidiaries in EEA countries to continue to manage EEA-domiciled investment funds in an efficient manner.

58. U.K. *insurance companies* would be relatively insulated from the effects of Brexit, even in the case of exit from the EEA. Many U.K. insurers already operate in other EU countries via subsidiaries, with the notable exception of Lloyd's. So even if the U.K. did not obtain EEA membership, they would not incur costs of subsidiarizing branch networks or be significantly affected by loss of "passporting," although they would be impacted by the regulatory uncertainty post-exit. However, the impact on Lloyd's and the London insurance market could be significant absent cross-border supervisory recognition.

59. Exit could have a major impact on U.K. *CCPs*. They would risk losing access to the EU market because EU regulations governing that access would no longer apply, and decisions on alternative access arrangements—that would depend solely on EU authorities—may not be taken on time. At present, relations between U.K. CCPs and EU CCPs and banks are governed by the EMIR. Post-exit, unless the U.K. became a member of the EEA and EMIR was incorporated into the EEA Agreement, EMIR would treat the U.K. as a "third country," whose regulatory regime for CCPs would need to be recognized as "equivalent." In the absence of such equivalence—or until such determination is made by the EU—EU banks would need to maintain higher capital buffers or, in the worst case, not be permitted to use U.K.-based CCPs. Likewise, the existing interoperability arrangements between U.K. and EU CCPs may have to be halted until the relevant U.K. CCPs have been recognized under EMIR. This would disturb current clearing arrangements and increase market inefficiencies. Regardless of the final shape of these arrangements, euro-denominated business may over time shift to the euro area.

60. U.K. *payment and settlement systems* may also face restrictions to access EU counterparts. Currently U.K.-authorized payment service providers have "passport" rights that allow them free access to EU markets, provided they meet the requirements of the EU Payment Services Directive. Depending on whether the U.K. retained membership of the EEA, exit could mean that providers that are not authorized credit institutions in the EU would need to establish a separate legal entity within the EU, which would likely have a significant cost impact. Exit could also impact the central securities depository business, albeit to a lesser extent, since EU legislation is not yet fully in place.

61. More generally, Brexit could have a deep long-term impact on the *legal environment* in which financial market participants deal with each other. Mutual recognition of judgments and complex cross-border resolution cases may become challenges. The U.K. would lose access to the European Court of Justice to challenge any perceived discriminatory behavior by EU institutions. Moreover, the International Swaps and Derivatives Association has questioned whether the widespread choice of English law for derivatives contracts between two non-U.K. counterparts in the EU would still be accepted by local courts post-exit if there was a dispute or a bankruptcy.

Banking Sector: Solvency Test			
Domain		**Framework**	
		Bottom-Up/Top-Down by Authorities	**Top-Down by FSAP Team**
1. Institutional perimeter	Institutions included	• Seven major banks and building societies: Barclays plc, HSBC Holdings plc, Lloyds Banking Group plc, Nationwide Building Society, The Royal Bank of Scotland Group plc, Santander U.K. plc, and Standard Chartered plc. • The criteria used to determine the institutional perimeter include: firms' balance sheet, firms' role in the U.K. payment system, and firms' plans to grow their balance sheet.	
	Market share	• Approximately 80 percent of PRA-regulated banks' lending to the UK real economy.	
	Data	• Effective date: end-December 2014 • Effective date for market risk: February 20, 2015. • Data: Stress testing templates and associated documents submitted by participating banks for the 2015 Stress Test. • Scope of consolidation: global consolidated group basis, except for Santander U.K. plc, whose parent is supervised by a foreign authority. Perimeter of the banking group (CRD IV). Insurance activities are excluded but firms have to assess the impact of the scenario on insurance activities and model the impact on dividends, holdings or minority interests, capital deductions, and risk weightings.	• Effective date: end-December 2015 • Effective date for market risk: end-December 2015. • Data: firm-by-firm confidential data at the cut-off date, BoE data on aggregate write-off rates for UK exposures, and publicly available data (Pillar 3 disclosures, Bloomberg, Datastream, Markit, 2015 EU-wide transparency exercise, Haver Analytics, Mortgage Lenders and Administrators Statistics, Moody's KMV, Bankscope, SNL, International Financial Statistics (IFS), IMF Global Assumptions (GAS), and IMF WEO). • Scope of consolidation: global consolidated group basis, except for Santander U.K. plc, whose parent is supervised by a foreign authority. Perimeter of the banking group (CRD IV). Insurance activities are excluded but firms have to assess the impact of the scenario on insurance activities and model the impact on dividends, holdings or minority interests, capital deductions, and risk weightings.
	Stress testing process	• The U.K. stress test is a hybrid process which includes the following steps: - Scenarios are designed by the BoE and approved by the FPC and PRA Board. - Each participating firm generates additional scenario variables as required for their modeling across their geographies and asset classes. - Firms perform constrained BU stress tests based on their internal risk-management infrastructure and tools. - The BoE runs its own in-house challenger models to cross-validate firms' results from both a micro and macro perspective. - Aggregation of results by BoE, including adjustments from peer comparison, challenger models and BoE judgment.	• The FSAP team conducted its own TD macroprudential stress test based on IMF generated scenarios. ○ For IRB exposures, a separate credit risk model is calibrated for 5 Basel asset classes and 15 geographies. ○ For STA exposures, stressed NPL ratios, stressed coverage ratios, and a transition matrix for performing exposures are projected. ○ For market risk, stress to 22 sovereign issuers and major corporate indexes is modeled separately. ○ The TD stress test includes a detailed stress test of the UK mortgage book by LTV vintage using a structural Merton-based approach. • The FSAP team used its own credit risk models to project stressed credit risk parameters based on the 2015 BoE scenario in banks' key selected portfolios. • FSAP projections were compared against banks' BU projections. • Sensitivity tests included a range of stressed UK residential house prices and shocks to the swap curve.

Banking Sector: Solvency Test			
Domain		**Framework**	
		Bottom-Up/Top-Down by Authorities	**Top-Down by FSAP Team**
2. Channels of risk propagation	Methodology	• Risks are projected using a variety of models, approaches and judgments from the banks and BoE/PRA. • Banks' internal risk management models translate the scenario into credit risk losses across their asset classes and geographies. • Banks model the traded risk elements of the stress, including: the impact on their market risk positions depending on the liquidity of those positions; the valuation adjustments (FVO, CVA, PVA and bid/offer reserve); and a prescribed number of counterparty defaults in geographies impacted by the stress. • Banks model the impact on their funding costs, and how the increase in funding costs is passed on to customers. • BoE in-house suite of supervisory risk models to challenge banks' projections and macro models to provide system-wide view of risk propagation. • Supervisory input to take account of individual banks' business models.	• A comprehensive battery of econometric and structural models were specifically developed and calibrated for the 2016 U.K. FSAP. • Over 75 credit risk models and 900 econometric specifications for PDs based on vector autoregressive models (VAR), principal component analysis (PCA), and quantile-based regressions, and a structural Merton-based approach for LGDs. • Lending rates linked to shocks to deposit rates (projected in line with the macro scenario, banks-specific solvency ratios, and funding stress in peer banks) and shocks to NIMs (affected by the base rate, money market shocks, and the slope of the yield curve), with pass-through estimated empirically • Add-on funding shock related to funding shock in H1 2012 with disallowed pass-through. • Marked-to-market losses from full revaluation of sovereign securities (22 jurisdictions), and corporate fixed income debt securities, excluding hedges, under each scenario.
3. Tail shocks	Scenario Analysis	• This scenario is characterized by a broad-based global recession with major adverse implications for China and the euro area. This impacts the U.K. and generates a domestic recession, affecting particularly corporate exposures, amid the build-up of disinflationary pressures. • U.K. real GDP growth contracts by 2.3 percent year-on-year from Q4 2014 to Q4 2015, and reaches a peak deviation from baseline in 2017 at -7.7 percent. Unemployment rises by 3.5 pps by 2017/Q3, equity prices decline by 36 percent peak-to-trough, and residential property prices fall by 20 percent. • Euro area year-on-year real GDP growth troughs at -2.1 percent in 2016/Q1. Emerging economies experience a large downturn in economic activity with year-on-year real GDP growth in China falling to 1.7 percent in 2015/Q4. The peak-to-trough fall in real GDP is about 7 percent in Brazil and 4 percent in South Africa. • The VIX peaks at 46 pps in 2015, the oil price troughs at USD 38, the renminbi depreciates 10 percent against the USD by end-2015, and the euro depreciates by about 25 percent against the USD and by 15 percent against sterling in 2015.	• This scenario is calibrated using IMF in-house model and auxiliary assumptions drawing on historical crisis-episodes. This scenario is characterized by a disorderly accelerated monetary normalization in the United States, which triggers an abrupt asset price correction across markets and generates financial crises in fragile emerging economies. • This scenario constitutes a 2.1 standard deviation move in two-year cumulative real GDP growth rate for 2016–17. • U.K. GDP growth contracts by 1.6 percent in 2016, and reaches a peak deviation from baseline in 2017 at -6.9 percent. There is a large housing market correction, with real house price falling by 40 percent in 2016 and 2017. In addition, the real equity price falls by 40 percent during 2016. The deep recession increases funding costs which induce a rise in banks' lending rates by 1.1 pps by 2017, and bank credit falls by 6.7 percent. • Output falls by 11.9 percent in the fragile three (Brazil, South Africa, and Turkey), and by 1.3 percent in other emerging economies. • The scenario includes and additional idiosyncratic and system-wide funding risk shock triggered by dislocation of money markets and linked to banks' capital ratios under stress

Banking Sector: Solvency Test			
Domain		**Framework**	
		Bottom-Up/Top-Down by Authorities	**Top-Down by FSAP Team**
	Sensitivity analysis	• Projections for stressed misconduct costs.	• Shocks to UK residential house prices affecting stressed LGDs. • Shocks to swap curve.
4. Risks and buffers	Positions/risk factors assessed	Credit risk • Estimated according to Basel III framework, under IRB advanced approach, IRB foundation approach, and Standardized approach. • Positions include cross-border loan exposures, including interbank and public sector loans. • Covered bonds and securitization exposures are included. • Off-balance sheet exposures using baseline and stressed Credit Conversion Factors (CCFs) are included. Sovereign risk • Issuer risk from shocks to yield curves across material advanced and emerging economies of banks' exposure (IRB sovereign exposures). • Mark-to-market valuation of securities in trading book and AFS/FVO linked to macro scenario. Market risk other than sovereign risk • Market stress from shocks to asset prices in FX markets, corporate spreads, commodities, and money markets. (IMF stress test) • Market stress from shocks to asset prices and volatilities in a broad set of core risk factor shocks calibrated by the BoE and all other relevant risk factors to which banks are exposed calibrated by firms and applied in line with the liquidity of the position (BoE stress test) • Counterparty credit risk losses covering all trading book and banking book derivatives and securities financing transactions, as well as CVA, (BoE stress test). • Shocks to PVA for own funding costs (BoE stress test). Profits • Income from investment banking activities. • Interest income declines for the amount of lost income from defaulted loans. • Interest income from non-defaulting loans is estimated according to satellite models (IMF stress test). • Interest expenses increase due to rising funding costs linked to the macroeconomic scenario with empirically estimated pass-through, and add-on funding stress from a market event with no pass-through to lending rates (IMF stress test). • Banks project interest income and interest expense in the stress scenario taking account of balance sheet evolution, funding evolution, product interest rate and margin movements, foreign exchange movements and structural hedging programs (BoE stress test). • Net fee and commission income, and other income evolve with macroeconomic conditions and banks' balance sheets. • No change in business models (no rebalancing of portfolio) (IMF stress test). Business models and balance sheets evolve over the stress horizon per the banks' corporate plans, adjusted for the scenario (BoE stress test).	

Banking Sector: Solvency Test			
Domain		**Framework**	
		Bottom-Up/Top-Down by Authorities	**Top-Down by FSAP Team**
		Regulatory impact • The effects of the phase-out of no-longer-eligible additional Tier 1 and Tier 2 capital are included. No conversion of additional Tier 1 capital is assumed during the stress horizon (IMF stress test). Additional Tier 1 instruments can convert if their trigger level is breached after management actions are taken into account (BoE stress test).	
	Behavioral adjustments	Dynamic balance sheets • The balance sheet evolves under stress per each bank's corporate plan, adjusted for the scenario. • The BoE scenario includes paths for UK lending to individuals and PNFCs in the stress, calibrated to reflect the reduced credit demand in the scenario. Guidance is provided that individual banks' market share of lending in these assets classes should not decline under stress. The BoE ensures that, in aggregate, banks' lending projections are consistent with the UK lending paths. • The size and composition of BSs for non-UK lending are allowed to vary as follows: (i) if non-UK lending has positive growth under baseline, slower growth is allowed under stress but no contraction; and (ii) if non-UK lending has negative growth under baseline, no further contraction is allowed under stress. • The dividend payout in stress is in line with banks' publicly disclosed dividend policies. Further dividend cuts can be proposed as strategic management actions. • Banks may propose strategic management actions to improve their capital position as it falls in the stress. The BoE assessed both timing and benefit of the actions proposed and only accepts realistic management actions. Any proposed management actions are expected to be part of banks' recovery and resolution plans.	Dynamic balance sheets • Credit supply effects are disallowed to calibrate credit risk projections. • Balance sheets evolve with key macroeconomic aggregates in material jurisdictions and FX effects and, thus, vary across banks. • EAD under stress from off balance sheet exposures increases about 5 percent on average, reflecting higher use of committed but previously unused credit lines. • Maturing assets are replaced by exposures of the same type and risk. • Dividends are linked to banks' net profits. Under positive profits, the dividend payout is set at 30 percent. Otherwise, no dividend payout is assumed. • The effective tax rate evolves with the macro scenario. • Losses are recognized in the same year that a shock hits. • If banks' capital ratio falls below regulatory minimum during the stress test horizon, no prompt corrective action is assumed.
5. Regulatory and market-based standards and parameters	Calibration of risk parameters	Parameter definition • Banks project PDs and LGDs across the stress scenario for both expected loan losses (impairment charges) and capital requirements.	Parameter definition • PiT PDs and LGDs for both expected and unexpected losses. • PDs are blended PDs (i.e. include both defaulted and non-defaulted counterparties) by asset class and geography.

Banking Sector: Solvency Test			
Domain		**Framework**	
		Bottom-Up/Top-Down by Authorities	**Top-Down by FSAP Team**
		• PDs and LGDs are projected by asset class and geography, for defaulted and non-defaulted exposures • Changes in capital requirements (RWAs) driven in part by banks' PRA approved regulatory IRB models. <u>Parameter calibration</u> • PDs and LGDs evolve with the macroeconomic and financial variables of the scenario, per banks' models.	• LGDs are calculated post credit risk mitigation by asset class and geography. <u>Parameter calibration</u> • For IRB exposures, changes in PDs are proxied by shocks to write-off rates for U.K. exposures, Moody's EDFs for cross-border exposures, and banks' computed PDs in historical stressed episodes. • Shocks to LGDs are projected using a Merton-based approach for mortgage exposures, shocks to unemployment for retail unsecured exposures, and shocks to GDP for corporate exposures. • PDs and LGDs evolve with the macroeconomic and financial variables of the scenario • For STA exposures, inflows into NPL categories are based on panel regression, including risk migration for performing exposures.
	Regulatory standards	• Capital definition according to Basel III/CRD IV/PRA rulebook, including CET1, Tier 1, and total CAR. • The CET1 ratio is computed using CRD IV end-point definition. This follows PRA's decision not to make use of transitional provisions for CET1. Specifically, unrealized gains/losses in AFS and equities and reserves arising from revaluation of property are recognized since January 2015. • Capital components that are no longer eligible for additional Tier 1 and Tier 2 capital components follow CRD IV transitional path. • CET1 ratio hurdle rate are 4.5% of RWAs in stress and 7% in the baseline (BoE stress test). Hurdle rates follow Basel III (including Capital Conservation Buffer under the baseline) (IMF stress test). • Leverage ratio (3 percent hurdle rate met with Tier 1 capital) using two definitions: (i) the leverage ratio set out by the PRA in SS3/13 (BoE stress test): - Tier 1 (end point definition as set out in CRR). - Leverage exposure (CRR delegated act definition). (ii) a Tier 1 (CET1 end point definition and Additional Tier 1 transitional definition) ratio relative to interest-bearing assets (IMF stress test).	
6. Reporting Format for Results	Output presentation	• Minimum stressed CET1, Tier 1, CAR and leverage ratio by bank. Evolution of stressed CET1 and leverage ratio for aggregate of all 7 banks (BoE stress test). • Evolution of CET1, Tier 1, CAR, and leverage ratio, for the aggregate banking system and type of bank, i.e., major U.K. international banks and major U.K. domestic banks (IMF stress test). • Contribution of key drivers to aggregate net profits and aggregate CET1 capital ratios. • Cumulative impairment charges by bank for the UK and specific other countries impacted by the scenario (BoE stress test). • Number of banks and share of total assets below hurdle rates (IMF stress test).	

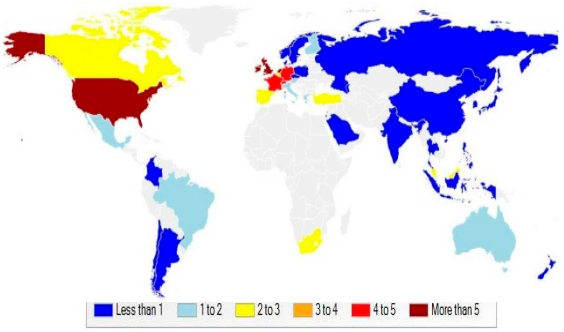
Liquidity Stress Testing Matrix		
Domain		**IMF designed stress test undertaken by the BoE on behalf of the FSAP team**
1. Institutional perimeter	Institutions	• Number of firms: 10, consisting of 7 major banks and building societies, and the 3-largest subsidiaries of foreign investment banks. • Selection criteria: The sample firms have been selected to provide 80 percent coverage of total U.K. banking assets as measured by the PRA048 liquidity returns.
	Market share	• About 80 percent of banking sector total assets.
	Data and base date	• The LCR Liquidity Stress Test is based on the data as of December 31, 2015 received by the PRA as Interim LCR reporting from U.K. firms on an all-currency basis. This PRA return is based on the EU Delegated Act (Commission Delegated Regulation (EU) no 2015/61) which implements LCR in the United Kingdom. • The cash flow liquidity stress test relies on the PRA048 return as of January 1, 2016.
2. Channels of risk Propagation	Methodology	• Basel III measures of liquidity risk—the LCR on three scenarios. • Two implied cash flow tests: 5 days (cumulative) and 30 days (noncumulative). • A general maturity mismatch analysis by maturity bucket. • A single currency analysis based on PRA's ILG regime.
3.Risks and buffers	Risks	• Funding liquidity risk, rollover risk, and market liquidity risk.
	Buffers	• HQLA securities assessed at market values net of haircut on a security-by-security basis.
4. Tail shocks	Size of the shock	A range of adverse scenarios • LCR Scenario under standard assumptions calibrated by BCBS. • An LCR 'U.K. retail stress' scenario. The calibration of this deposit run-off scenario replicates the peak stress during the 2007 Northern Rock run, with run-off rates for retail deposits of up to 15 percent and for corporate deposits of 60 percent, and with liquidity risk from committed but undrawn liquidity facilities of 50 percent. • An LCR 'U.K. wholesale stress' scenario. This scenario replicates the liquidity stress observed during the global financial crisis. It is characterized by: (i) a freeze of wholesale funding on the interbank market, secured funding market via repo and covered bonds, and the commercial paper market (with run-off rate for operational deposits of 75 percent and for not-fully covered corporate deposits of 100 percent), and (ii) liquidity risk from sizable margin calls related to secured funding, derivatives and foreign currency funding due to market liquidity shocks, derivative assignments, and unwinds and disruptions in the FX swap market (with rollover of secured funding backed by other than Level 1 and Level 2A assets of up to 0 percent). • Implied cash-flow assumptions include haircuts of up to 60 percent for securities and bank loans that can be mobilized in repos, no issuance of new unsecured funding and freeze of securitization markets, call-back rates of up to 100 percent, and cash outflows of up to 75 percent.
5. Regulatory standards	Regulatory standards	• Counterbalancing capacity above net cash outflows under stress scenario. • The PRA's transitional arrangement for the LCR ratio which is more front-loaded than that prescribed by the CRR (Art. 460). It is set at 80 percent on October 2015 above the 60 percent threshold under the CRR).
6. Reporting format for results	Output presentation	• Changes in average liquidity position and counterbalancing capacity for each scenario. • Distribution of banks' liquidity position for each scenario. • Number of banks with counterbalancing capacity below net cash-outflows. • Banks post-shock net liquidity position.

Appendix IV. Spillovers from U.K. CCB Adjustments

62. The analysis of macrofinancial spillovers from CCB adjustments in the U.K. is based on the Global Macrofinancial Model (GFM). The GFM is a structural macroeconometric model of the world economy, disaggregated into forty national economies, documented in Vitek (2015).[13] This estimated panel dynamic stochastic general equilibrium model features a range of nominal and real rigidities, extensive macrofinancial linkages through both bank- and capital market-based financial intermediation with a financial accelerator mechanism, and diverse spillover transmission channels.

63. In the GFM, macrofinancial spillovers from CCB adjustments are transmitted via trade, financial, and commodity price linkages. These financial linkages encompass cross-border bank lending, private sector borrowing, portfolio debt and equity exposures, as well as capital market contagion effects. Of these spillover transmission channels, the most important for CCB adjustments are private sector borrowing exposures. Private sector dependence on U.K. bank loans is relatively high in some Western European and North American advanced economies.

Private Sector Borrowing from U.K. Banks

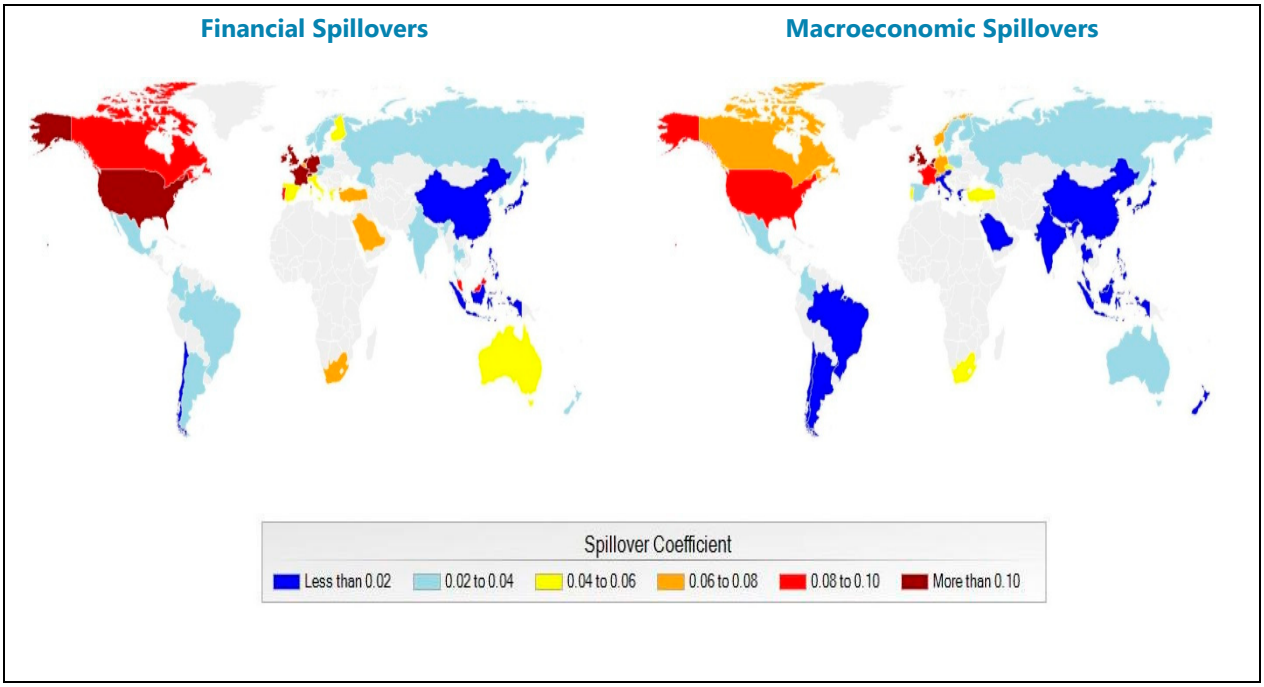


Source: BIS bilateral bank lending statistics, consolidated ultimate risk basis, end-2012.

64. The estimates suggest that macrofinancial spillovers from CCB adjustments in the U.K. are small but concentrated among selected economies. International financial and macroeconomic spillovers from CCB adjustments in the U.K. are measured in terms of credit and output spillover coefficients, respectively. The credit (output) spillover coefficient for a CCB shock is defined as the ratio of the peak effect on nonfinancial corporate debt (output) in the recipient economy to the peak effect on bank credit (domestic demand) in the U.K. In response to a CCB increase in the U.K., bank lending spreads widen there, raising the bank capital ratio while moderately reducing bank credit. Other things being equal, this induces a small output contraction in the U.K. In other economies, the corporate loan interest rate rises, to the extent their private sectors depend on U.K. bank loans. Nonfinancial corporate debt falls in response, inducing private domestic demand-driven output contractions. These output losses from negative financial spillovers are amplified by negative trade spillovers, in the form of lower exports to the U.K., while commodity price spillovers are negligible. These negative macrofinancial spillovers from CCB adjustments in the U.K. to the rest of the world are small: a one percentage point increase in the CCB in the U.K. would reduce U.K. output by 0.1 percent and output in the other economies covered by the analysis by less

[13] Vitek, F. (2015), "Macrofinancial Analysis in the World Economy: A Panel Dynamic Stochastic General Equilibrium Approach," IMF WP/15/227.

than that. However, this impact is unevenly distributed: it is concentrated among selected advanced and, to a lesser extent, emerging economies, broadly in line with their exposures. In addition, it could be larger in some very small economies with large exposures to the U.K. not included in the sample.



Appendix V. Report on the Observance of Standards and Codes—Basel Core Principles for Effective Banking Supervision

65. This report summarizes the assessments of the current state of the implementation of the BCP in the United Kingdom. The full Detailed Assessment Report, which also includes the overview of the institutional setting and market structure and the preconditions for effective banking supervision, is published separately.

66. An assessment of the effectiveness of banking supervision involves a review of the legal framework, as well as a detailed examination of the policies and practices of the institutions responsible for banking regulation and supervision. In line with the BCP methodology, the assessment focused on the PRA and the FCA as the main supervisors of the banking system.

67. The U.K. authorities agreed to be assessed according to the revised BCPs issued by the BCBS in September 2012. This assessment was thus performed using a different methodological basis than the previous BCP assessment of the U.K. carried out in 2011. The two assessments are thus not directly comparable: the revised BCPs have a heightened focus on corporate governance and risk management, and set a higher bar in assessing the effectiveness of a supervisory framework.

68. The U.K. authorities chose to be assessed and rated against both the Essential Criteria (EC) and the Additional Criteria (AC) articulated in the BCP document. The BCP methodology uses a set of EC and sometimes AC for each principle. The EC are the main elements on which to gauge compliance with a Core Principle (CP). The ACs are recommended best practices, against which the U.K. authorities have agreed to be assessed and rated. The assessment of compliance with each CP is qualitative and based on the assessors' judgment of whether the criteria are fulfilled in practice.

69. The authorities' openness and cooperation with the assessors was excellent. The assessors reviewed the framework of laws, rules, and guidance and held extensive meetings with U.K. officials, banking sector representatives, and other stakeholders (auditors, associations, and market observers). The authorities provided a comprehensive self-assessment of the BCPs, detailed responses to additional questionnaires, access to a variety of supervisory documents and files, as well as facilitated a broad range of meetings.

70. An assessment of compliance with the BCPs is not a mechanical exercise but relies on the judgment of the assessors. To reach their conclusions regarding the compliance of the U.K. approach to banking supervision against the BCPs, the assessors exercised judgment. Nevertheless, they also sought to adhere to a methodology that is consistent with assessments done in other countries. Consequently, the assessment is intended to provide U.K. authorities with an internationally consistent measure of their compliance with the BCPs.

Main Findings

71. With the enactment of the Financial Services Act of 2012, the U.K. reformed fundamentally its institutional regulatory architecture for financial services. The Act replaced the Financial Services Authority with an architecture centered on two new authorities: the PRA—a subsidiary of the BoE—and the FCA. Responsibility for financial stability was assigned to a new statutory subcommittee of the BoE's Court of Directors, the FPC. The Governor of the BoE was named Chair of the FPC, and the FPC itself was charged with the primary objective of identifying, monitoring, and taking action to remove or reduce systemic risk.

72. The U.K. authorities have made important progress in adopting a more rigorous, hands-on, and systemically focused approach to banking supervision since the last FSAP in 2011. This progress is reflected in the very high degree of compliance with the BCPs: the assessors judged the U.K. to be compliant or largely compliant with all BCPs. The goal of the U.K. authorities' current supervisory approach is now more clearly aligned with the overarching objective of promoting and preserving systemic resilience. This policy objective is borne out especially in the emphasis U.K. supervisors have placed, *first*, on the assessment of risks and on the adequacy of capital and liquidity in supervised entities; and *second*, on the largest and most systemically important firms. From the supervisors' perspective, the severe deterioration or failure of these firms threatens not just the stability of the financial system but also the broader economy. At the same time, the emphasis on reducing systemic risk arising from the largest, most systemically important firms is accompanied by a relatively higher tolerance for microprudential risks arising from mid-size and small firms, whose deterioration or failure would likely have lesser systemic implications.

73. Stress testing has become a critical supervisory tool that encourages firms and supervisors to adopt a more forward-looking view on the strength of their balance sheets and resilience to shocks. There is evidence that the emphasis on stress testing has encouraged firms to strengthen their internal analytical and risk-management capabilities, in addition to retaining high levels of capital and liquidity.

74. The BCP assessment took place during a period of continuing development and transition. It is based on the assessors' understanding of the current state of the supervisory approach, but also incorporates, where possible, the available information about changes introduced shortly after the assessment took place or expected in the near future. Three such changes, in particular, are worth highlighting.

- ***Further revisions to the structure of the U.K.'s supervisory apparatus*.** The BoE and Financial Services Act, approved in May 2016, merges the PRA into the BoE, ending its status as a BoE subsidiary. The Act creates a Prudential Regulatory Committee (PRC) alongside the FPC and the MPC. The PRC will still draw on a range of perspectives in steering its work, as its governance body will include both senior BoE bank officials, including some involved from the other two committees, and an external majority similar to the composition of the PRA's existing Board of Directors. The bill seeks to preserve the operational independence of the prudential supervisor, which would retain its power to fund its operations through a levy on supervised firms.

Resolution powers will be kept separate from the prudential supervisor, as required by law, and will remain in the BoE's Resolution Directorate (RD). This change is expected to increase the integration of the prudential supervisor with the rest of the BoE, enabling greater synergies across those parts of the BoE charged with financial stability objectives.

- ***"Ring-fencing."*** Banks are preparing plans to implement the requirement to ring-fence their retail banking operations by 2019. While it is too early to judge the shape and repercussions of these changes, ring-fencing is expected to reduce systemic risk, improve resolvability and lower risk to the taxpayer by segregating retail deposits from riskier activities. It may also spur further increases in the capital base of U.K. banks. These changes are particularly important in view of the desire to see the U.K. financial sector grow further, preserving London's historical role as a hub for global finance.

- ***Improvements in governance.*** In March 2016, a new Senior Managers Regime (SMR) replaced previous requirements governing the supervisory approvals that individuals require in order to assume senior roles in supervised firms. The SMR seeks to reinforce the accountability of individuals in the most senior roles on an ongoing basis and in a more structured and focused way than was the case under the previous Approved Persons Regime. The new regime is an important step toward bolstering public confidence in the banking system, which was severely damaged after the crisis and a succession of cases of misconduct. But as it was introduced very recently, the assessors were not able to examine how it is implemented in practice. The SMR is thus not reflected in the BCP assessment.

75. In addition, the U.K. supervisory authorities continue to adapt their approach in view of the experience since the establishment of the new model of supervision. Discussions include the definition, by the PRA, of its 'target operating model', which specifies how the PRA intends to operate in accordance with an agreed risk appetite and within a realistic budget envelope to meet its statutory and strategic objectives while ensuring the best use of its people and processes within appropriate governance and controls. The PRA's internal considerations revolve around some of the themes that this assessment identifies, as outlined below. In December 2014, the FCA announced a revised overall strategy to address its range of functions and responsibilities, which will enable a more market-focused approach to identifying risks and supervising firms.

Mandate, independence and cooperation, enforcement powers (CP 1-3, 11)

76. Overall, U.K. supervisors have an appropriate foundation for their mandate, powers, independence, and ability to direct firms to address weaknesses. The reforms instituted by the Financial Services Act 2012, especially the clearer delineation of responsibilities achieved with the creation of two separate authorities for prudential and for conduct supervision, have largely resolved prior concerns about challenges in pursuing two different mandates within the same agency. The regulators no longer have a duty to have regard to the desirability of maintaining the competitive

position of the United Kingdom.[14] The pursuit of financial stability as its primary goal is further reinforced by the explicit mention, in the law, of a 'no-zero-failure' policy: it is not the supervisor's goal to prevent failures, only to avoid disorderly ones that could destabilize the U.K. financial system.

77. Nonetheless, the recent reforms do not appear to have fully resolved tensions—also identified during the 2011 FSAP—regarding the balance that supervisors must find between effectiveness and efficiency. The U.K. authorities' decision to prioritize systemic resilience, and thereby concentrate attention and resources on the largest, most systemically important firms, represents a legitimate policy consideration. But the reduced probing and validation on the remaining banks creates tradeoffs and risks that the U.K. authorities should also factor into their objective function.

Licensing, permissible activities, transfer ownership, and major acquisitions (CP 5-7)

78. The U.K. supervisory approach includes sound tools for licensing activities and providing oversight over changes in control and with regard to major acquisitions. Many of the decisions regarding licensing or acquisitions require consultation between the twin supervisors, if not the outright approval from each, and the PRA and FCA appear to be working toward greater collaboration in reaching such decisions. Both supervisors require firms to meet and then uphold continuously a set of "Threshold Conditions"[15] to engage in the regulated activity of deposit-taking. The supervisors require firms as well to behave according to a set of "Fundamental Rules" and "Principles for Business"—principles that guide firms to maintain the safety and soundness of their operations and set out their fundamental obligations.

Supervisory approach, process, and reporting (CP 8-10)

79. Drawing on lessons learned from the financial crisis, U.K. supervisors have made significant progress in addressing some of the weaknesses cited in the last FSAP. Thanks in large part to the separation of powers between the PRA and the FCA, each agency has been able to develop supervisory approaches that better support its different yet interdependent objectives.

[14] However, in the Chancellor's 'remit and recommendations' letter of July 2015 to the FPC, the competitive position of the London marketplace is emphasized: "I would like the Committee to consider how, subject to its primary objective to protect and enhance the stability of the U.K.'s financial system, its actions might affect competition and innovation, and their impact on the international competitiveness of the U.K. financial system." In its reply, the Governor of the BoE (and Chairman of the FPC) states that "[t]he FPC will, where practicable in the context of its financial stability objective, consider how its policy actions (or decisions not to act) might affect competition, innovation and the international competitiveness of the U.K. financial system." While this does not affect formally the U.K. regulators' mandate, it could—through FPC recommendations or directions—increase the weight assigned by the PRA to non-prudential considerations in the discharge of its functions. At the time of assessment, there were no signs that this had materialized.

[15] Minimum requirements that firms must meet in order to be permitted to carry on the regulated activities in which they engage. In broad terms, they require firms to have an appropriate amount and quality of capital and liquidity, to have appropriate resources to measure, monitor, and manage risk, to be fit and proper, and to conduct their business prudently.

80. Supervisors continue to rely substantially on the practice of setting out supervisory expectations for firms—articulated in the "Threshold Conditions" and in the PRA's "Fundamental Rules" and FCA's "Principles for Business" mentioned above—and then depending on them to report shortfalls from these standards. This approach is based on holding firms and their senior management accountable for their compliance with rules and regulations and for conducting their business in a prudent, safe, and sound manner. Given recent concerns about weaknesses in conduct and culture, it is important that U.K. supervisors continue to probe firms' compliance, safety, and soundness more carefully and intensely than before the crisis.

81. The assumptions the U.K. supervisors appear to be making regarding the scale and depth of challenges or risks that could emerge from mid-sized and smaller, non-systemically significant institutions should be re-examined. Such institutions may serve particular regions of the country or particular classes of customers who may otherwise not be well served by larger firms, and their risks across these banks are more likely to be correlated than across large ones. They constitute the majority of supervised firms in terms of numbers of firms though not in terms of risk exposure.

82. U.K. supervisors are cognizant of this risk and have sought to mitigate it, but there is a question whether the solutions they adopted are adequate. Supervisors rely to a great degree on automated monitoring for small to mid-sized banks. However, it is not clear whether this approach gives them sufficient insight into their management, operations, and risks. While the failure of any one of the smaller firms may not threaten financial stability or the broader economy, frequent or concurrent failures may represent a reputational risk for the supervisor. Evaluating and monitoring risks across firms requires the generation of comparable, relevant, reliable, and timely data. In discussions with supervisors and industry representatives, recent improvements in the collection of data were noted, many stemming from changes in the EU reporting framework. The creation of a PRA data governance group is also improving the decisions supervisors make about what data to gather and how to make use of it. But there is still room for U.K. supervisors to develop better data on credit exposures and performance. This would enhance their ability to monitor and interpret credit trends across the industry and to develop techniques for a more detailed offsite analysis of loan portfolios' performance, leading to more efficient monitoring of credit conditions and of banks' asset quality.

83. As well, there may be room to expand the depth and breadth of certain critical reviews even for the largest banks. The supervisors' "continuous assessment" of the major players may leave insufficient time and resources for the regular review of the internal models they are permitted to use for the calculation of their capital requirements. This could weaken the supervisor's scrutiny of the adequacy of banks' capitalization.

Consolidated and cross-border supervision (CP 12-13)

84. An essential element of effective supervision is to possess the ability to oversee the consolidated operations of a firm, both at home and abroad. The Financial Services Act 2012 corrected a legacy weakness of the prior supervisory arrangements by giving the PRA and FCA two

new powers over holding companies that are not themselves authorized entities and were not previously subject to the supervisor's oversight: (i) the power to give directions to the parent organization to undertake or refrain from certain undertakings; and (ii) the power to require the parent organization to provide information. These powers give U.K. supervisors more direct access to, and influence over, parent organizations that are not themselves undertaking a regulated activity.

85. The two supervisors are likewise deeply engaged in the oversight of U.K. firms' overseas operations and cooperate as well with supervisors abroad in their roles as both home and host supervisors. Both agencies have the ability to share or exchange relevant information with supervisors in other jurisdictions, and both can play a role in supervisory colleges.

Corporate governance (CP 14)

86. Another lesson from the crisis incorporated in the current supervisory approach is that the excessive build-up of risks in firms prior to the financial crisis was partly due to weak or poor internal governance in those firms. The approach to supervising corporate governance observed at the time of the assessment evidenced gaps, especially in supervisors' abilities to hold key individuals accountable for their actions or inaction. The new SMR, implemented in March 2016, is expected to address these weaknesses and reinforce supervisors' abilities in this area. Due to the timing of its introduction, however, the assessors were not able to assess how it is implemented in practice.

Risk-management and capital adequacy (CP 15-25)

87. The U.K. authorities have a comprehensive and well-articulated framework for the supervision of risk management practices and capital adequacy, especially for the most systemically important firms. Still, as noted above, supervisors have had difficulty keeping pace with reviews of internal models, which in turn raises issues for capital planning across many firms. Moreover, there may be room to improve guidance offered regarding the supervision of credit risk and to increase the application of Asset Quality Reviews (AQR) for smaller firms. In addition, U.K. authorities should continue to promote a closer alignment of the EU regulatory framework with international standards.

Controls, audit, accounting, disclosure, and abuse of financial services (CP 26-29)

88. The U.K.'s approach in this area has evolved considerably to encourage greater dialogue with internal and external auditors. The supervisors have increased their oversight of banks' internal audit functions to ensure that they perform their role effectively; this, in turn, allows supervisors to rely more on the internal auditors' work as a complement to their own analysis of banks' internal governance. Discussions with external auditors now extend past accounting and financial controls, and into governance matters. Auditors themselves have welcomed this increased level of contact for sharing insight, though more could be done to promote greater consistency in how supervisors engage with them.

89. With regard to disclosure, U.K. supervisors should find ways to publish non-confidential, firm-level prudential returns to assist in the comparative analysis of those firms' condition and performance. The greater release of comparable, relevant, reliable, and timely data on firms' balance sheets, income and losses, and off-balance sheet exposures may improve the marketplace's understanding of firms' risk profiles and promote greater scrutiny.

90. Finally, while supervisors appear to have an appropriate legal framework and policies to address the risk of financial services abuse, the procedures in place today leave large numbers of firms monitored and supervised on a thematic and "responsive" basis. Reviews of the majority of firms that are subject to the AML regulation are limited to carrying out periodic work on specific risks and sectors on a thematic basis. Given that the FCA's thematic reviews have identified problems with compliance and internal controls in smaller firms, supervisors are encouraged to strengthen the "backstop" against the abuse of firms thought to be of lower risk.

Summary Compliance with the Basel Core Principles

Table 1. Summary Compliance with the Basel Core Principles

Core Principle	Comments
1. Responsibilities, objectives, and powers	The new financial regulatory architecture addresses most of the findings of the previous FSAP: unclear and ultimately unbalanced allocation of effort and resources between the prudential and conduct macro-objectives; the reference to principles of 'good regulation' potentially weakening the supervisor's focus on prudential issues; the lack of powers over parent undertakings.
2. Independence, accountability, resourcing, and legal protection for supervisors	Considering the size, complexity and systemic footprint of the U.K. financial system, supervisory resources, in their current configuration, might be overstretched, potentially weakening the supervisory action.
3. Cooperation and collaboration	A number of institutional arrangements promote cooperation among domestic authorities. International cooperation (at both bilateral and multilateral level) appears well established and evolving.
4. Permissible activities	Although the name "bank" is not defined in U.K. laws, the use of this name and the related concept of "building society" are strictly controlled through legislation and the PRA's and FCA's rules. Accepting deposits is clearly identified as an activity requiring authorization, and only firms authorized to accept deposits may use the name "bank" or "building society."
5. Licensing criteria	Through the application of the U.K.'s "Threshold Conditions," the U.K.'s licensing criteria ensure that a firm, once authorized, can be supervised effectively.
6. Transfer of significant ownership	While neither the European Banking Authority (EBA) nor the U.K. supervisors have issued guidance regarding ultimate beneficial owners, the EBA and U.K. supervisory agencies reference requirements regarding major shareholders of a company (in the EBA's guidelines) or any entity or individual who is to become a shareholder, which would include ultimate beneficial owners. Consequently, beneficial owners would be subject to scrutiny similar to other shareholders in evaluations regarding the transfer of significant ownership.

Table 1. Summary Compliance with the Basel Core Principles (continued)	
Core Principle	**Comments**
7. Major acquisitions	While the UK legislation does not define the term 'major acquisition,' it sets forth notification requirements that result in an expansive definition, which covers any proposed business expansion with a potentially significant impact on the firm's risk profile or resources or in its capital adequacy or solvency. These criteria apply to any operation of significant impact, be it the acquisition of a bank or nonbank, EU or non-EU. Once notified, U.K. authorities have the necessary powers to approve or reject requests to undertake major acquisitions that raise concerns about the risk that may result or the authorities' abilities to supervise the firms.
8. Supervisory approach	Important progress has been made in adopting a more rigorous and "hands-on" approach, especially for the most systemically important firms. There is room for more testing and probing in certain areas, even in the largest firms. A better balance must be achieved in the supervision of less systemically important firms, as offsite monitoring remains the primary means of supervision.
9. Supervisory techniques and tools	Supervisors apply a range of supervisory tools more actively in the supervision of systemically important firms. While supervisors may need to employ external experts to assist with some reviews, reliance on skilled persons and "deep dives" still does not achieve the benefits of onsite supervision that includes transaction testing and greater probing of issues.
10. Supervisory reporting	Thanks partly to the EU reporting framework, a wide range of data is collected for supervisory reporting. The degree of detail is generally adequate, though opportunities remain to develop better data on credit exposures and performance.
11. Corrective and sanctioning powers of supervisors	In the last FSAP, U.K. authorities received a recommendation to make more proactive use of corrective action and sanctioning tools as part of a more formal early intervention framework. The creation by the PRA of the proactive intervention framework, with five explicitly defined stages, provides U.K. supervisors with a more formal process and a supervisory tool that describe steps supervisors—and the Resolution Directorate of the BoE—must take as a firm's condition deteriorates.
12. Consolidated supervision	The U.K. authorities supervise banking groups on a consolidated basis; prudential standards are imposed at different levels of consolidation; supervisors routinely analyze information collected on both a consolidated and solo basis in order to inform their assessment of the risks posed to the safety and soundness of the banking groups.
13. Home-host relationships	The U.K. authorities, in their capacity as both home and host supervisors of cross-border banking groups, regularly share information and cooperate with foreign authorities for effective supervision of groups and group entities. Foreign banks operating in the U.K. are subject to the same standards as those required of domestic banks.
14. Corporate governance	Weaknesses identified at the time of the assessment in the Approved Persons Regime may be addressed through the new SMR, which seeks to identify the accountability of individuals in significant roles on an ongoing basis. Corporate governance reviews appear to have taken place predominantly in the largest, most systemically important firms ("Category 1") and not in other firms, although the

	PRA has released guidance during this assessment outlining an approach to evaluating governance issues across all supervised firms going forward.

Table 1. Summary Compliance with the Basel Core Principles (continued)

Core Principle	Comments
15. Risk management process	The PRA has set up a comprehensive and well-articulated framework for the supervision of bank's risk-management systems, which allows it to perform a range of analyses and reviews (including of banks' enterprise-wide risk management), particularly on the largest banks, with more breadth and depth than it was the case for the FSA. The introduction of the concurrent stress test for major U.K. banks is seen as a factor that raises the standard of banks' risk-management practices. The smaller institutions receive a lower degree of attention and are rarely examined by risk specialists: which, per se, is quite natural, given their more limited degree of complexity and systemic impact, but raises legitimate questions that have been further elaborated elsewhere (CP 8 and 9).
16. Capital adequacy	The current model change review policy does not ensure that the reliability of internal model banks' capital requirement calculations is adequately scrutinized. Some of the elements of non-compliance of the EU legislation/regulation on capital with the Basel standard (as revealed by the December 2014 regulatory consistency assessment program (RCAP)) are relevant for the U.K. banking system, though the U.K. implementation of the European framework is more conservative for other aspects.
17. Credit risk	No explicit supervisory guidance on credit risk managements is provided to the majority of banks.
18. Problem assets, provisions, and reserves	AQRs at nonsystemic banks are too sporadic to ensure an adequate scrutiny of their asset classification and provisioning.
19. Concentration risk and large exposure limits	The EU framework for large exposures is not aligned with the Basel standard; which, however, will take effect only from January 2019. As regards concentration risk, the U.K. framework is robust, particularly advanced for credit risk concentration under Pillar 2, and less structured but still effective for other forms of risk concentration (such as market and liquidity risk).
20. Transactions with related parties	The PRA Rulebook complies with the BCP definitions of related parties and related party transactions and sets out most of the requirements cited in the principle. Aggregate information on transactions with related parties is obtained from banks though a semi-annual FINREP report. Non-FINREP banks (the majority of U.K. banks) provide information on transactions with related parties in their annual reports; such frequency does not ensure an adequately intense supervision of transactions with related parties at medium and small banks (which falls within the general finding under CP 8).
21. Country and transfer risks	At the last FSAP, assessors recommended that U.K. supervisors adopt a more proactive approach to the supervision of country and transfer risk. The PRA does engage to a greater degree than before on these risks with the largest and most systemically important firms. More work could be done to evaluate and monitor smaller firms' exposures to country risk, though these firms may have fewer such exposures.

22. Market risk	The PRA periodically reviews banks to assess that their market risk-management processes are consistent with their risk profile, risk appetite, systemic importance, and capital strength.

Table 1. Summary Compliance with the Basel Core Principles (concluded)

Core Principle	Comments
23. Interest rate risk in the banking book (IRRBB).	Continued weaknesses in the measures and comparability of IRRBB measures across firms may be addressed in forthcoming changes in EU's and BCBS's approach to this risk. These changes may remediate suggestions raised in the prior assessment to improve outlier analysis of this risk in mid-sized and smaller firms.
24. Liquidity risk	The PRA is equipped with a liquidity risk framework that is overall robust, structured, consistently implemented. The EU Regulation on liquidity is not aligned with the Basel standard.
25. Operational risk	Supervisors now customize their operational reviews more closely to the key risk exposures that the largest firms face. The more strategic use of several deep dives spread out over three years for each of the largest firms may raise questions about whether this pace of review is sufficient to ensure that large firms are keeping pace with the state of the art in operational risk management.
26. Internal control and audit	Supervisors have strengthened their engagement with control functions as well as internal and external auditors, especially in the largest and most systemically important firms. In smaller firms, supervisors have fewer touch points to ensure that control functions and auditors are functioning as expected.
27. Financial reporting and external audit	The law requires U.K. banks to prepare financial statements and to maintain books and records that produce adequate and reliable data for the preparation of financial statements. The FCA, through the U.K. Listing Authority, has responsibility for enforcing the requirements for the preparation of financial statements on listed banks. The PRA reviews firms' ability to produce adequate and reliable data. The lack of formal powers to access external auditors' working papers is mitigated by the close collaboration of the PRA with the Financial Reporting Council (which has right of access to the auditors' working papers), the use the PRA makes of this collaboration to address areas of its own concern, and the consideration that information from external auditors is only a complementary aspect of bank supervision in the U.K.
28. Disclosure and transparency	The combined expectations set by the CRR, plus the requirements set out in U.K. financial reporting guidelines and audit frameworks, help ensure that supervised firms are reporting on a consolidated and, where appropriate, solo basis that is easily accessible and fairly represent their condition and performance.
29. Abuse of financial services	Testing of the management and control of exposure to financial crime and the abuse of financial services is limited and raises questions of whether supervisors engage in sufficient testing to ensure that these risks are well managed. The prior assessment's concerns remain that "pockets of financial activities…receive less than adequate supervision."

Recommended Actions

Table 2. Recommended Actions to Improve Compliance with the Basel Core Principles for Effective Banking Supervision

Reference Principle	Recommended Action
1. Responsibilities, objectives, and powers	PRA to incorporate into its approach to risk an explicit consideration of reputational risk, including related to the possible failure of nonsystemic banks.
2. Independence, accountability, resourcing, and legal protection for supervisors	Reevaluate the adequacy of PRA's operating model for the overall effectiveness of its supervisory activity.
8. Supervisory approach	Evaluate adequacy of supervision, especially of less systemically important firms, and whether current arrangements provide sufficient testing to ensure that all firms are operating safely and soundly and in compliance with laws, regulations, and supervisory expectations.
9. Supervisory techniques and tools	Seek more ways to validate and probe statements in banks. Evaluate whether "deep-dives" provide sufficient, ongoing insight into major firms, and whether key skills need to be developed within staff.
14. Corporate governance	Promote efforts to make managers in financial institutions more accountable. Ensure that corporate governance is appropriately supervised in firms beyond the largest and most systemically important, including through the implementation of recently released supervisory guidance.
16. Capital adequacy	Revise the model change review policy to ensure that the reliability of large banks' capital requirement calculations is adequately scrutinized.
17. Credit risk	Provide more explicit guidance on supervisor's expectations to the majority of banks. Consider establishing regular access to (and elaborations from) broad databases with loan level information.
18. Problem assets, provisions, and reserves	Devise operational enhancements to secure a minimum level of direct scrutiny of banks' asset classification and provisioning also for the generality of nonsystemic banks. Require banks to set and periodically review an appropriate threshold for the identification of significant exposures.
19. Concentration risk and large exposure limits	Require banks to set thresholds for acceptable concentrations of risk.
20. Transactions with related parties	Introduce regular infra-annual reporting of transactions with related parties for non-FINREP banks. Ensure regular monitoring of compliance with the rules on transactions with related parties for all banks.
21. Country and transfer risks	Consider how to mitigate risks of missing issues in mid and small banks.

Table 2. Recommended Actions to Improve Compliance with the Basel Core Principles for Effective Banking Supervision (concluded)

Reference Principle	Recommended Action
24. Liquidity risk	Continue to promote a closer alignment of the EU regulatory framework with international standards.
25. Operational risk	Evaluate assumptions underlying the deployment of supervisory risk specialists (SRS) with regard to operational risk to ensure that all firms, and not solely systemically important ones, are managing this risk appropriately.
29. Abuse of financial services	Propose stronger and more proactive backstops for evaluating banks in the lowest risk categories more frequently to assess the quality of their controls and risk-management to avoid exposures to financial crime.

Authorities' Response to the Assessment

91. The U.K. authorities welcome and support the IMF's comprehensive review of the U.K.'s supervisory and regulatory framework and its acknowledgement of the significant progress made since the last FSAP in 2011 through the adoption of a more rigorous, hands-on and systemically focused approach to banking supervision. The assessment has come at an important time for the U.K. authorities as they continue to develop and transition to the new regulatory structure and supervisory approach.

92. The ambition of the U.K. authorities is for the U.K. financial services sector to be the best regulated in the world, aligning competitive and innovative markets of unquestioned integrity with the highest standards of conduct.

93. To this effect the U.K. has taken a number of steps, including the following:

- continuing to be a leading advocate for tough capital and leverage requirements and liquidity standards;
- introducing a robust resolution regime and adopting total loss absorbency standards, a bail in tool and structural reform of the banking system;
- putting in place the Senior Managers and Certification Regime to ensure strong governance, better accountability of senior executives and higher standards of conduct in the banking sector;
- ensuring better alignment of financial incentives of senior risk takers with the longer term financial soundness of their firms; and
- prioritizing a high degree of protection for consumers of financial services, improving standards across the industry and taking tough enforcement action against those who do not meet them.

94. The U.K.'s approach is centered on forward looking, judgment-based prudential and conduct regulation. A key element of the U.K. approach is that it does not seek to operate a 'zero

failure' regime. Rather it seeks to ensure that a financial firm which fails does so without significant disruption to the supply of critical financial services or a material negative impact on consumers. Therefore, the U.K. approach continues to be risk based, with resources devoted to those areas where the risk to financial stability is the greatest. The U.K. authorities believe that the current level of scrutiny given to the supervision of smaller firms is appropriate, proportionate and is in line with their statutory objectives, including ensuring the safety and soundness of the U.K. financial system.

95. The U.K. authorities welcome the IMF's findings regarding the effectiveness of AML/CFT supervision, and its recognition of the positive and significant progress that has been made since the last FSAP in 2011 in expanding and strengthening supervisory activities in this area.

96. The FCA's approach to AML supervision is risk-based and outcome focused to encourage good industry AML/CFT standards. In line with the U.K. authorities' risk-based supervision, resources are targeted at those banks and their activities which give rise to high money laundering risk. The U.K. authorities consider the approach to supervising lower risk banks—through thematic reviews, event-driven supervision and alerts from other domestic and overseas law enforcement/supervisory authorities—to be proportionate, effective and in line with their wider risk-based approach.

97. Once again, the U.K. authorities wish to express their support for the role of the FSAP in contributing to improvements in supervisory practices and promoting the soundness of the financial systems in member countries. The U.K. authorities look forward to continuing the dialogue with the IMF and other global counterparts to work to improve the stability and effective supervision of the global financial system.