INTERNATIONAL MONETARY FUND

IMF Country Report No. 16/189

GERMANY

FINANCIAL SECTOR ASSESSMENT PROGRAM

June 2016

FINANCIAL SYSTEM STABILITY ASSESSMENT

This report on Financial System Stability Assessment on Germany 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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International Monetary Fund
Washington, D.C.

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GERMANY

FINANCIAL SYSTEM STABILITY ASSESSMENT

June 10, 2016

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Prepared By
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This report is based on the work of the Financial Sector Assessment Program (FSAP) mission that visited Germany in November 2015 and February–March 2016. The 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 team comprised Michaela Erbenová (mission chief), Jodi Scarlata (deputy mission chief), Ulric Erickson von Allmen, Elias Kazarian, Emanuel Kopp, Cecilia Marian, Fabiana Melo, Jean-Marc Natal, Nobuyasu Sugimoto, Hans Weenink, Christopher Wilson, and TengTeng Xu (all IMF staff), as well as Jonathan Fiechter, David Scott, Robert Sheehy, Richard Stobo, Ian Tower, José Tuya, and Marguerite Zauberman (external experts). David Jutrsa provided research assistance from Washington. The mission met the Ministry of Finance (MOF), the Deutsche Bundesbank, Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin), the European Central Bank (ECB), the European Securities and Markets Authority (ESMA), the Federal Agency for Financial Market Stabilization (FMSA), the European Systemic Risk Board (ESRB), the Single Resolution Board (SRB), representatives of deposit guarantee schemes, institutional protection schemes (IPS), industry associations, financial sector firms, academics, and representatives of the auditing, 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. This FSAP evaluates the risks and vulnerabilities of the German financial system and reviews both the German regulatory and supervisory framework and implementation of the common European framework insofar as it is relevant for Germany.
- Germany is deemed by the Fund to have a systemically important financial sector 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 Michaela Erbenová and Jodi Scarlata, with contributions from the FSAP team members. It draws on several Technical Notes and Detailed Assessment Reports on compliance with the Basel Core Principles for Effective Banking Supervision (BCP) and with Principles for Financial Market Infrastructure (PFMI).

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Glossary

AFS	Available for Sale
AIFMD	Alternative Investment Fund Managers Directive
AML/CFT	Anti-Money Laundering and Combating the Financing of Terrorism
AQR	Asset Quality Review
AUM	Assets Under Management
BaFin	German Federal Financial Supervisory Authority
BCP	Basel Core Principles for Effective Banking Supervision
BIS	Bank for International Settlements
BO	Beneficial Ownership
BRRD	Bank Recovery and Resolution Directive
BU	Bottom-up (stress test)
CCB	Countercyclical Capital Buffer
CCP	Central Counterparty
CDS	Credit Default Swaps
CET1	Common Equity Tier 1 Capital
CMG	Crisis Management Group
CPMI	Committee on Payments and Market Infrastructures
CPSS	Committee on Payment and Settlement Systems
CRDIV	Capital Requirements Directive
CRE	Commercial Real Estate
CRR	Capital Requirements Regulation
CSD	Central Securities Depository
CVA	Credit Valuation Adjustment
DGSD	Deposit Guarantee Scheme Directive
EA	Euro area
EBA	European Banking Authority
ECB	European Central Bank
DNFBP	Designated Non-financial Businesses and Professions
EEA	European Economic Area
EIOPA	European Insurance and Occupational Pension Authority
ELA	Emergency Liquidity Assistance
EM	Emerging Markets
EMIR	European Market Infrastructure Regulation
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
FMI	Financial Market Infrastructure
FMSA	Federal Agency for Financial Market Stabilization
FSB	Financial Stability Board
FSC	Financial Stability Committee
FX	Foreign Exchange
G-SIBs	Global Systemically Important Banks (designated by the FSB)

G-SIIs	Global Systemically Important Insurers (designated by the FSB)
IAIS	International Association of Insurance Supervisors
ICAAP	Internal Capital Adequacy Assessment Process
ILAAP	Internal Liquidity Adequacy Assessment Process
IOSCO	International Organization of Securities Commissions
IPS	Institutional Protection Scheme
IRRBB	Interest rate risk in the banking book
HQLA	High Quality Liquid Assets
HH	Households
KA	FSB's Key Attributes for Effective Resolution Regimes
LCR	Liquidity Coverage Ratio
LSIs	Less Significant Institutions (in the context of SSM)
LTV	Loan-to-value ratio
MiFID	Markets in Financial Instruments Directive
MOF	German Ministry of Finance
MOU	Memorandum of Understanding
MREL	Minimum Requirement for Own Funds and Eligible Liabilities
NCA	National Competent Authority
NFC	Non-financial corporations
NII	Net Interest Income
NPL	Non-performing Loans
NSFR	Net Stable Funding Ratio
ORSA	Own Risk and Solvency Assessment
OTC	Over-the-counter
PFMI	CPSS-IOSCO Principles for Financial Market Infrastructures
PSIs	Potentially Significant Institutions
QIS	Quantitative Impact Study
RRP	Recovery and Resolution Plan
RWA	Risk-Weighted Assets
SCR	Solvency Capital Requirement (for insurers)
SIs	Significant Institutions (in the context of SSM)
SME	Small and Medium-size Enterprise
SRB	Single Resolution Board
SREP	Supervisory Review and Evaluation Process
SRF	Single Resolution Fund
SRM	Single Resolution Mechanism
SSM	Single Supervisory Mechanism
SSMR	Single Supervisory Mechanism Regulations
TD	Top-down (stress test)
TLAC	Total loss-absorbing capacity
UCITs	EU Directive on Undertakings for Collective Investment in Transferrable Securities
YTM	Yield-to-maturity

EXECUTIVE SUMMARY

Germany's financial sector plays a key role in the global economy. The country is home to two global systemically important financial institutions, Deutsche Bank AG and Allianz SE, as well as to one of the largest global central counterparties (CCP), Eurex Clearing AG. The system is also very heterogeneous, with a range of business models and a large number of smaller banks and insurers. Its asset management industry is the third largest in the European Union (EU), while its sovereign bond market is a safe haven and benchmark for fixed income instruments globally. Consequently, Germany's contribution to ensuring the success of the new European financial stability architecture is crucial for fostering its domestic financial stability and the success of the European reform agenda.

The resilience of the German financial sector is bolstered by major financial sector reforms, driven by EU-wide and global developments, which are now nearing completion. The regulatory landscape has changed profoundly with strengthened solvency and liquidity regulations for banks (the EU Capital Requirements Regulation (CRR) and Directive IV (CRD IV)), and the introduction of macroprudential tools. The establishment of the Single Supervisory Mechanism (SSM) has positively impacted the supervision of the banking system as a whole, while the bank resolution regime has been significantly strengthened following the implementation of the EU Bank Recovery and Resolution Directive (BRRD). Introduction of Solvency II enhanced the regulatory and supervisory regime for insurance, leading to a more risk-based approach. The framework for Financial Markets Infrastructure (FMIs) has been strengthened by the European Market Infrastructure Regulation (EMIR). Germany is making progress towards compliance with the new EU Directives on Undertakings for Collective Investment in Transferable Securities (UCITS) and Alternative Investment Fund Managers (AIFMD). Overall, there is welcome emphasis on quantitative analysis to augment the traditional qualitative and relationship-based supervision.

The key risks facing the financial system reflect euro area (EA) and global developments as well as characteristics unique to the domestic financial architecture:

- ***The ongoing transition to the new supervisory and resolution architecture may give rise to decision-making and implementation frictions.*** The newly established European recovery and resolution framework entails a major cultural change. Its complex decision-making process still needs to be tested. The coordination of the European and domestic authorities to handle a systemic crisis is being set up. While the SSM supervisory practices are evolving quickly, the SRB—in charge of resolution measures for significant German banks—is still in a startup mode. This constitutes a transition risk until the EA level authority is fully operational.
- ***Low profitability, rooted in banks' and insurers' business models, is exacerbated by the low interest rates.*** The low interest rates are helping to boost credit demand and stimulate growth. However, prevailing business models make banks and life insurers particularly vulnerable to the associated adverse side-effects of unconventional monetary policy. Banks faced with falling net interest margins may be tempted to adopt risky search-for-yield strategies, and bank equity prices have been dropping markedly. Low profitability of life insurers hampers

their ability to pay guaranteed yields to policyholders. Real estate assets, while currently broadly in line with fundamentals, could become overvalued.

- ***A global growth shock, sharp downturn in emerging markets (EMs), or renewed tensions in the EA*** could lead to a rapid hike in global risk premia and asset price volatility. This may give rise to domestic financial risks and second round adverse spillovers because of the globally interconnected financial sector and the importance of German G-SIFIs for shock transmission. The uncertainties associated with the possibility of British exit from the EU weigh on the outlook.

Although long-standing challenges remain, the financial system as a whole appears resilient to these risks:

- Households' and corporate balance-sheets are strong. Deleveraging has progressed steadily, and mortgage-related debt-service is largely insensitive to rapid changes in interest rates.
- Risk-based bank solvency measures indicate substantial capital buffers, and non-performing loans (NPLs) are generally low and declining, although bank profitability is low and leverage is high in some institutions. While banks have continued to consolidate and reduce costs, mainly through branch reductions and increased IT services, further progress is needed.
- Notwithstanding severe challenges from low interest rates and Solvency II implementation, life insurers generally retain significant loss absorption capacity. Large insurers enjoy diversification benefits from multiple business lines and an international presence, while many small insurers are less affected by the low interest rates owing to their business mix. Some medium-sized insurers do not have such clear strengths.
- Eurex Clearing CCP has a comprehensive risk management framework. Preliminary results of the EU-wide stress test indicate that the CCP could withstand an extreme but plausible shock scenario, covering losses with pre-funded resources.

At this juncture, the German authorities, in close collaboration with their European partners, should keep their focus on finalizing the agenda and, crucially, ensuring that the new architecture is effective in practice. In this context, the following priorities are highlighted:

- Rapidly completing the processes to facilitate the resolvability of German financial firms while safeguarding taxpayer resources, and building capacity to implement the new resolution regime.
- Expanding further the capacity to monitor financial stability risks and cross-sector spillovers, by collecting comprehensive and granular data and completing the macroprudential toolkit.
- Continuing to integrate quantitative analysis into ongoing supervisory monitoring and promoting sound risk management practices in banks, including on strengthening the oversight role of supervisory boards, internal control and audit, related party exposures, and operational risk.

Key FSAP recommendations are summarized in Table 1.

Table 1. Germany: FSAP Key Recommendations	
Recommendations	**Time Frame[1]**
Financial stability policy framework	
Establish a core set of readily-available, consistent data for banks and non-banks to strengthen financial stability and macroprudential policy analysis	Short term
Develop the legal basis for real estate-related macroprudential tools	Short term
Banking oversight	
Implement measures to strengthen the oversight role of the banks' supervisory board	Short term
Provide guidance on risk management and other supervisory requirements, e.g. regarding loan portfolio management, concentration and related party risk, and operational risk	Short term
Increase granularity and coverage of bank supervisory data	Short term
Strengthen rules and supervisory processes for acquisitions and exposures to related parties	Medium term
Streamline and simplify the SSM decision making processes (to be taken at the EU level)	Medium term
Insurance oversight	
Prepare a communication strategy ahead of the publication of Solvency II indicators	Short term
Extend the application of G-SII toolkit on a risk-based basis to other large groups, including recovery and resolution planning, enhanced supervision and regular stress tests	Medium term
Communicate supervisory expectations based on the ORSA review more systematically; and use Solvency II framework to impose capital add-ons	Medium term
Require action plans for companies facing difficulties in meeting Solvency II requirements, including stress testing to ensure that they would be met even after a plausible shock	Medium term
Asset management oversight	
Intensify frequency of on-site inspections and enhance risk classification methodology	Short term
Introduce stronger rules on reporting of pricing errors and investor compensation rules	Short term
Crisis management and resolution	
Develop a formal systemic crisis coordination mechanism including German authorities, SRB and ECB	Short term
Ensure plans for adequate funding to support the orderly resolution of banks and discretionary ELA post-resolution	Short term
Remedy operational challenges to resolution actions; ensure authorities retain control during the resolution process; and test contingency plans in a system-wide crisis exercise	Short term
Review efficiency of SRM decision making (to be taken at the EU level)	Medium term
Financial Market Infrastructure—Eurex Clearing	
Strengthen the liquidity stress tests and upgrade the secondary site with staffing arrangement	Short term
AML/CFT	
Increase the effectiveness of the AML/CFT supervisory framework over cross-border banks	Short term
[1]Near term is one year. Medium term is 2–3 years.	

MACROFINANCIAL SETTING

1. The German economy is growing at a steady pace. Strengthening domestic demand, bolstered by robust labor market developments, higher public expenditures and lower oil prices (Table 2) offset a weaker foreign environment in 2015.

2. Private sector balance sheets continue to strengthen as monetary conditions ease and house prices increase (Figure 1, Tables 3 and 4). Households' (HH) and non-financial corporations' (NFC) debt and interest expenses have declined in relation to income. HH debt service is largely insensitive to rapid rises in interest rates with most mortgage rates being fixed for a 10–15 year period. Following more than a decade-long correction, house prices have risen rapidly since 2010, though still broadly in line with fundamentals. Recent real estate developments warrant monitoring as pockets of vulnerability may be emerging (Box 1).

3. The authorities have made progress in addressing the 2011 FSAP recommendations (Annex I). The financial oversight framework has been strengthened. The restructuring of the Landesbanken is under way but with only a limited progress to reduce non-commercial influences. Improvements are evident in the intensity of banking and insurance supervision and the adoption of analytical tools to support system-wide monitoring. The crisis management framework has been reformed owing to the EU-wide developments. Government support to banks is being wound down.

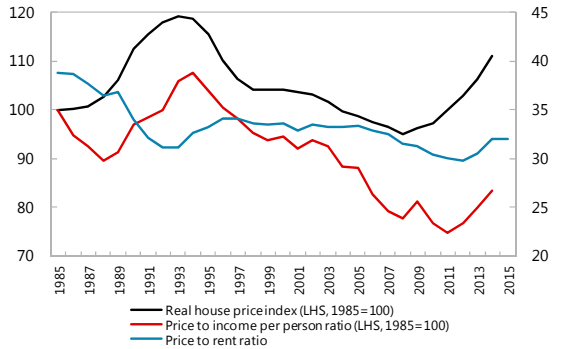
4. The financial system is dominated by banks and is generally domestically oriented and robust to shocks—a relatively unchanged financial structure since the last FSAP (Figures 2 and 3, Table 5). The banking system, with assets equivalent to 245 percent of GDP, is structured around three pillars and has gone through a sustained period of consolidation (Annexes II and III).[1] Bank funding, in aggregate, is more reliant on deposits compared to other advanced economies. Banks' foreign exposures are a fifth of total assets, with only small exposure to vulnerable emerging markets and Central and Eastern Europe. Approximately half of the claims are against the foreign non-bank private sector, followed by banks and the public sector. Germany's insurance sector is smaller than its peers as a share of GDP, with guaranteed return life products playing a dominant role. The asset management sector is the third-largest in Europe as measured by assets under management, and comprises a broad range of management companies and funds. Financial infrastructures are fewer than in other financial centers, but are interconnected with G-SIBs.

[1] The number of banks has declined by about 100 compared with the time of the last FSAP, with consolidation mainly taking place at local savings and cooperative banks level.

Figure 1. Germany: Real Estate and Shipping Developments

House prices have reached long-term equilibrium value …

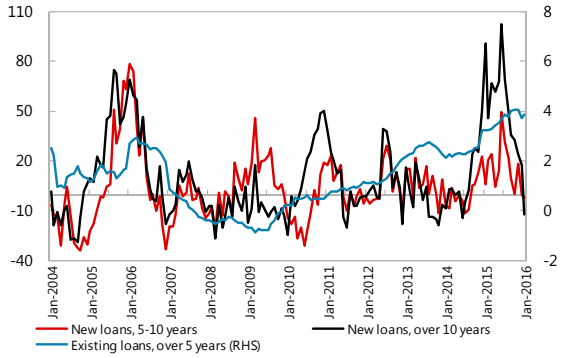
Housing Market Valuation Indices



Sources: Bulwiengesa, Bundesbank, Destatis, and IMF staff calculations.

… as mortgage credit accelerates significantly…

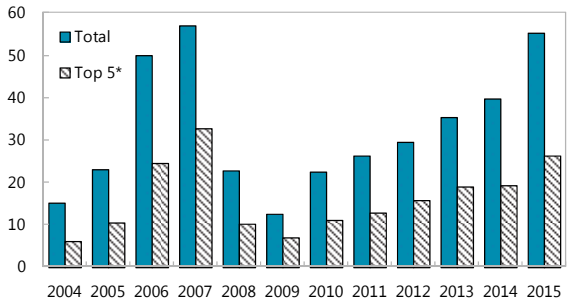
Housing Loans
(in percent)



Sources: Bulwiengesa, Bundesbank, Destatis, and IMF staff calculations.

… and the CRE market is heating up.

CRE Investment Turnover
(in EUR bn)

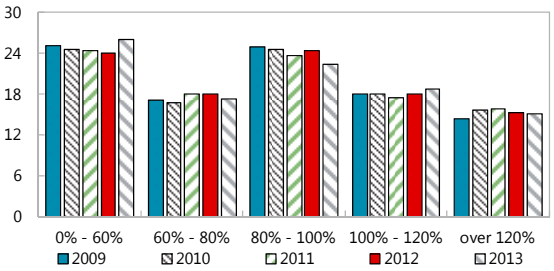


Source: CBRE Research Q4 2014, Q4 2015

*Top 5 includes: Berlin, Dusseldorf, Frankfurt, Hamburg and Munich

Pockets of vulnerability may need to be monitored

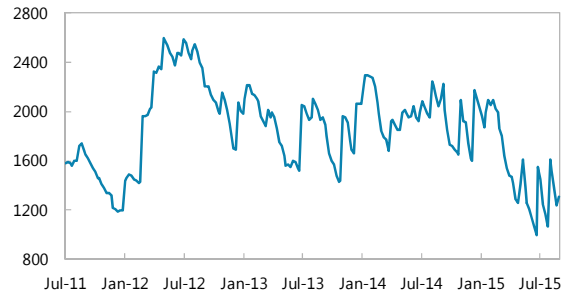
New Residential Mortgages by Sustainable LTV Ratio*
(number of banks)



Source: Bundesbank special survey among 116 banks in 24 towns and cities.
*The ratio of a loan to the mortgage lending value of the purchased asset, where a haircut on the market value is generally applied to reflect the sustainable value of the property. LTV measurement in Germany therefore differs from other internationally used concepts making comparison with LTVs from other countries difficult.

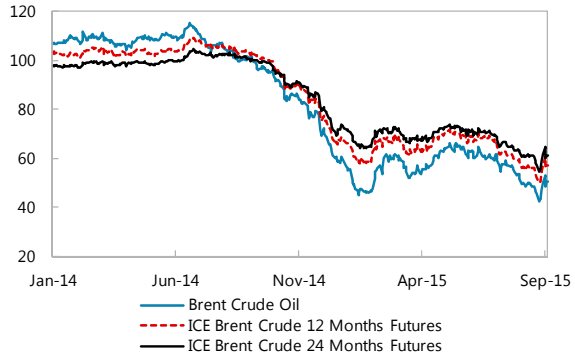
Container freight prices dropped sharply in 2015 …

WCI Composite Container Freight
(Benchmark Rate per 40ft Box)



… and floating storage (tankers) becomes less profitable

Oil Prices
(Brent USD/Barrel)



Box 1. Trends in Residential Real Estate

For the fourth consecutive year, house price increases in 2015 exceeded the growth in nominal income, but with important regional differences. While apartment price increases in the largest and most dynamic German cities (Berlin, Munich, and Hannover) reached double-digits in 2015H2, sustained East-West migration continues to weigh on residential prices in former East Germany.

The positive trend in real house prices that started in 2010 broadly reflects fundamentals. Following the post-reunification fiscally-triggered excesses of the early nineties, real estate prices declined, reaching a trough in 2009–10. Since then, higher income growth, immigration, supply bottlenecks, declining inventories, higher construction costs, and record-low interest rates contributed to the positive price trend. In real terms, house prices have reached a level consistent with measures of long-term equilibrium in 2015, as confirmed by price-to-rent and price-to-income ratios as well as the Bundesbank's internal valuation models. As households take advantage of record-low interest rates to lock-in new mortgage debt, mortgage credit growth has also been trending up, but at a moderate pace with largely unchanged credit standards.[1]

However, recent developments warrant closer monitoring. Despite a pickup in construction activity, supply continues to fall short of demand in selected areas fueling higher prices. The Ministry for the Environment estimates that around 400,000 new residential units per year are needed to keep up with current demand, or about 100,000 more units than are currently put on the market each year. Absent a rise in mortgage interest rates or a sudden burst in house supply—both rather unlikely in the next couple of years—house prices should continue to rise quickly in the most dynamic regions. The arrival of refugees will put additional pressure on vacancy rates and boost house prices in the next few years.

Pockets of vulnerability may be emerging. While the financial stability assessment has been hampered by the lack of granular loan-by-loan data, survey evidence suggests that for a notable part of mortgage loans in the largest urban areas, loan-to-value ratios may exceed prudent levels.[2] Future mortgage developments therefore warrant close supervisory monitoring. Authorities should address administrative housing supply bottlenecks and ready the macroprudential toolkit.

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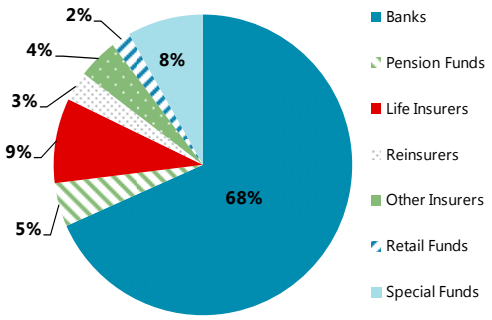
[1] The acceleration in 2015 may have been partially driven by the renewals of a large number of loans granted in 2005 in anticipation of the abolishment of the home owners' subsidy.

[2] Surveys in selected urban areas suggest that about a third of mortgages have a loan-to-value ratio (LTV) of more than 100 percent based on the German sustainable LTV (*Beleihungsauslauf*) – a conservative measure that applies a prudential haircut to the value of properties. Also, debt service exceeds 40 percent of income for about 10–15 percent of indebted households (about 8 percent due to mortgage).

Figure 2. Germany: Financial System Structure

Financial sector remains bank-dominated….

Financial System Overall Structure

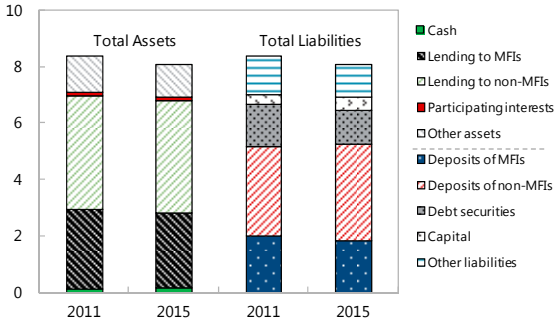


Source: Bundesbank

*Measured by Total Assets. Does not sum to 100% due to rounding.

…with conservative business model.

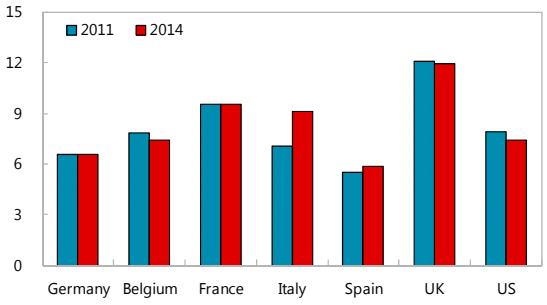
Banking System Assets and Liabilities
(in EUR tn)



Source: Bundesbank

Insurance premia grew in line with GDP ….

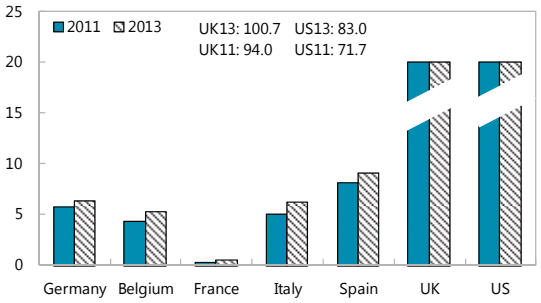
Insurance Premium Income
(in percent of GDP)



Source: Statistical Yearbook of German Insurance 2015, IMF WEO Oct 2015

…with pension funds expanding only moderately.

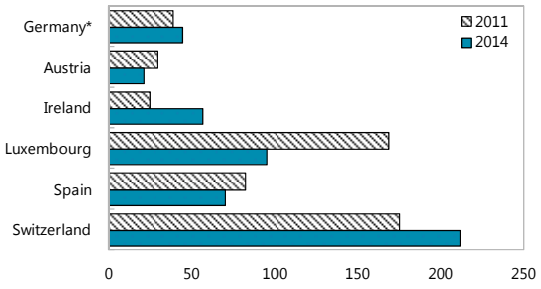
Pension Funds Total Assets
(in percent of GDP)



Source: Statistical Yearbook of German Insurance 2015

Market capitalization is low amongst peers…

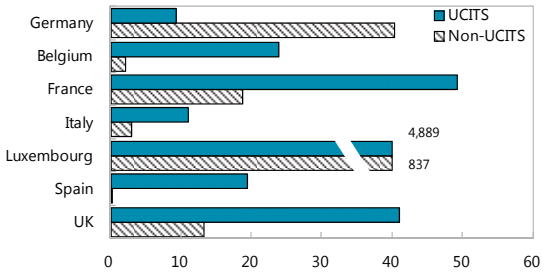
Domestic Stock Market Capitalization
(in percent of GDP)



*Germany excludes "Freiverkehr" (unofficial regulated market)
Source: World Federation of Exchanges

..while asset management is the third largest in the EU.

UCITS and non-UCITS, Assets Under Management
(in percent of GDP)

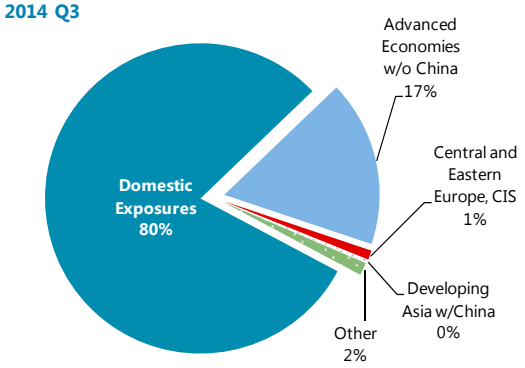


Source: EFAMA Quarterly Statistical Release Q4 2014, IMF WEO Oct 2015

Figure 3. Germany: Banking Sector

Banking system is domestically oriented ….

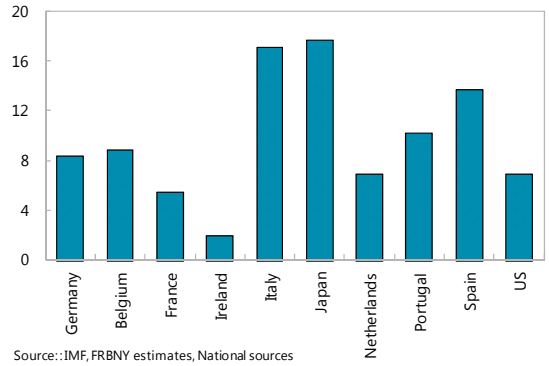
Geographical Loan Distribution
2014 Q3



Source: IMF Financial Soundness Indicators

…with a sizable share of exposure to the sovereign.

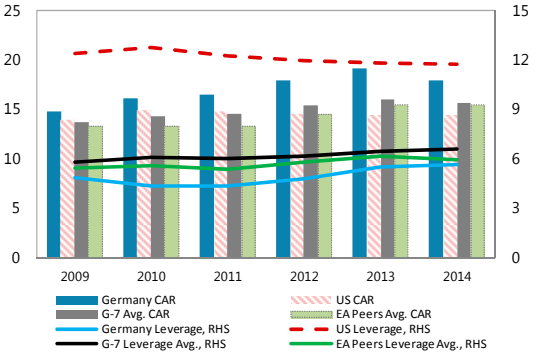
AE Bank Claims on Domestic Government, 2014
(in percent of assets)



Source:: IMF, FRBNY estimates, National sources

Bank leverage is masked by strong capital ratio….

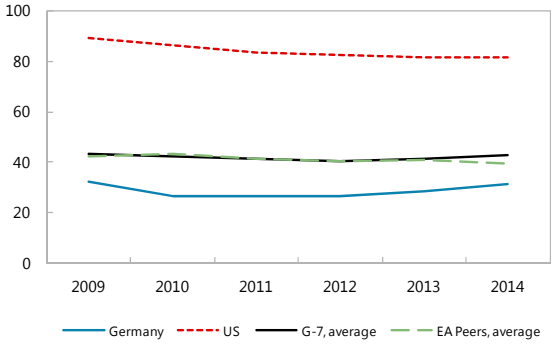
Capital Adequacy and Leverage
(in percent)



Source: IMF Staff Calculations

..with an RWA density lowest among peers.

RWA to Total Assets
(in percent)

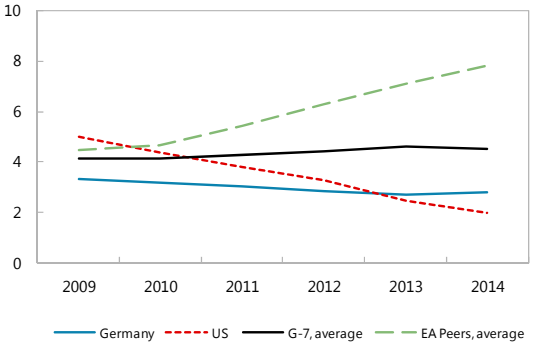


Source: IMF Staff Calculations

*Leverage is defined as Total Regulatory Capital over Total Assets.

Asset quality remains solid…

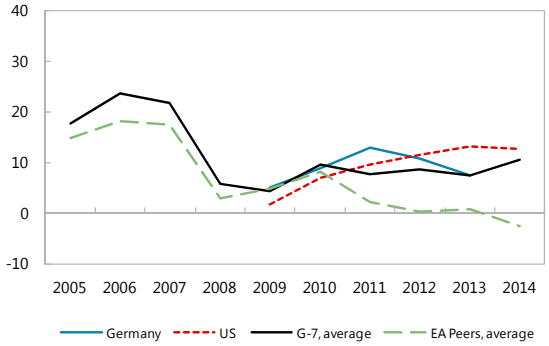
Non-performing Loans
(in percent of total loans)



Source: IMF Financial Soundness Indicators, IMF Staff calculations

…but bank return on equity has fallen.

Return on Equity
(in percent)

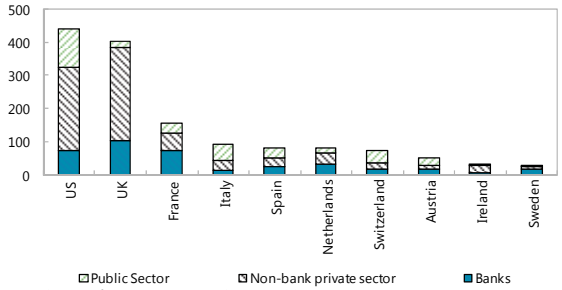


Source: IMF Financial Soundness Indicators, IMF Staff calculations

*EA Peers includes: Austria, Germany, Italy, France, Netherlands, Portugal, and Spain.

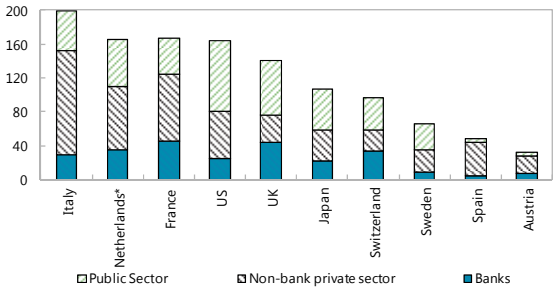
Germany: Cross-Border Banking Exposures

German Banks' Combined Foreign Claims: Top 10 Countries by Exposure
(in USD bn)



Numbers are from Q2 2015 on an ultimate risk basis.

Consolidated Foreign Claims on Germany: Top 10 Countries by Origin
(in USD bn)

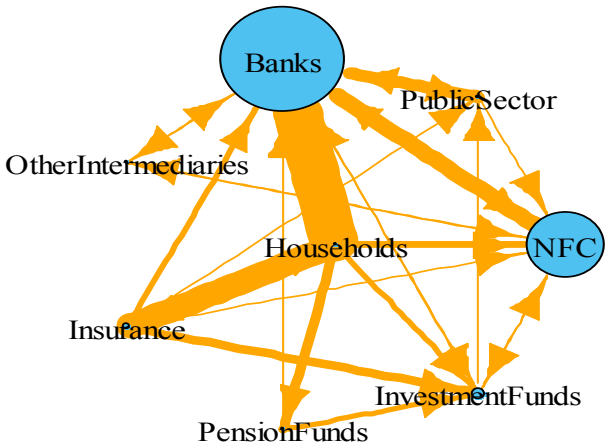


Numbers are from Q2 2015 on an ultimate risk basis.
Note '*' : For the Netherlands, the breakdown by public sector, non-bank private sector and banks were estimated by the corresponding share for total foreign claims on Germany, as the disaggregated data were not published by the BIS.

Sources: BIS Consolidated Banking Statistics, IMF Staff Calculations.

5. Intermediation is concentrated between HHs and financial institutions, while NFCs rely less on banks and more on intra-segment financing. HHs are closely interlinked with banks (via loans; deposits, bank bonds and equity holdings) and insurance companies (via claims on insurance reserves). NFC financing by households mainly constitutes payments to corporate pension funds. Insurance companies and investment funds are expanding their claims to investment funds via debt securities, which have almost doubled since 2008.

Germany: Sectoral Interlinkages, June 2015



Source: FSAP team model and estimation based on Bundesbank data, using the Reingold-Tilford network algorithm Note: The category "banks" includes all monetary financial institutions as defined by the ECB. All financial instruments for which comprehensive debtor/creditor relationships exist are taken into account (deposits, debt securities, loans, listed shares, investment fund shares and claims on insurance corporations and pension funds). The arrows show the direction of interlinkages (from who to whom) and their thickness indicates strength of interlinkages. The size of the node the interconnectedness within a sector.

RISKS, RESILIENCE, AND SPILLOVERS

A. Key Risks Facing the German Financial System

6. The FSAP analyzed three macrofinancial scenarios using a number of quantitative techniques (Table 6):

- **A global stress with recessions in advanced economies, triggered by a tightening of global financial conditions and credit cycle downturns in emerging economies (EMs):** German exporters would be hit, and both investment and consumption would drop as confidence deteriorates. A sharp correction of asset prices, paired with strong foreign exchange rate movements, would affect unhedged market positions and hit banks' trading income.

- **The return of the EA crisis:** Sovereign yields in highly indebted EA countries would increase sharply. Flight-to-quality effects would diminish and the 'core' countries would see their refinancing conditions deteriorate, albeit to a lesser extent. Investor sentiment would deteriorate, and the EA would enter a deflationary phase. The uncertainties associated with the possibility of a British exit from the EU could usher in a heightened macroeconomic uncertainty and financial market volatility.

- **Excessive risk-taking associated with the protracted low interest rate environment:** Banks and insurers may be tempted to adopt risky search-for-yield strategies against the backdrop of squeezed profitability and persistent structural weakness. Banks are key beneficiaries of the unconventional monetary policy in the EA through improved growth prospects and borrower credit worthiness, among other. However, prevailing business models of German banks and insurers may make them particularly vulnerable to the associated adverse side effects.[2] Separately, lower market liquidity fuels asset price volatility. Banks could see a drop in deposit funding, and institutional investors could channel funds towards higher-yield investments.

7. The overall stability assessment paints a mixed picture. While reported risk-based bank solvency indicators point to substantial capital buffers across all pillars, the risk-weighted assets (RWA) density (at 30 percent on average for large banks) is among the lowest in Europe. Capital ratios may, therefore, understate risks as leverage remains high for some banks. Bank profitability is low and cost-to-income ratios are high, reflecting banks' cost-intensive business model. NPLs are low and falling on aggregate, although asset quality and provisioning in Landesbanken are below average. Commercial (and large) banks, Landesbanken, and the regional institutions of credit

[2] The impact on banks depends on their capacity to reprice loans, deposits and non-deposit liabilities, the relative importance of net interest income to profitability, and ability to generate noninterest income. Current negative interest rates may be unique in accelerating margin compression over time as German banks have a large deposit base and have so far proven unwilling or legally unable to pass on the negative rates to depositors, while mortgage loans started repricing to lower rates. See IMF (2016), "Global Financial Stability Report," April 2016, Chapter 1, Box 1.3 for a discussion on broader effects of low and negative interest rates on banks.

cooperatives appear more liquid compared to local savings and cooperative banks, in part owing to an intra-pillar distribution of liquidity.

Germany: Financial Statement Indicators for Different Types of Banks

(End-2014 data or last available year)

	Solvency and liquidity				Profitability /1				Asset quality		Inter-connectedness
	Tier 1 Capital Ratio	Total Capital Ratio (CAR)	Liquid Assets to Total Assets	Liquid assets to ST funding	ROAE	ROAA	Net Interest Margin	Cost to Income Ratio	NPL Ratio	Provisioning Coverage Ratio /2	Interbank Ratio /3
Commercial banks	14.5	22.5	27.9	51.3	3.6	0.5	1.0	79.1	3.2	40.5	159.1
Big banks	14.4	17.6	25.0	47.1	3.3	0.2	1.2	81.6	3.9	42.5	185.2
Savings bank sector	15.4	18.2	11.4	13.3	2.1	0.2	2.3	70.8	3.3	47.4	103.3
Landesbanken	12.7	15.6	21.6	40.1	2.5	0.1	0.8	64.2	6.7	31.9	61.2
Savings banks	15.4	18.3	11.2	12.8	2.1	0.2	2.3	70.9	3.2	46.2	104.0
Cooperative banks	14.1	18.7	9.8	11.1	3.7	0.3	2.5	68.9	3.5	39.9	94.0
Regional institutions of credit cooperatives	13.7	16.8	28.5	48.6	10.0	0.4	0.7	48.6	2.3	31.4	75.2
Other cooperative banks	14.1	18.7	9.8	11.0	3.6	0.3	2.5	69.0	3.5	39.9	94.0
Real Estate & Mortgage Banks	15.3	17.1	14.7	19.8	0.9	0.1	1.2	79.9	2.7	36.5	143.5
Average (arithmetic mean)	**15.1**	**19.3**	**13.0**	**19.9**	**3.2**	**0.3**	**2.2**	**71.8**	**3.5**	**44.1**	**102.6**

Source: Bankscope, Bundesbanks and IMF staff calculations.

Notes: Unless otherwise noted, numbers are in percent.

/1 Return on average equity (assets).

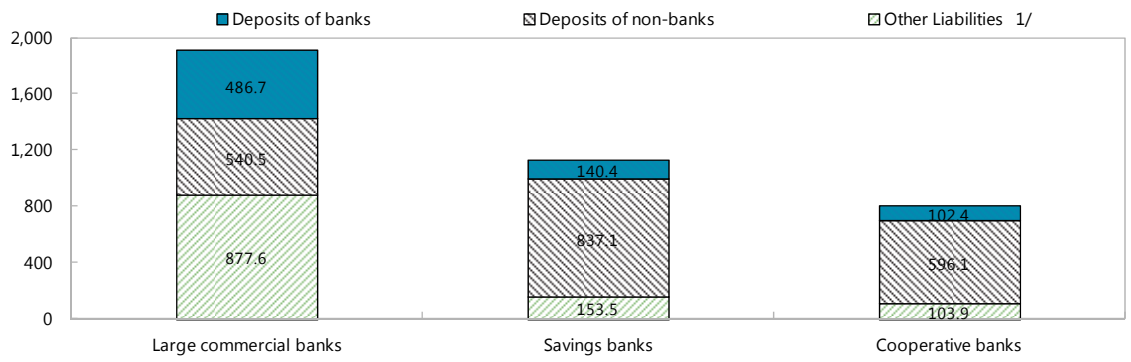
/2 Loan loss reserves to impaired loans.

/3 Net interbank lending; money lent to money borrowed. Numbers above (below) 100 percent indicate net liquidity provision (consumption).

8. A legacy of the crisis has been a shift in the availability and form of funding and subdued credit growth (Figures 4 and 5). Loose monetary conditions are prominent on the domestic risk map. The crisis exposed weaknesses in bank funding practices, and precipitated ongoing restructuring. Short-term markets contracted significantly, while longer-term markets became more domestically focused. Funding flows across the banking pillars continue to be concentrated among a few key financial institutions, which themselves receive significant amounts of intra-pillar financing. The ECB liquidity injections are ensuring a high level of liquidity in the system, but markets will face further challenges as they adapt to new bank liquidity and leverage regulations. While the new regulatory regime may result in improved sectoral resilience, it may also result in higher volatility. Measures to facilitate the transfer of excess liquidity within and across the banking pillars, and elimination of barriers to competition and consolidation among banks, particularly within the savings banks and credit cooperatives sectors, could help promote efficient intermediation of excess savings.[3]

[3] See Technical Note on "Systemic Bank Liquidity and Funding."

Figure 4. Germany: Bank Liability Structure by Segment
(In EUR billion, September 2015)



1/ Other liabilities include bearer debt securities, capital and reserves, and other liabilities.
Source: Deutsche Bundesbank

9. The banking system faces structural headwinds and will need to adapt. Financial technology innovation is introducing new competitive pressures while the post-crisis regulatory reforms have raised the bar with respect to capital and liquidity requirements. The Landesbanken have generally become more efficient, but the risk of inefficient use of public resources in some institutions remains. For some Landesbanken, viable restructuring may require further downsizing, opening of capital to private investors and further reform of governance structure. Chronic overcapacity in the context of slowing international trade has put the shipping industry under intense pressure. Further provisioning related to shipping may become necessary in banks with large shipping exposures.[4]

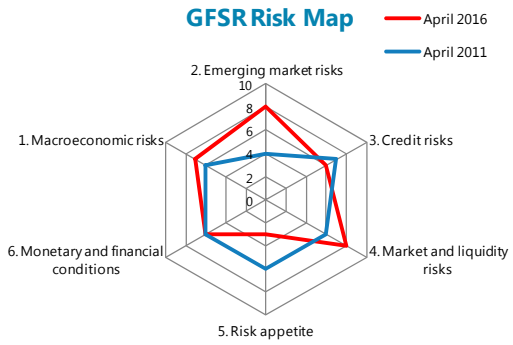
10. Consolidation is ongoing, albeit gradually. Banks have been reducing costs mainly through reduction of branch networks and introduction of IT-based services. Among the largest banks, Deutsche Bank announced a major shift in strategy, while Commerzbank is dealing with legacy commercial real estate and shipping assets.[5] A merger of DZ Bank AG and WGZ Bank AG, two central institutions for cooperative banks, will be effective in 2016 creating the country's third-largest bank by total assets and should lead to improved efficiency.

[4] For several banks with shipping loan portfolios, these loans are large in proportion of capital and are concentrated in the container segment with the biggest over-capacity. While parts of the legacy portfolios—arguably the riskiest exposures—have been wound down, the ECB's 2014 asset quality review (AQR) revealed that most of these banks operated under optimistic cash-flow projections, requiring EUR 2 billion of additional provisioning for shipping loans (30 percent of the total AQR capital effect for German banks in the sample). The AQR was undertaken before the recent slowdown in global trade, fall in commodity prices and the ensuing increase in overcapacity.

[5] Repeated fines for involvement in the systematic manipulation of benchmarks, misleading regulators, and violating U.S. restrictions on conducting business with sanctioned countries, hit Deutsche Bank's bottom line and may be indicative of corporate governance issues.

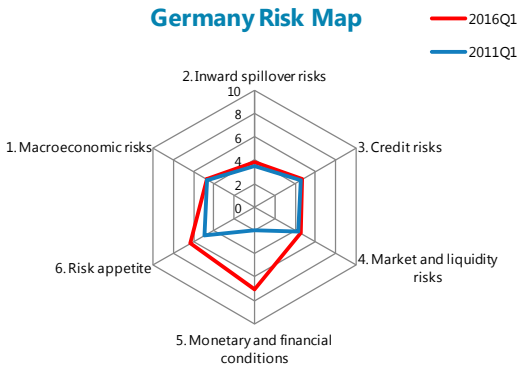
Figure 5. Germany: Systemic Risk Indicators

Global risk map changed…



Note: Away from center signifies higher risks, easier monetary and financial conditions, or higher risk appetite.

… while loose monetary conditions dominate in Germany.

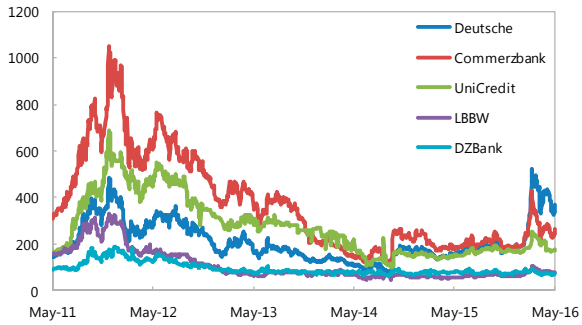


Note: Away from center signifies higher risks, easier monetary and financial conditions, or higher risk appetite.

*Components of drivers differ for GFSR and Germany risk maps.

Perceived riskiness of banks grew in early 2016…

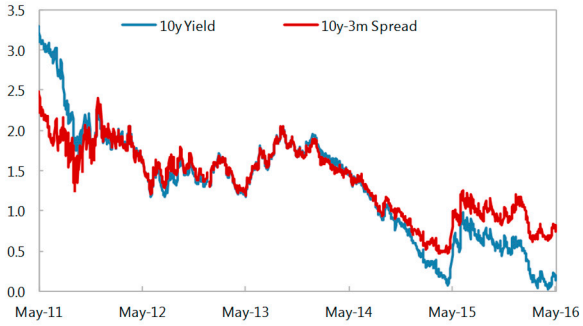
German Banks 5y CDS Spreads
(in pps)



Source: Bloomberg

… while yield curve remains flat…

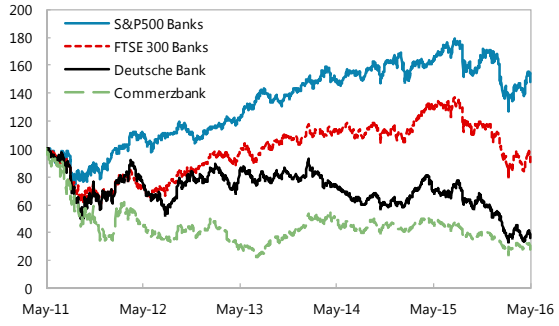
Bunds 10y Yield and 10y-3m Spread
(in percent)



Source: Bloomberg

largest banks' stocks underperform…

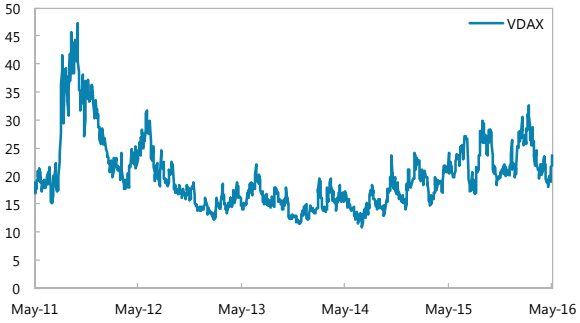
Banking Performance
(2011 = 100)



Source: Bloomberg

… and market volatility has risen.

VDAX Index
(in pps)



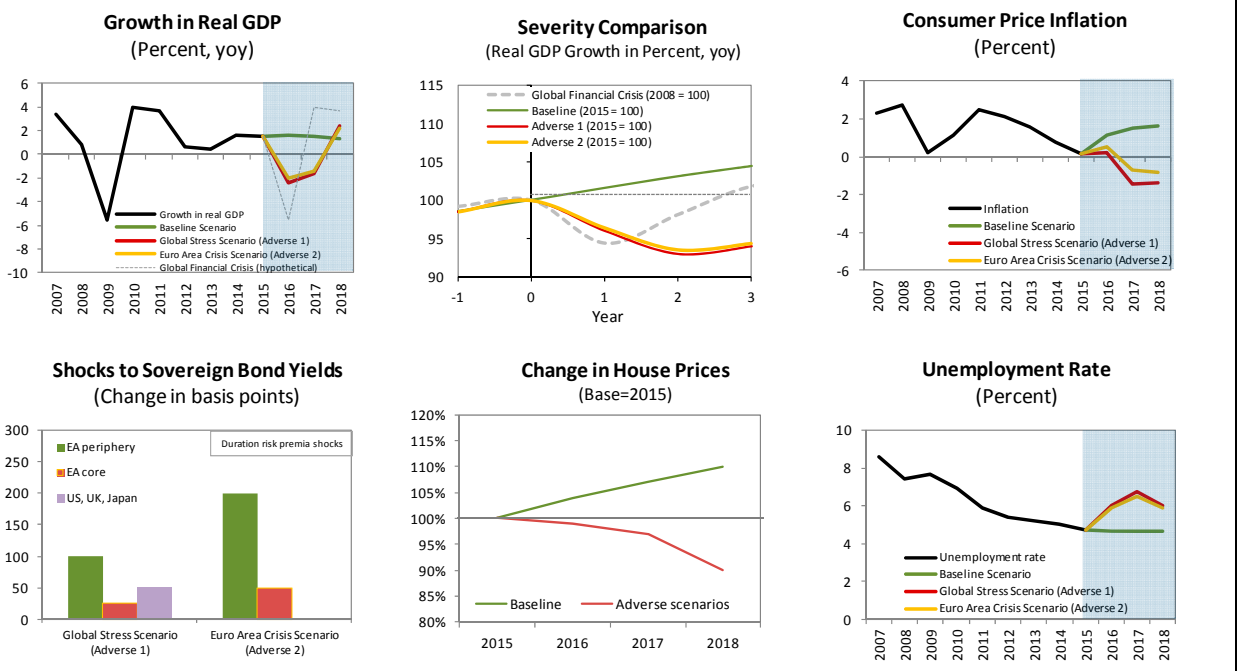
Expected fluctuations in DAX deriv. market for the following 45 days.
Source: Bloomberg

B. Financial System Resilience[6]

Banking Solvency Tests

11. Solvency tests covering all banks operating in Germany were performed to evaluate the stability of the German banking system (Figures 6 and 7, Annex IV). The analysis covered 1776 institutions operating in Germany and assessed banks' resilience to credit and market risk, including foreign exchange rate and sovereign risk, equity price, and house price risk, in the baseline based on the October 2015 World Economic Outlook and two stressed scenarios.

Figure 6. Germany: Macroeconomic Scenarios—Key Variables



Source: IMF Staff Calculations.

12. The German banking system would remain broadly stable under the baseline scenario.[7] Banks are relatively well capitalized, with CET1 ratios around 15 percent, on average, and found to be resilient, with an improvement in their solvency levels under the baseline. For both large banks (also known as significant institutions or SIs) and small and medium-sized banks (less significant institutions or LSIs), interest revenue would continue to deteriorate, albeit more or less offset by

[6] See the Technical Note on "Stress Testing the Banking and Insurance Sectors" for details.

[7] The stress tests were performed against the end-2019 "fully-loaded" regulatory definitions, including applicable buffers.

lower interest expenses. Nevertheless, in the current low interest rate environment, business models concentrating on maturity transformation continue to weigh on bank profitability.[8]

13. Under the adverse scenarios, banks would see an increase in loan losses, while adverse market price movements take a toll on trading income and the value of sovereign bonds. The credit risk model implies that loan losses would rise by up to 80 percent, as a result of a rise in default probabilities. Banks' annual credit impairment needs would almost double, albeit from a very low level, in part because of the impact of house prices stress on mortgage collateral values. SIs would suffer a 40 percent drop in trading income, while LSIs with very little trading exposure and open foreign exchange (FX) positions would be affected much less. The direction of net FX positions varies across banks and, on average, the impact is not large. Some SIs are affected by credit risk and sovereign bond valuation losses. LSIs mainly suffer from continuously falling net interest income, and structurally high costs.

- **Under the Global Stress Scenario**, the CET1 ratio of SIs would drop by 2.6 percentage points, but remain above 10 percent. On aggregate, capital shortfalls amount to EUR 6.0 billion, or 0.2 percent of annual GDP. LSIs appear more resilient, and that group as a whole would experience a drop in CET1 ratio of only around 0.3 percentage points against the fully-loaded CET1 hurdle. The CET1 capital shortfall amounts to around EUR 450 million. Only 32 banks out of 1,755 in this bucket would see their CET1 capital ratios drop below fully-loaded regulatory hurdle rates in 2018.
- **The EA Crisis Scenario** would cause the average CET1 ratio to drop by 2.2 percentage points, to 12.7 percent in 2018 for SIs, corresponding to a capital shortfall of EUR 4.2 billion, or 0.1 percent of annual GDP. LSIs would see CET1 ratio eventually rising 0.6 percentage points above the current level, after a 0.2 percentage point drop, against the fully-loaded CET1 hurdle, including buffers. The aggregate CET1 capital shortfall stands at around EUR 450 million, with 30 small and medium-sized banks breaching the regulatory hurdles.[9]

14. Sensitivity analysis shows that the persistently low interest rates weigh significantly on the profitability of LSIs (Figure 8).[10] Under banks' own interest rate projections, profitability is expected to decline by around 25 percent by 2019. Should the low interest rates persist, operating profit could slump by 50 percent, on average. If the interest rate were to fall by a further 100 basis points, the operating profit of LSIs could decline by 60 percent or 75 percent, under a dynamic or static balance sheet assumption, respectively.

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[8] The drop in bank profitability would not reduce the regulatory capital ratio as long as net after-tax profits remain positive. As with the Bundesbank's results, despite the impact on system profitability, the capital shortfalls in a few individual banks were not sufficient to cause a decline in the aggregate capital ratios.

[9] One-off effects are an important driver of the capital shortfall, in particular, non-recurring write-offs. In contrast to the 2016 EU-wide bottom-up stress test of the European Banking Authority (EBA), such events in the base year (2015) have not been removed from the balance sheet when profit and loss positions were projected three years (2016-2018) into the future." See "2016 EU-wide stress test-Methodological note" for the EBA methodology. http://www.eba.europa.eu/-/eba-launches-2016-eu-wide-stress-test-exercise.

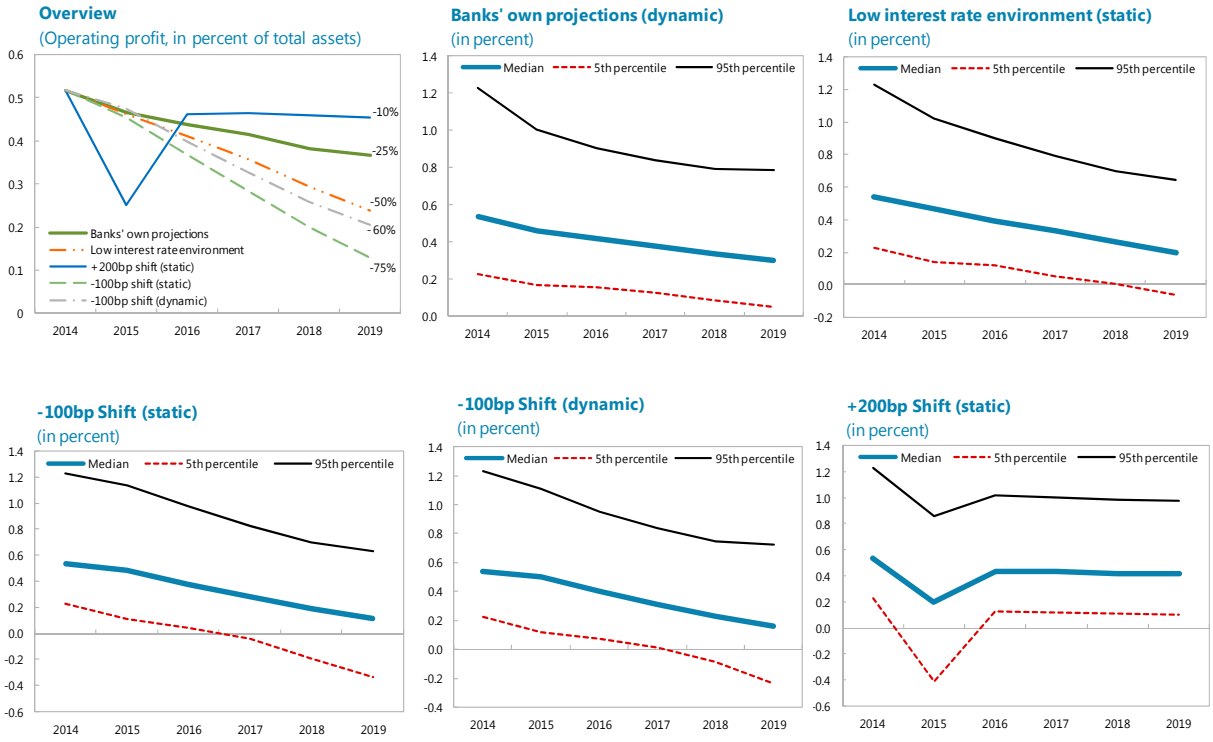
[10] See Bundesbank (2015), Survey on the Profitability and Resilience of German Credit Institutions in a Low-Interest-Rate Setting. http://www.bundesbank.de/Redaktion/EN/Pressemitteilungen/BBK/2015/2015_09_18_bafin_bbk.html

Figure 7. Germany: Solvency Stress Test

Source: IMF Staff Calculations.

Note: The top panel shows the *evolution of CET1 ratio* under the three scenarios. *Capital shortfalls* to regulatory hurdles are shown as bars in the panel below, together with the share of total assets that the banks dropping below hurdle rates correspond with (markers, rhs). The *drivers* are expressed in terms of percentage points of the CET1 ratio. For example, the credit risk losses experienced by large banks in the Global Stress Scenario equal 2.3 percentage points of the CET1 ratio.

Figure 8. Germany: Low Interest Rates and Bank Profitability



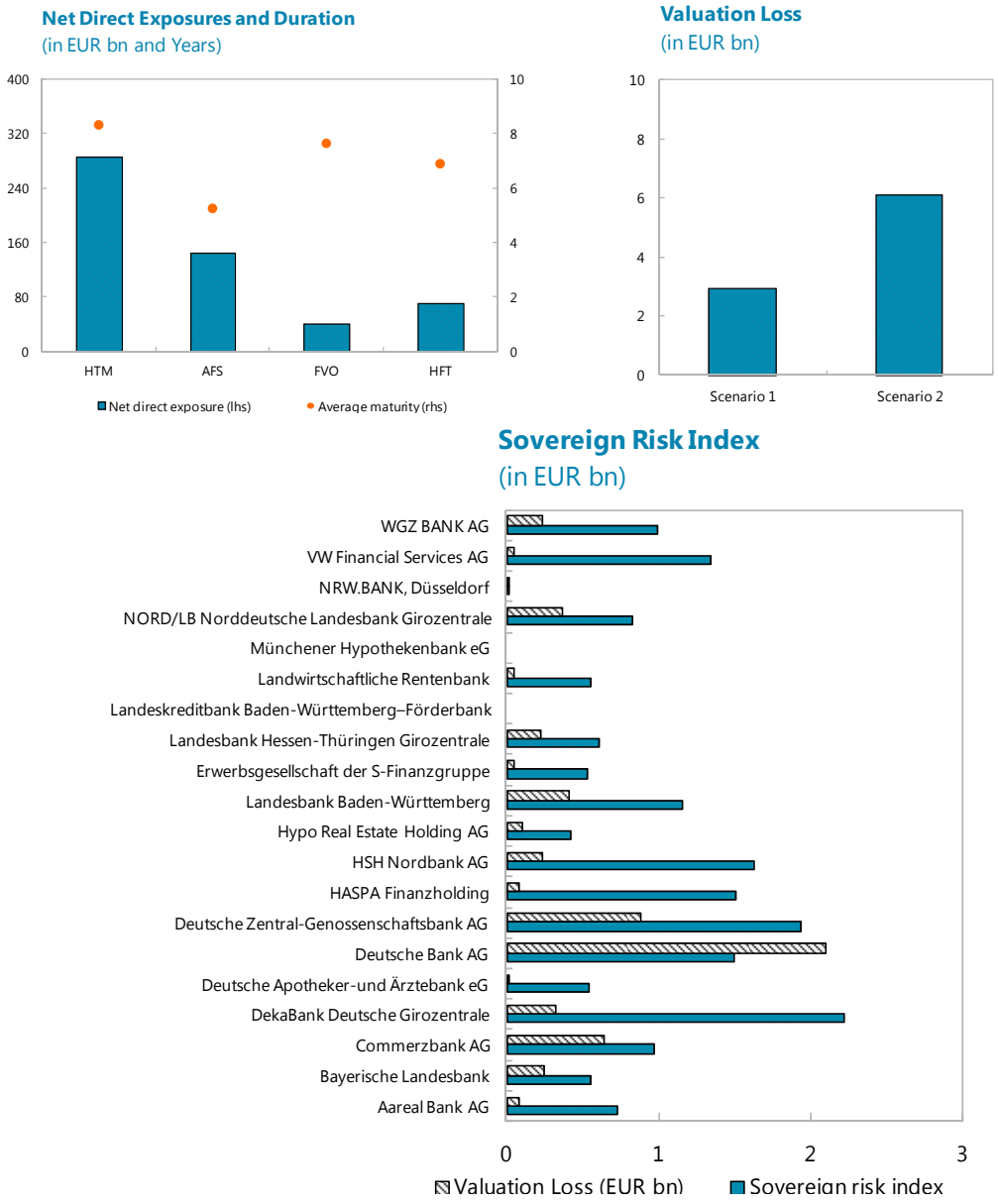
Source: Bundesbank

Note: The charts show, for five different tests, the evolution of operating profit to total assets for some 1500 LSIs. The top-left chart gives weighted averages for each scenario tested, while the other charts show the median and the 5th/95th percentile of individual banks' operating profit. Details about methodology, scenarios, and samples can be found in the Stress Test Matrix in the Annex IV.

15. Sovereign risk analysis shows diversity across banks (Figure 9). While noticeable in some banks, valuation losses from sovereign exposures tend to be rather low overall. Banks usually keep more risky securities in the held-to-maturity portfolio, which is not being marked to market.[11] Also, duration differs considerably across portfolios and banks. Banks with higher sovereign risk index values hold longer-term or riskier paper, or try to generate profit from market movements in yields.

[11] Analysis used the applicable regulatory standard under which held-to-maturity portfolio is not marked to market, while for the available-for-sale portfolio, the prudential filter is being phased-out. Therefore, if banks had to mobilize liquidity under stress, and sell securities in the banking book, losses would increase.

Figure 9. Germany: Sovereign Exposures, Risk Index, and Valuation Losses under Stress



Source: IMF Staff Calculations using EBA 2015Q2 data.

Note: The sovereign risk index gives for each bank the valuation loss (VL) with the gross volume of sovereign bond exposures held (Exp), relative to the total sample $Idx = \frac{VL_i}{\sum_{j=1}^{n} VL_j} \Big/ \frac{Exp_i}{\sum_{j=1}^{n} Exp_j}$

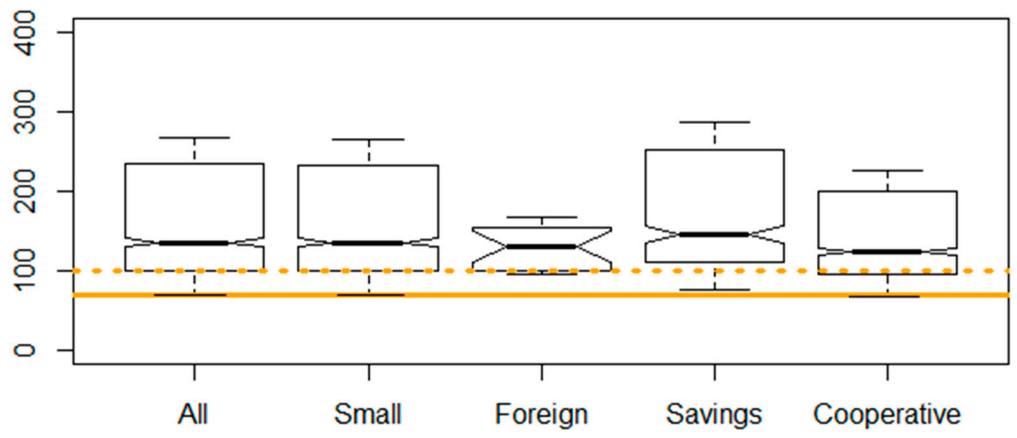
If the index value is 1, the valuation loss corresponds to the total sovereign exposure held by the bank, signaling average risk from sovereign exposures. If the value is above 1, the bank's valuation loss is disproportionally higher than its holdings would imply, indicating that the sovereign bond portfolio has relatively more risk (and vice versa). Index values are determined by (i) the issuer's risk as expressed by the sovereign yield and its volatility of time, (ii) average maturity of the bonds in the portfolio together with (iii) the bank's accounting of that exposure (HTM, AFS, FVO, HFT).

Bank liquidity tests

16. Tests based on the LCR show that the banks would be able to withstand market and funding liquidity shocks (Figure 10). Almost all banks show ratios above 70 percent, and most banks already today have LCR ratios above 100 percent, with foreign banks showing the lowest dispersion.

17. Banks have been increasing both the LCR and the Net Stable Funding Ratio (NSFR), and larger banks appear to be managing their ratios more efficiently (Figure 11). Analysis of detailed Basel Committee's (BCBS) Quantitative Impact Study (QIS) results, reported by participating banks, shows a general improvement in ratios since 2011, and the variation across banks' LCRs has also reduced over time.

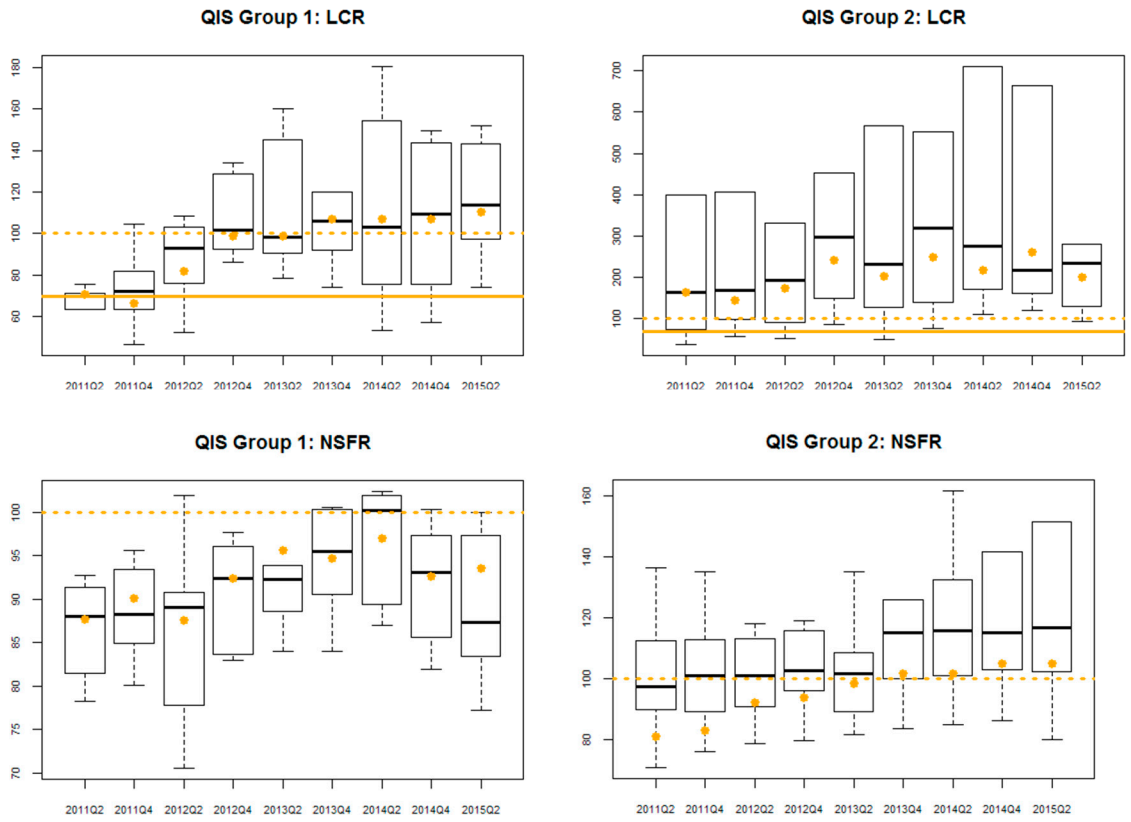
Figure 10. Germany: LCR Estimates
(In percent)



Source: Bundesbank.

Note: Results were estimated from reporting data through a matching with CRD IV asset and liability categorization (i.e., net outflows and liquid assets). The Whisker plots give the lower and upper quartile, the median (black line inside the box), and the lower and upper 5 percent percentile. The orange line is the current (2016) regulatory minimum of 70 percent, while the dashed line shows the fully phased-in hurdle rate of 100 percent. Outliers are not shown. Results for the four big banks are not shown, as individual LCRs could be identified. However, they are all above 70 percent regulatory minimum. The big bank group includes Commerzbank, Deutsche Bank, Deutsche Postbank, and UniCredit.

Figure 11. Germany: LCR and NSFR Reported by German Banks in the BCBS QIS



Source: Bundesbank

Note: Results as reported by banks participating in BCBS QIS. The box gives the lower and upper quartile, the median is shown as black line separating the box, the weighted average as orange circle, and whiskers are at the 5th and 95th percentile. For the LCR, the orange line marks the 2016 regulatory minimum of 70 percent, while the dotted line gives the fully phased-in 2019 minimum of 100 percent. For the NSFR, the dotted orange line marks the future expected regulatory minimum of 100 percent, to be introduced in 2018. Whiskers extending above the vertical axis' range are removed.

Insurance solvency tests

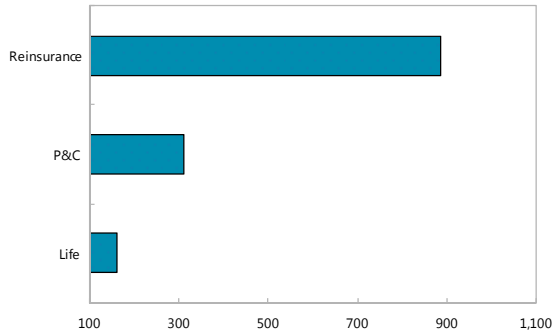
18. Low interest rates pose particular challenges to life insurers over the medium- to long-term, reflecting the predominance of traditional products with high guaranteed rates of return (Figure 12). Capital adequacy ratios have been showing a downward trend in recent years. Since 2016, Solvency II has created new pressures on life insurers to recognize the impact of low interest rates in a forward-looking assessment of solvency. Some evidence of search for yield has been emerging.[12] Health, property and casualty, and reinsurance companies appear to be more robust, reflecting lower dependence on investment returns.

[12] Together with rating migration effects, this exacerbates the challenge to meet Solvency II requirements as higher capital must now be held against riskier assets. Evidence of search for yield includes increasing investment in non-German sovereign bonds and higher risk investments (such as BBB) with longer duration.

Figure 12. Germany: Insurance Earnings, Solvency, and Risk Analysis

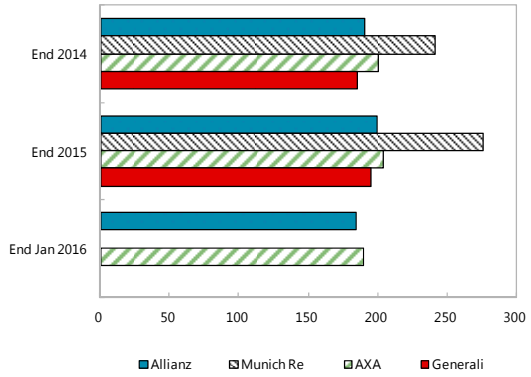
P&C and reinsurers maintain high Solvency Ratios, while life insurers have the lowest ratios.

Solvency I Ratio
(in percent)



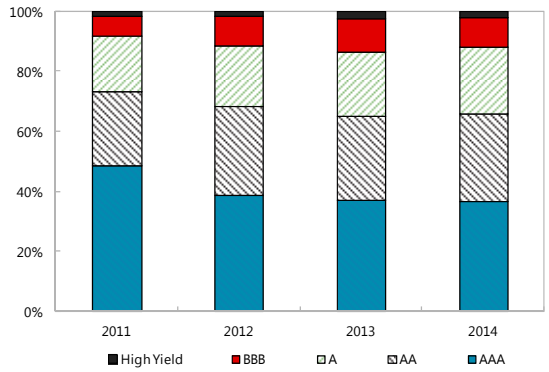
Publicly available Solvency II figures suggest that the end-2014 ratio is a good proxy of the latest figure.

Solvency II SCR Ratio (Group Level)
(in percent)



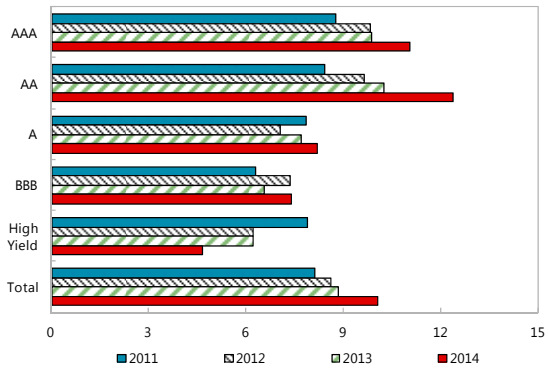
Fixed income portfolios are gradually shifting to lower credit grades.

Life Insurers: FI Portfolio Rating Distribution



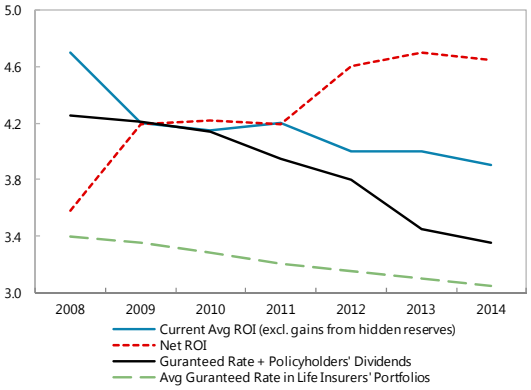
Modified duration of fixed income portfolio of life insurers have increased in the last 4 years.

Duration of Assets
(Year)



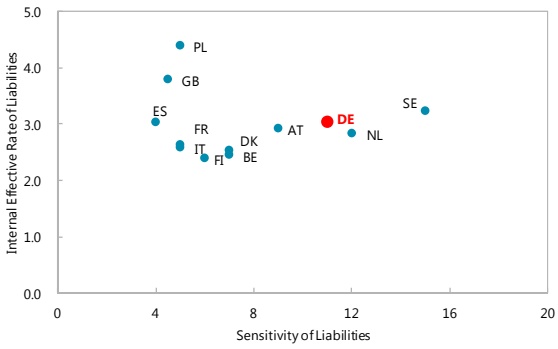
Life insurers are making efforts to cope with lower investment returns by reducing guaranteed rates and policyholders' bonuses.

Life Insurers' Key Interest Rates
(in percent)



Guaranteed rate and the duration of German life insurers are some of the highest among EU countries.

Liabilities Sensitivity and IRR
(in percent)



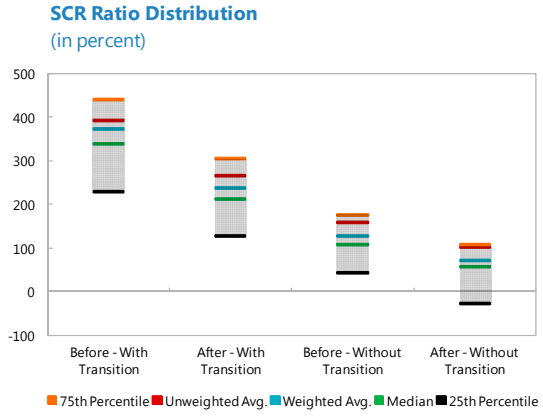
Source: BaFin, Bundesbank, EIOPA, Insurer disclosures (Allianz, Munich Re, AXA and Generali), Assekurata, IMF Staff Calculations.

19. Stress tests analyzed the impact of low interest rates under Solvency II (Annex V). The scenarios covered major market shocks, while sensitivity analysis assessed the potential impact of other insurance-specific risks, such as longevity and lapse risks. A majority of life insurers (93 percent of the sector by assets) were covered. The methodology reflected the significance of policyholder participation in traditional life insurance and the scope for insurers to reduce future policyholders' profit participation in a stressed situation.[13]

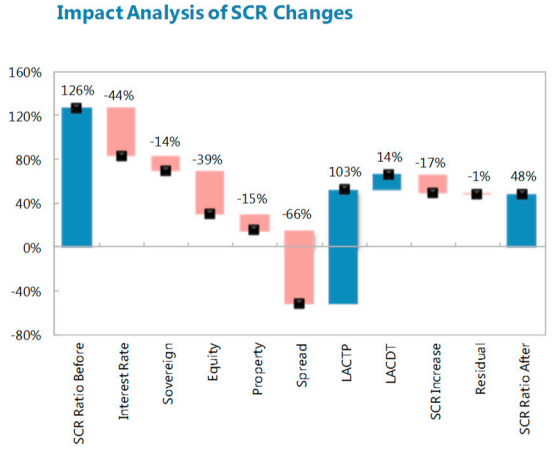
20. The results are stated with respect to the Solvency II Capital Requirement (SCR) ratio, with and without transitional measures (Figure 13). Based on EU law, the so-called transitional measures allow insurers, on BaFin's approval, to mitigate material Solvency II impacts arising from lower interest rates over the 16-year long phase-in period. Both ratios—with and without transitional measures—will be published in 2017, the stress tests apply the two hurdle rates.

Figure 13. Germany: Insurance Stress Testing Results

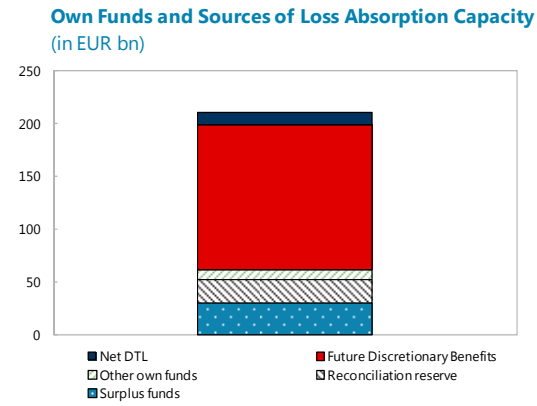
SCR ratio with transition is above the minimum after stress. Without transition, the majority of life insurers may not be able to meet the requirement.



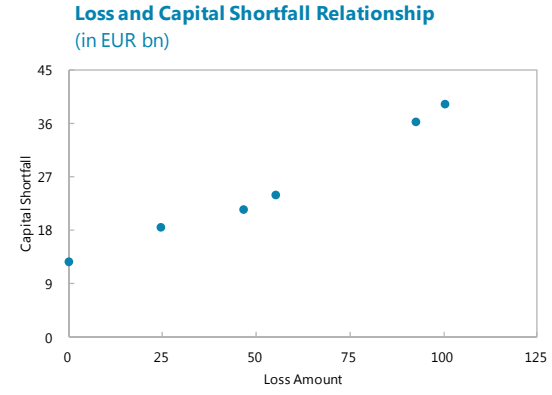
Spread and interest rate risks have material impacts, but LAC_TP reduced the loss by more than 50 percent.



A significant amount of potential loss absorption capacity is embedded in the liabilities of life insurers.



Capital shortfalls might increase in a non-linear fashion.



Source: BaFin and IMF staff calculations

[13] German life insurers recognize EUR 136 billion of future discretionary bonuses as part of their liabilities. In the stress test, the future discretionary bonuses are assumed to be reduced by EUR 58 billion.

21. With transitional measures, insurers' capital levels appear generally sufficient, although a minority would have difficulties in meeting the SCR under stress. Life insurers maintain SCR ratios above 100 percent even under stress, although the weighted average SCR ratio drops from 372 percent to 236 percent. No firm would have negative capital after the shocks, but for 13 firms (out of 75) the SCR ratio would fall below 100 percent. The total capital shortfall by value would be small.

22. Without the transitional measures, a majority of life insurers would have difficulties in meeting the SCR. The weighted average SCR ratio would fall from 126 percent to 48 percent under stress. Thirty-four firms and 58 firms (out of 75) would fall below the 100 percent SCR ratio before and after the shocks, respectively. Eight firms and 27 firms would have negative capital before and after the shocks, respectively. The total capital shortfall would be EUR 12 billion (0.4 percent of GDP) before shocks and would increase to EUR 39 billion (1.3 percent of GDP) after the shocks.

23. The business model is a significant determinant of insurers' relative resilience. The tests were conducted at the legal entity level. Individual large insurers are generally more resilient than others, as many are part of wider groups and benefit from diversification across business lines and geographically. Many small firms have focused on protection-type business, where profitability is less affected by the low interest rate environment and thus have exceptionally high SCR ratios, and appear resilient to investment-side interest rate and other market shocks. However, some medium-size life insurers are more vulnerable to the low interest rate environment and additional market shocks. Features such as business mix, the amount of unrealized gains, future discretionary policyholders' bonuses, and average guaranteed rates are the most important risk drivers.[14]

[14] Most insurers that did not perform well in the test have already been on BaFin's watch list and placed under intensive supervision, such as enhanced reporting and more frequent on-site inspections, etc.

C. Systemic Risk and Spillovers[15]

24. Domestically, the largest German banks and insurance companies are highly interconnected (Figure 14). The highest degree of interconnectedness can be found between Allianz, Munich Re, Hannover Re, Deutsche Bank, Commerzbank and Aareal bank, with Allianz being the largest contributor to systemic risks among the publicly-traded German financials.[16] Both Deutsche Bank and Commerzbank are the source of outward spillovers to most other publicly-listed banks and insurers. Given the likelihood of distress spillovers between banks and life insurers, close monitoring and continued systemic risk analysis by authorities is warranted.

25. Notwithstanding moderate cross-border exposures on aggregate, the banking sector is a potential source of outward spillovers. Network analysis suggests a higher degree of outward spillovers from the German banking sector than inward spillovers.[17] In particular, Germany, France, the U.K. and the U.S. have the highest degree of outward spillovers as measured by the average percentage of capital loss of other banking systems due to banking sector shock in the source country. Reflecting solid aggregate capital buffers, the impact of inward spillovers on the German banking sector is considerably more moderate, as measured by the percentage of capital loss in the banking system due to the default of all exposures.

26. Among the G-SIBs, Deutsche Bank appears to be the most important net contributor to systemic risks, followed by HSBC and Credit Suisse (Figure 15). In turn, Commerzbank, while an important player in Germany, does not appear to be a contributor to systemic risks globally. In general, Commerzbank tends to be the recipient of inward spillover from U.S. and European G-SIBs. The relative importance of Deutsche Bank underscores the importance of risk management, intense supervision of G-SIBs and the close monitoring of their cross-border exposures, as well as rapidly completing capacity to implement the new resolution regime.

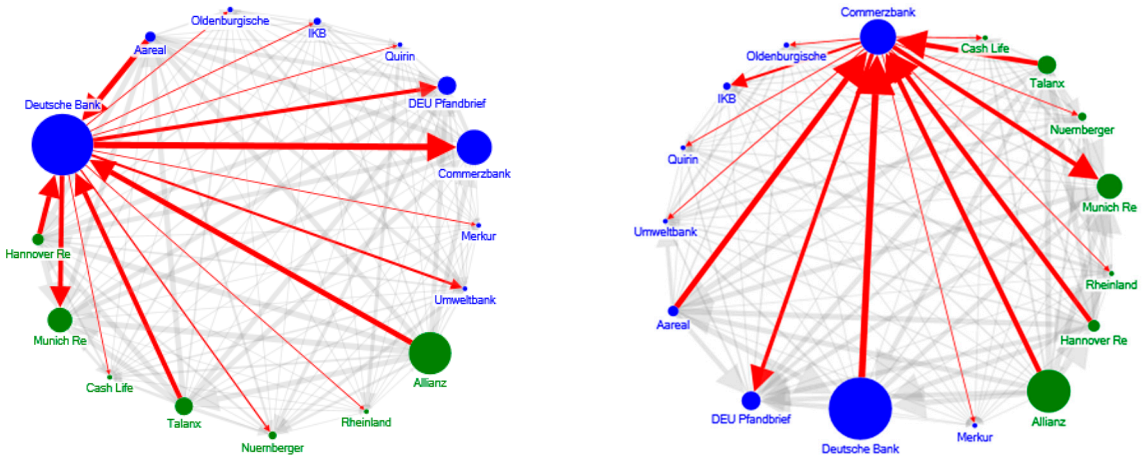
[15] See Annexes VI and VII for methodology.

[16] The interconnectedness measure is derived from the variance decomposition of the underlying vector autoregression (VAR) of equity returns. Similarly, Bundesbank analyses based on CDS prices for a European sample also indicate a risk transmission from insurers to banks. See Bundesbank Monthly Report July 2014.

[17] Analysis was performed across 16 BIS reporting countries with the highest banking sector exposures to Germany.

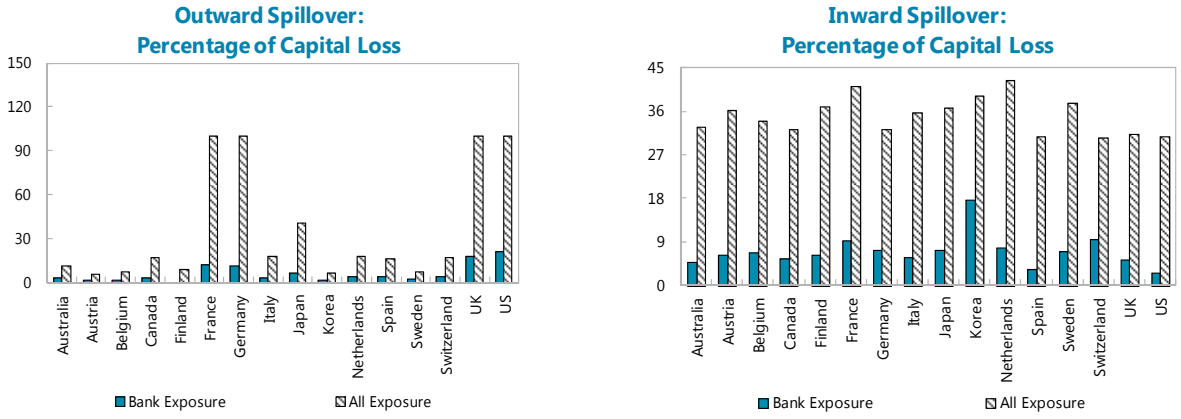
Figure 14. Germany: Financial Sector Interconnectedness

Domestic Interconnectedness among Publicly Traded German Banks and Insurers



Source: IMF Staff Calculations constructed with NodeXL. Results are based on the Diebold and Yilmaz (2014) using daily equity returns from 16 July 2015 to 23 February 2016. Note: The blue and green nodes denote banks and insurance companies, respectively. The thickness of the arrows captures total linkages (both inward and outward), and the arrow captures the direction of net spillover. The size of the nodes reflects asset size.

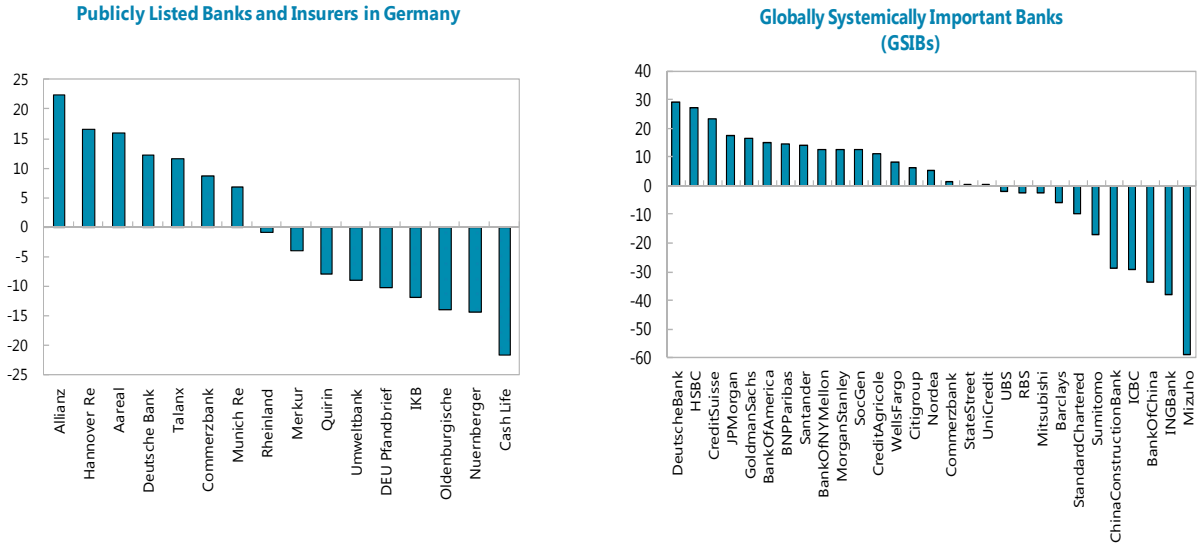
Outward and Inward Spillovers of the German Banking Sector



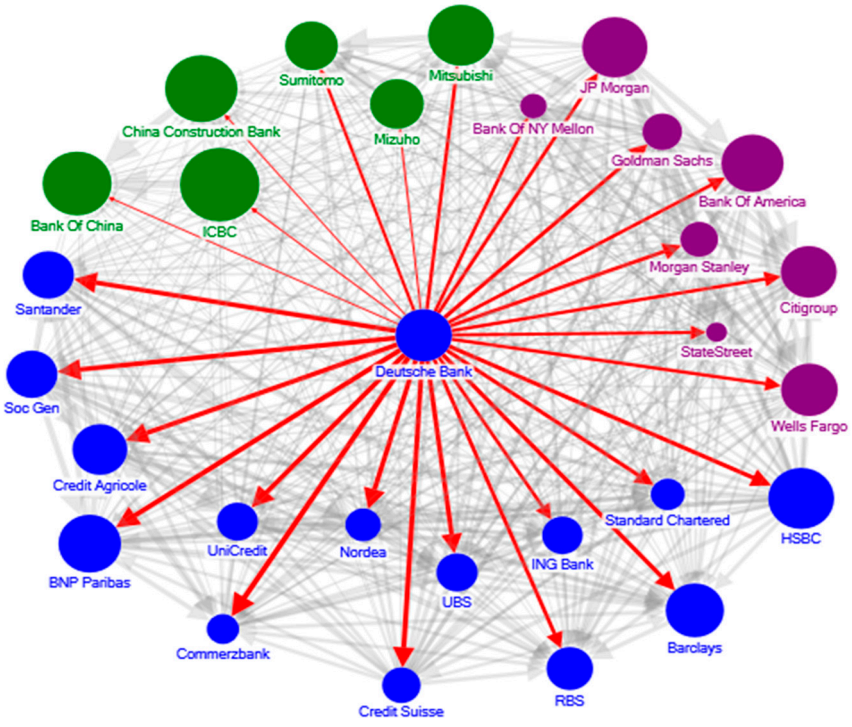
Source: IMF Staff Calculations. Results are based on the Espinoza-Vega and Sole (2010) approach and BIS Consolidated Banking Statistics for 2015Q1.

Figure 15. Global Systemic Risk

Net Contribution to Systemic Risk



Systemic Risk among GSIBs



Source: IMF Staff Calculations based on the Diebold and Yilmaz (2014) methodology using daily equity returns from 11 October 2007 to 26 February 2016. Lower chart constructed with NodeXL.

Note: The GSIB list follows the November 2015 update by the FSB. Commerzbank is included in the analysis, Groupe BPCE and the Agricultural Bank of China (ABC) are excluded due to the data limitations. The blue, purple and green nodes denote European, US and Asian banks, respectively. The thickness of the arrows capture total linkages (both inward and outward), and the arrow captures the direction of net spillover. The size of the nodes reflects asset size.

27. In light of its systemic importance in the financial system and cross-sectoral activities, Eurex Clearing AG can become a source of domestic and cross-border spillovers. Eurex Clearing AG is one of the largest global CCPs, with interlinkages to over 180 clearing members in 17 countries. Its clearing members include 24 G-SIBs, creating potential contagion channels through interbank markets and memberships of these G-SIBs in other CCPs around the world.

28. Eurex Clearing could withstand an extreme but plausible market shock scenario, covering losses with pre-funded resources. The EU-wide stress test exercise initiated by the European Securities and Markets Authority (ESMA) was ongoing during the FSAP mission. The objective was to test the resilience of EU CCPs to historical and hypothetical adverse market developments, including market participant's defaults across CCPs. The preliminary results for 2014 data for Eurex Clearing indicate sufficient buffers to withstand market shock scenarios.

MACRO- AND MICROPRUDENTIAL OVERSIGHT

A. Macroprudential Policy Framework

29. Germany has revamped its macroprudential policy framework. The Financial Stability Act, adopted in late 2012, created the Financial Stability Committee (FSC) with a central role in macroprudential oversight, and set out additional financial stability responsibilities for the Bundesbank.[18] These reforms have taken place in the context of EU-wide macroprudential policy reforms. Notably, the European Systemic Risk Board (ESRB) was created in December 2010, and the Single Supervisory Mechanism (SSM) was established in November 2014, the latter sharing macroprudential powers with the respective national authorities.

30. The new German framework appears broadly appropriate for effective macroprudential policy. Although too early to make a full effectiveness assessment, the mandate, accountability, and tasks are reasonably clear and set out in the Financial Stability Act and elaborated in the FSC's macroprudential policy strategy. Furthermore, Germany has recently established a macroprudential policy tool-kit that became operational on January 1, 2016, including: a countercyclical capital buffer (CCB); capital buffers for G-SIBs and for other systemically important institutions; and the systemic risk buffer. Also, a liquidity coverage ratio is being phased in, as in other EU countries.

31. Still, there is scope to strengthen the framework, including with regards to:

- ***Macroprudential tools.*** As the real estate sector is often a source of systemic financial risk, macroprudential tools, such as loan-to-value caps, debt-service-to income limits, debt-to-income ceiling, and amortization requirements, can be very useful. Though the German real estate market does not show an imminent risk of a bubble, the authorities should create such real estate-related tools, as recommended by the FSC in June 2015 to close an important gap in

[18] The Act also tasks the FSC with strengthening the cooperation between its members in the event of a crisis situation but it does not envisage a formal role for the FSC in the operational crisis management decision-making.

the macroprudential policy framework. International experience is that such tools should be deployed early to be most effective.

- ***Data.*** Macroprudential analysis and policy are highly data-dependent. The real estate tools, in particular, require access to granular information on household incomes, debt data on a loan-by-loan basis and real estate prices. To strengthen macroprudential and financial sector risk analysis, the authorities should give priority to obtaining the required data. It could also consider amending the Federal Data Protection Law to allow judicious use of data already collected for other purposes, while maintaining adequate privacy protection.
- ***Transparency and accountability.*** The main accountability mechanism is the FSC's Annual Report to the Bundestag. To give more visibility to macroprudential policy issues, the FSC should consider publishing a record of the discussions at each FSC meeting and creating a dedicated FSC website with access to all relevant information, broadly similar to the practice in many other advanced economies.

B. Microprudential Oversight

Banking regulation and supervision

32. German banking supervision has undergone profound changes with the approval of the CRD IV/CRR framework, the establishment of the European Banking Authority (EBA) and the creation of the SSM. The legal framework has been amended to transpose the CRD IV, while the CRR and the regulatory technical standards developed by EBA and issued by the European Commission became directly applicable. Additionally, the ECB took over direct supervision of 21 of Germany's largest banks, including one G-SIB.

33. Overall, the FSAP found good compliance with international best practices when accounting for the more stringent 2012 BCP standards, proportionality considerations and the impact of SSM integration.[19] The legal framework for banking supervision is well established by German laws with effective division of responsibilities between BaFin and Bundesbank. Banks are required to conduct regular stress testing using both standardized and bespoke scenarios. Interest rate risk in the banking book (IRRBB) features as a key priority for both SIs and LSIs. Supervisors have also stepped up the frequency and intensity of interaction with banks regarding management of liquidity risk, contingency funding plans and compliance with the new Basel III liquidity requirements (LCR and NSFR). A range of supervisory initiatives to mitigate cyber risk, which constitutes growing stability threat, is welcome (Box 2).

[19] For details, see Report on the Observance of Standards and Codes—Summary Assessments, Basel Core Principles for Effective Banking Supervision.

Box 2. Cyber Risk and Financial Stability in Germany

The complexity and interconnectedness of banks' digital technology is growing, increasing the technology-related operational risk. The changing distribution channels and nature of cyber-related incidents require the regulations and supervisory approach to adapt to a rapidly changing risk profile. Effective management of technology-related operational risk is a fundamental element of a bank's risk management.

Authorities have established industry-wide initiatives on the availability, integrity, and confidentiality of IT-infrastructure by passing the IT-Security Act.[1] The Act focuses on providers of critical infrastructure required to implement and maintain appropriate organizational and technical security standards in order to ensure its proper operation and permanent availability. A range of financial institutions is covered, while measures include the need for a contact point; measures to protect infrastructure; and reporting.

Risk management standards for IT-related operational risk are established by MaRisk.[2] Banks are required to have in place an effective operational risk management framework across the entire enterprise, subject to ongoing testing and enhancements to keep pace with the scale, complexity and risk profile of the business. In addition, banks are required to adhere to established industry standards for IT security, such as ISO/EC 27 of the International Standards Organization and the IT-Grundschutz Catalogues.

Strengthening IT resilience and cyber security is a key strategic priority for bank supervisors. Several initiatives have been implemented:

- Strengthened dedicated IT risk specialist teams to support supervision processes;
- Annual meetings with IT security professionals to raise awareness of IT-related security issues;
- Cyber risk questionnaire involving all SIs to survey good practices and areas of weaknesses; and
- Targeted IT onsite examinations conducted across the banking system.

Further work is planned in 2016, including:

- Development of specific requirements for banks' IT risk management;
- Targeted onsite examinations to test and assess IT resiliency; and
- Thematic review of Significant Institutions (SIs).

Robust surveillance techniques are needed to keep pace with evolving cyber threats. Regular board and management engagement and intrusive inspection are key planks in the supervisory approach. Supervisors need to verify that banks are appropriately incentivized to increase security and IT resilience by raising risk management standards, and to leverage collective strengths through greater global coordination. Achieving consistent industry standards at each layer of the service point will be necessary.

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[1] https://www.orrick.com/Events-and-Publications/Pages/German-Parliaments-IT-Security-Act-Covers-Critical-Infrastructure.aspx.

[2] Minimum requirements for risk management (Mindestanforderungen an das Risikomanagement - MaRisk).

34. Notwithstanding the extensive legal and regulatory framework, important gaps exist. While the Banking Act establishes fit-and-proper standards for supervisory and management board members and defines the oversight function of the supervisory board, in practice the focus of governance is placed on the management board. The oversight by the supervisory board is very light. The independence of internal audit and compliance is compromised as they report to the management board with no independent reporting channel to the supervisory board. The lack of comprehensive and granular supervisory data negatively affects all aspects of financial supervision and risk monitoring. In the absence of supervisory approval of investments, acquisitions may occur that increase the risk to the banking group without *ex ante* prudential review. There is still no sound framework regarding management and supervision of related-party risk. More attention is also needed to monitoring of the effective implementation of operational risk management frameworks.

35. The establishment of the SSM has fundamentally changed the supervision of German banks, both large and small. For the SIs, day-to-day supervision is conducted by Joint Supervisory Teams led by ECB staff and supported by supervisors from supervisory agencies from all member states where banks have operations, involving supervisors with different backgrounds, supervisory cultures, and languages. The coordination of these teams presents operational and motivational challenges, which will need to be addressed by the SSM in the long run. For the two largest German SIs, the introduction of SSM allows for a welcome benchmarking of supervisory practices with other large banks and G-SIBs. However, the timeliness of the supervisory response seems to have been reduced given the need to develop consistent policies and the complex ECB decision making procedures. For the smaller German SIs, the shift from local supervision to the SSM framework represents a deep change in terms of reporting, minimum level of engagement with supervisors, intrusiveness, and supervisory requirements—including capital add-ons resulting from the Supervisory Review and Evaluation Process (SREP) process.

36. Over 1500 LSIs remain under the direct supervision of BaFin and the Bundesbank, under the general guidance and oversight of the ECB. The ECB has designated some LSIs as High Priority for which enhanced supervisory monitoring and reporting have been adopted, and is developing joint standards to ensure elements of the SSM supervisory manual are also applied to LSIs. BaFin and the Bundesbank have traditionally put a great emphasis on processes for risk management and controls, counting on the work of external auditors for the verification of compliance, while supervisors conduct the risk assessment using this and other information obtained through onsite inspections, reports, and direct contact with banks. The greater emphasis on reporting and SREP, in particular on a more direct assessment of credit risk valuation, is welcome. As a consequence, LSI supervision is changing from a more qualitative and relationship-based approach to a more quantitative approach. However, the increased reporting and monitoring requirements for LSIs need to be proportional to their systemic importance and available resources. For the very small entities, it is also important that sufficient resources in the national competent authorities (NCAs) continue to be dedicated to meeting supervisory objectives.

37. Most of the tasks assigned to the SSM must be executed according to national legislation, and all decisions need to be approved by the ECB's Governing Council resulting in a time-consuming and cumbersome decision making process. Every supervisory decision, after consideration and approval by the Supervisory Board, is raised to the ECB's Governing Council for approval under a no-objection procedure. In addition, for LSIs and SIs alike, the ECB needs to apply local legislation in each member state. For instance, licensing applications must be filed with national authorities in compliance with national legislation, and then submitted for analysis and decision by the ECB. All fit and proper authorizations of SIs are assessed against national fit and proper criteria and then submitted to the ECB. Enforcement and sanctioning powers of the ECB are also largely based on what is available under national legislation, and although the ECB has some direct enforcement powers, it mostly needs to act by giving instructions to BaFin on measures to be taken under German legislation. It is crucial that decision making processes in the day-to-day supervision are streamlined to the extent possible so that timely supervisory response is not hindered further in this already complex legal framework.

38. As the supervisory landscape evolves, it is crucial that supervisors communicate their expectations to banks and develop guidelines and regulations that can be used to substantiate enforceable measures. All aspects that are not harmonized within the EU—or on which EU or German regulatory framework is silent—need to be developed into guidelines or regulations that can both inform the banks of supervisory expectations and substantiate supervisory action. In the German framework some of that is done through circulars, ordinances and guidelines. Through the implementation of the SSM, harmonized standards are being introduced for SIs and the good practices and process engrained in the internal SSM procedures should be made public in instruments which can help substantiate supervisory measures. This is particularly relevant for guidance related to loan portfolio management (on setting loan classification parameters and provisioning, collateral valuation considerations, and elements of effective credit risk management), concentration risk, country and transfer risk, related party risk, and operational risk. The coverage and granularity of supervisory data needs to be improved rapidly.

Withdrawal of correspondent banking relationships

39. Some major German banks are withdrawing from correspondent relationships in a number of countries. These decisions appear to be driven mainly by business and risk-return considerations, lower risk appetite and implementation of a risk-based approach to international standards. Not unique to German banks, they could entail disruptions to the affected countries' economic activity. The authorities should encourage banks to assess the risks that they face in specific situations and apply risk mitigation tailored to the risks of a specific customer or product, with a view to preventing unnecessary curtailment of legitimate financial activities. Greater cooperation among national supervisors is also needed, including to clarify regulatory expectations, harmonize regulatory frameworks and facilitate cross-border information sharing on customer due diligence.

Financial market infrastructures—Eurex Clearing[20]

40. Eurex Clearing is licensed both as a CCP and a credit institution resulting in a number of financial stability safeguards. It is authorized by BaFin as a clearing house in accordance with EMIR and at the national level licensed also as a credit institution. The banking license allows it to take deposits, and provide lending while acting as a CCP. As a member of TARGET 2, Eurex Clearing settles the cash leg of its euro transactions in central bank money, using its account at the Bundesbank. It also settles the Swiss franc transactions at the Swiss National Bank (SNB). It has access to the intraday and overnight credit facility of the Bundesbank and may have access to further liquidity assistance at the discretion of the relevant central bank, subject to applicable legal restrictions.

41. Eurex Clearing has coped well with volatile markets and strengthened international standards. It has already developed a recovery plan in accordance with the Recovery and Resolution Act. Eurex Clearing has been recognized by the Swiss authorities as a systemically important FMI to the Swiss market and approved by the U.S. Commodity Futures Trading Commission (CFTC) as a registered derivatives clearing organization to offer proprietary OTC clearing services to clearing members domiciled in the U.S. However, it would benefit from strengthening its liquidity stress tests and ensuring effective business continuity arrangement by upgrading the secondary site with appropriate staffing arrangements. While the regulatory, supervisory, and oversight framework is effective, the legal basis for the Bundesbank's oversight warrants strengthening, its tasks and powers should be made explicit in the law and intensity of on-site inspections increased.

42. Potential spillover risks related to Eurex Clearing are well contained; authorities are encouraged to monitor global and domestic interdependencies. As the G20 regulatory reforms lead to increased central clearing volumes,[21] Eurex Clearing's sound risk management is critical to minimize global spillovers from disruption of its operations. German authorities should monitor interdependencies, for example through network analysis and stress testing, and are encouraged to continue leading the international effort to increase robustness of CCPs, further enhance recovery and resolution standards for FMIs, analyze and monitor their interconnectedness and coordinate FMI recovery planning with other key global players in the relevant international fora.[22]

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[20] For details, see Report on the Observance of Standards and Codes—Summary Assessments, Principles for Financial Market Infrastructures.

[21] With 186 clearing members, 1.8 billion contracts and transactions have been cleared in 2015 amounting to a total value of over EUR 200 trillion, compared to EUR 159 trillion in 2010 based on the EMIR compliant reporting of Eurex Clearing AG.

[22] The stress testing exercise of EU CCPs and their clearing members, initiated and coordinated by ESMA, and authorities' participation in the Study Group on Central Clearing Interdependencies are important first steps.

Insurance regulation and supervision[23]

43. Since the last FSAP, the authorities have acted to mitigate the impact of low interest rates on the insurance sector; nonetheless, vulnerabilities persist. Actions taken include the introduction, as early as 2011, of requirements on life insurers to build reserves for future commitments (the so-called ZZR);[24] legislative changes regarding distribution of unrealized investment gains to departing policyholders; and the use of transitional measures under Solvency II to mitigate the material impact of the new valuation basis. Insurers themselves have been changing their product mix, and reducing guarantees on new products. Nonetheless, financial strains at individual companies are possible, particularly those concentrating on traditional life insurance, reflecting large accumulated books of business written over many years.

44. The regulatory and supervisory regime has been substantially bolstered by Solvency II implementation. BaFin is taking a more risk-based approach to evaluating supervisory risks and allocating resources. There is an increased focus on groups in the regulatory and reporting requirements, improved cross-border cooperation through colleges of supervisors, and enhanced monitoring of insurers' investment activities, including regular stress testing. After a large increase, BaFin's supervisory resources appear appropriate, while the transition to Solvency II has involved extensive retraining of staff and application of more principles-based approaches to governance and risk management. However, many new regulatory tools (including a prudent person principle for investments) are still under implementation and their effectiveness remains to be tested.

45. BaFin has identified life insurers under strain that are now subject to close oversight. The continuing importance of national Generally Accepted Accounting Principles (GAAP) in relation to policyholder profit participation, which is a central feature of German life insurance, makes Solvency II implementation particularly complex in Germany. While BaFin is monitoring companies' positions and has conducted surveys on the impact of Solvency II, uncertainty remains regarding market reactions to the publication of new solvency indicators. The array of measures of financial strength may hamper interpretation.[25] Given this multiplicity and high transparency of measures to be published in 2017 regarding the reliance on transitional measures, a communication strategy should be formulated with high priority to improve public understanding.

46. BaFin's intervention and policy framework should be reinforced. BaFin should communicate supervisory expectations based on the Own Risk and Solvency Assessment (ORSA) review more systematically, and make full use of the provisions in the supervisory legislation to require capital add-ons in the circumstances envisaged in Solvency II. BaFin should consider applying aspects of its G-SII approach, on a risk-based basis, to other large insurance groups, including large reinsurers with global reach. BaFin should continue to develop its crisis management

[23] For details, see technical Note on "Insurance Sector Supervision."

[24] Since 2011, over EUR 20 billion of profits have been allocated to the ZZR on a cumulative basis at year-end 2014.

[25] Insurers are subject to both Solvency II requirements for regulatory purposes and the continuing national GAAP framework, based on historic cost accounting, for financial statements.

planning, including the acceleration of recovery planning (now applied only to the G-SII) and keep under review the adequacy and flexibility of safety net arrangements, in particular transferability of complex businesses with derivatives and reinsurance transactions. The authorities should continue to improve the stress testing methodologies and conduct regular stress tests on an industry-wide basis.

47. BaFin should require action plans where companies face difficulties in meeting Solvency II requirements. Where companies are relying on transitional measures, insurers should have robust and credible plans for meeting the full requirements, including under stress conditions that may occur in the long transitional period, and by the end of the period. BaFin should take action to restrict business or withdraw approval of transitional measures, where necessary.

Asset Management and Collective Investment Schemes[26]

48. Germany's regulatory framework for asset management sector is strong and comprehensive. Full account is taken of the requirements set out in EU legislation and the standards and principles developed by International Organization of Securities Commissions (IOSCO), with some adjustments to reflect the specificities of the German market and priorities of the main supervisor of the sector, BaFin.

49. The authorities have increased their supervisory engagement in recent years. BaFin is sufficiently well-resourced that it can maintain close contact with asset managers and depositaries, which could be intensified even further through a program of more frequent on-site inspections. This should include BaFin staff accompanying external audits on a more regular basis. In addition, BaFin should take into account a broader range of factors, such as the leverage employed by fund managers and the level of interconnectedness, in its risk classification of supervised entities.

50. German asset managers and funds are subject to detailed rules on the valuation of assets and net asset value (NAV) calculation, but additional macroprudential measures could be considered. With respect to liquidity risk management, appropriate safeguards were put in place to prevent a recurrence of problems experienced by certain open-ended real estate funds following the financial crisis. Nevertheless, additional measures could further ensure stability—and should be considered in tandem with other EA supervisors—for instance, the introduction of mechanisms, such as swing pricing, to reduce the first-mover advantage that can exist in single-priced funds. BaFin should also monitor the need for more detailed guidelines on the use of these tools, with a view to contributing to relevant EU and international standard-setting work. The authorities should also consider allowing for a broader range of tools to deal with situations of market illiquidity that could have an impact on the ability of funds to meet redemption requests. Finally, the treatment of material pricing of investment funds and associated rules on investor compensation merit stronger oversight.

[26] For detail, see Technical Note on "Fund Management: Regulation, Supervision and Systemic Risk Monitoring."

51. BaFin is able to monitor developments in the asset management sector by having access to an extensive set of data shared by the Bundesbank. Individual exposures can be identified accurately, allowing supervisory intervention where needed. BaFin's oversight of the sector using quantitative data will be further enhanced as the reporting under the AIFMD becomes more reliable. Pending the establishment of a system for the collection and exchange of data by ESMA, BaFin should ensure it has its own system in place to assess the reported information and flag issues to other EU supervisory authorities as necessary. BaFin should also contribute to discussions at the European and international levels on the development of a single method of calculating leverage.

AML/CFT[27]

52. In recent years, Germany has introduced significant reforms to enhance its AML/CFT regime. It notably criminalized self-laundering and immobilized bearer shares, enhanced domestic cooperation, improved the supervisory framework for designated non-financial business and professions (DNFBPs) and the risk analysis model applied by BaFin for AML/CFT supervision. Onsite visits to financial institutions and DNFBPs have increased. Germany is currently conducting a national assessment of its money laundering (ML) and terrorist financing (TF) risks.

53. Overall, the AML/CFT framework appears strong, with enhancements warranted in some areas. Germany should consider expanding the range of predicate offenses to ML so as to include offenses—in particular tax offenses—not only when aggravating circumstances are met but also in their absence, when the offense generates significant amounts of proceeds. Significant sanctions by foreign regulators for non-compliance with their national AML/CFT provisions imposed on some banks suggest the need for stronger implementation of AML/CFT obligations. Germany should enhance AML/CFT supervision of banks with cross-border operations, and as a priority, give additional attention to the supervision and audit review of banks' risk assessments and control measures. More streamlined information flow and cooperation between BaFin, ECB and the Bundesbank would also strengthen BaFin's AML/CFT supervision of banks' group-wide risk management policies and controls at the parent level. Current staffing levels at BaFin's Department of Money Laundering Prevention warrant strengthening. Finally, Germany should take further measures to facilitate timely access to beneficial ownership information of legal persons.

FINANCIAL SAFETY NETS[28]

Scope and institutional landscape for bank resolution and crisis management

54. The transposition of the EU BRRD into German law has significantly strengthened the existing resolution regime in Germany. The BRRD establishes uniform rules within the EU for recovery and resolution of banks and investment firms that are closely aligned with the FSB's Key

[27] For detail, see Technical Note "Anti-Money Laundering and Combating the Financing of Terrorism."

[28] For detail, see Technical Note on "Crisis Management, Bank Resolution and Crisis Management Frameworks."

Attributes for Effective Resolution Regimes (KAs).[29] Preexisting broad German powers and tools have been further enhanced by, *inter alia*, the introduction of bail-in, though the authorities did not transpose the BRRD's extraordinary government financial stabilization tools (temporary public equity support and temporary public ownership), thus constraining their toolkit in the event of a systemic crisis. This new framework now needs to be operationalized.

55. Institutional arrangements have undergone fundamental change with the implementation of the Single Resolution Mechanism (SRM). In 2016, the SRB has assumed responsibility for ensuring effective resolution of SIs along with other German banks with cross-border operations in other EU jurisdictions. A Single Resolution Fund (SRF) was created to fund resolution measures, and will be used for banks resolved in all SRM member states after the national compartments of the SRF have been fully mutualized in eight years' time. While the SSM has established a track record over more than a year in operation, the SRM is still in a start-up phase. The SRM decision-making structure is complex. Its efficiency should be reviewed and streamlined.

56. While the institutional framework for bank resolutions has been put in place, a coordination mechanism for addressing a systemic crisis remains less formalized. A formal coordination framework involving the German authorities, ECB and SRB should be developed along with contingency plans for management of a systemic crisis in cooperation between the German and European authorities. These plans should be tested via crisis simulation exercises.

Recovery and resolution planning

57. Authorities are making significant progress in recovery and resolution planning. Since 2013, large domestic banks have been required to have recovery plans. This requirement is now being rolled out for additional banks, including high priority LSIs and small banks, by 2017. Similarly, resolution planning and resolvability assessments are ongoing in all significant banks.

58. Authorities intend to rely largely on bail-in to resolve systemic banks. The EU minimum requirement for eligible liabilities (MREL) is formally in place since 2016 and will be applied on an institution specific basis and phased-in over time.[30] The framework for bail-in is strict and only allows exemptions in limited cases. Building adequate buffers may take years in some banks. This might constrain policy options in a systemic crisis during the transition. The authorities' policy options are also constrained by the non-transposition of the BRRD's provisions on government stabilization tools in the SRM regulation and German legislation. Based on a number of surveys, the authorities believe that most potentially systemic banks have already issued a sufficient volume of debt that would allow for bail-in. The authorities should continue to monitor that the available bail-inable liabilities are adequate for large banks. Recent German legislation clarifying the subordination of certain unsecured debt from 2017 onwards will facilitate implementation of bail-in.

[29] These rules also cover subsidiaries, financial holding companies, mixed financial holding companies and mixed activity holding companies.

[30] A draft RTS by the EBA outlines the criteria that resolution authorities should apply when setting MREL.

59. Operationalization of resolution plans and ensuring funding of a bank in resolution is a high priority. The authorities have identified operational challenges (e.g., the timely valuation of assets to be transferred, continued access to financial market infrastructures) and are working to surmount them. In some cases, actions to effect resolution may require a number of days to implement, and the authorities should ensure they can maintain control over the bank during this period, including by using their powers to impose a more general moratorium for a specific bank.[31] Authorities also need to ensure adequate funding to support banks in, and subsequent to, a resolution decision. The available funding should be assessed during resolution planning and in the preparation of a resolution decision. Such funding needs should preferably be covered by private sector funding, or by public sector backstop facilities. While the resolution framework legally precludes assuming access to ELA (which is subject to ECB approval above specified thresholds) as part of resolution planning, the Bundesbank should consider liaising with the resolution authorities during the preparatory phase to assess potential post resolution liquidity needs.

60. Completing a common European backstop to the SRF remains a medium term priority. Currently, the German Loan Facility Arrangement with the SRB provides a backstop for the national compartment in the SRF. In addition, the SRF allows for limited recourse to the SRF's other national compartments during the transition phase. There is no agreement yet on a common European backstop. The EU Economic and Financial Affairs Council (ECOFIN) ministers have committed to agreeing on this issue by the end of the SRF transitional period, i.e., 2023. A common European backstop remains necessary to ensure that the SRF will have sufficient resources at its disposal to fund resolution measures.

Cross-border cooperation

61. Contrary to the requirements of the Key Attributes of Effective Resolution regimes, the resolution framework limits the participation of third country authorities in Resolution Colleges to the role of observers. Their access to confidential information is conditional upon their domestic regimes compliance with the required confidentiality and data secrecy provisions. In practice, the German authorities have developed a good track record of coordination with countries outside of the EU in Crisis Management Groups (CMGs). The authorities should continue efforts to foster cooperation with non-EU countries, despite gaps regarding confidentiality in the European framework.

62. Similarly, the resolution framework requires the resolution authority to take into account the effects of a resolution decision in other EU Member States, but not the effects in third countries. Aforementioned cooperation in Resolution Colleges and CMGs will also address these effects. The authorities should continue their efforts to develop cooperation with third country authorities, and, in the longer term, to pursue legislative changes—with other EU member states—to foster cross-border cooperation at the European level.

[31] This moratorium should be limited to the maximum time necessary in order to minimize any destabilizing effects in the market.

Deposit insurance

63. Funding and transparency of the deposit guarantee schemes (DGS) has been enhanced. Deposit insurance follows the three-pillar model of the German banking sector. In the event of a bank failure, depositors have a legal claim for reimbursement of their covered deposits up to EUR 100,000 (in specific situations, up to a higher amount). In addition to the two statutory DGSs (one for private banks and one for public banks), there are also two Institutional Protection Schemes (IPS), which are formally recognized as DGSs; one covers savings banks and Landesbanken and another cooperative banks. Legislation requires banks be able to provide information on insured depositors with respect to their claims and for reimbursement by a statutory DGS within seven working days. While important progress has been made, EA jurisdictions have not yet reached agreement on an EA-wide deposit insurance scheme.

64. IPSs play important monitoring and stabilization roles for their members, but the uneven playing field for DGSs may result in competitive disadvantages for private banks and hinder consolidation across sectors. The IPSs have risk monitoring systems in place, and can provide funding to restructure and resolve individual failing members as part of private sector measures. In a systemic crisis situation, they may potentially propagate contagion within the respective banking pillars. However, the members of IPSs do not have a legal claim on such funding by the IPS. In the absence of IPS support, as an appropriate safeguard, covered deposits will be paid out to the maximum of EUR 100,000 and the troubled bank will be dealt with under the general resolution regime.

Table 2. Selected Economic Indicators, 2013–17

January 2016 Projections

	2013	2014	2015	2016	2017
Output					
Nominal GDP (in EUR bn)	2820.8	2915.6	3025.9		
Real GDP growth (%)	0.4	1.6	1.5	1.7	1.7
Total domestic demand growth (%)	0.9	1.3	1.3	1.8	1.9
Output gap (% of potential GDP)	-0.4	-0.2	-0.1	0.2	0.4
Employment					
Unemployment rate (%, ILO)	5.2	5.0	4.6	4.8	5.1
Employment growth (%)	1.0	0.9	0.5	0.8	0.7
Prices					
Inflation (%)	1.6	0.8	0.1	1.0	1.5
General government finances					
Fiscal balance (% of GDP)	-0.1	0.3	0.6	0.0	0.0
Revenue (% of GDP)	44.4	44.6	44.7	44.5	44.4
Expenditure (% of GDP)	44.5	44.3	44.1	44.5	44.4
Public debt (% of GDP)	77.4	74.9	71.1	68.4	66.2
Money and credit					
Broad money (M3) (end of year, % change) change) [1]	2.6	4.9			
Credit to private sector (% change)	0.8	0.6			
10 year government bond yield (%)	1.6	1.2			
Balance of payments					
Current account balance (% of GDP)	6.5	7.3	8.3	8.1	7.7
Trade balance (% of GDP)	7.5	7.8	8.5	8.6	8.2
Exports of goods (% of GDP)	38.2	38.2	39.3	39.8	40.5
volume (% change)	1.3	4.2	5.3	3.7	4.3
Imports of goods (% of GDP)	30.8	30.5	30.7	31.2	32.2
volume (% change)	2.2	4.7	6.2	4.5	5.1
FDI balance (% of GDP)	-0.3	-2.8	-0.6	-0.6	-0.6
Reserves minus gold (in USD bn)	67.4	62.3			
External Debt (% of GDP)	150	153			
Exchange rate					
REER (% change)	3.3	-2.4			
NEER (% change)	3.4	-1.7			
Real effective rate (2000=100) 4/	99.7	97.3	...	...	...
Nominal effective rate (2000=100)	101.5	99.8	...	...	...

Sources: Deutsche Bundesbank, Eurostat, Federal Statistical Office, Haver Analytics, and IMF staff.

[1] Reflects Germany's contribution to M3 of the euro area.

Table 3. Financial Soundness Indicators for the Household Sector, 2006–15

(Billions of euro, end of period, unless otherwise noted)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Disposable income	1482	1507	1541	1525	1562	1608	1642	1672	1710	1758
Savings ratio (percent)	10.1	10.3	10.5	10.0	10.0	9.6	9.3	9.2	9.5	9.7
Debt	1567	1547	1532	1529	1534	1552	1568	1580	1600	
Mortgage debt to total debt (%)	75.1	75.4	75.5	75.5	75.2	75.2	74.6	74.7	76.6	
Total debt to disposable income (%)	105.72	102.64	99.40	100.29	98.25	96.48	95.47	94.49	93.57	
Debt to GDP (%)	67.7	63.7	62.0	64.6	62.0	59.8	n.a.	56.2	55.1	
Debt service to income (%)	4.2	4.4	4.4	3.4	3.2	2.9	n.a.	2.1	1.8	
Structure of household's financial assets										
Deposits in banks and currency	1499	1565	1658	1703	1770	1828	1907	1970	2056	
Debt securities	275	297	267	266	254	247	238	216	198	
Equities and investment fund shares	1001	1066	777	820	863	805	878	947	1017	
of which:										
Investment fund shares	444	467	380	416	435	395	420	450	498	
Listed shares	202	204	128	163	197	173	202	233	244	
Pension savings	1361	1436	1465	1544	1622	1672	1760	1847	1933	
Ratio of household's fin. liabilities to fin. assets (%)	37.5	35.1	36.4	35.0	33.8	33.8	32.5	31.5	30.5	
Real estate markets										
Prices (index, 2007Q1=100) [1]										
Total		99.0	98.8	97.1	99.2	102.5	107.5	113.1	116.0	122.3
Apartment		100.1	99.7	97.9	100.2	102.9	108.8	113.9	116.1	122.4
New Homes		99.7	101.3	102.1	105.0	108.3	113.5	119.1	123.1	129.2
Existing Homes		97.3	95.4	91.0	92,1	96.2	100.2	106.2	108.5	115.0
Average home price of 10 main cities		99.1	98.2	97.7	98.5	101.9	106.1	112.2	116.3	122.6
Average apartment price of 10 main cities		100.8	100.9	100.7	104.1	108.0	114.0	123.5	129.5	138.0
Price to rent ratio (index) [2]	99.7	99.5	98.9	98.4	100.0	104.5	95.6	115.0	119.1	103.2
Gap to linear trend (%) [3]	-5.1	-5.7	-6.1	-6.1	-5.4	-2.3	1.1	4.5	8.5	

Sources: BulwienGesa, Bundesbank, Destatis, ECB, Hypoport, OECD, and IMF Staff Calculations.

[1] Source: Hypoport.

[2] Nominal house prices to rent prices, index based in 2010. Source: OECD.

[3] Total house price; trend from 1975-2014. Source: BulwienGesa.

Table 4. Financial Soundness Indicators for the Corporate Sector, 2006–14

(Billions of euro, unless otherwise indicated)

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Capital structure									
Corporate equity	1972.2	2234.4	1655.4	1785.2	2018.7	1841.2	1927.8	2433.5	2535.1
Corporate debt	1775.5	1892.8	1985.6	1939.7	1887.0	1890.7	2106.5	2091.0	2144.8
Financial assets	2336.7	2559.1	2404.9	2476.4	2380.9	2357.2	2607.4	3101.6	3192.6
Financial assets to liabilities ratio	1.32	1.35	1.21	1.28	1.26	1.25	1.24	1.48	1.49
Debt to equity ratio	0.90	0.85	1.20	1.09	0.93	1.03	0.92	0.86	0.85
Profitability									
Return on equity (%)	N/A	N/A	N/A	N/A	8.84	13.05	10.82	7.54	7.17
EBITDA [1]	0.64	0.56	0.70	0.61	0.86	0.73	0.94	0.78	0.71
EBITDA to interest ratio [1]	7.52	6.53	6.17	4.35	7.45	7.44	8.56	7.83	8.95
Debt to EBITDA ratio [1]	1.77	1.99	2.56	3.18	2.44	2.45	2.39	2.56	2.37
Miscellaneous indicators									
Number of bankruptcies per year	16408	13599	13358	16167	15283	14553	13951	14344	13480
DAX (excl. f.i.s, end of year value)	748.3	974.2	508.3	817.6	850.7	685.1	828.1	1166.8	1371.4
DAX index (end of year value) [2]	6596.9	8067.3	4810.2	5957.4	6914.2	5898.4	7612.4	9552.2	9805.6

Source: Bundesbank, Capital IQ, Deutsche Bourse, and IMF staff calculations.

[1] Data is the median value of the top 50 companies by assets, IMF/MCM.

[2] Index: December 30, 1987=1000.

Table 5. Financial Soundness Indicators, 2008–14

(In percent, unless otherwise indicated)

	2008	2009	2010	2011	2012	2013	2014
Capital Adequacy							
Regulatory capital to risk-weighted assets	13.6	14.8	16.1	16.4	17.9	19.2	18.0
Regulatory Tier I capital to risk-weighted assets	9.5	10.8	11.8	12.1	14.2	15.6	15.4
Capital to assets	4.5	4.8	4.3	4.4	4.7	5.5	5.6
Credit Risk							
NPLs net of provisions to capital	25.3	36.9	34.2	31.6	27.4	23.8	
NPLs to gross loans	2.9	3.3	3.2	3.0	2.9	2.7	
FX loans to total loans	12.2	11.5	11.5	11.0	10.5	10.0	11.5
Spread between reference loan and deposit rates[1]	273.0	342.0	343.0		324.0	326.0	319.0
Sectoral Distribution of Total Loans							
Loan to households	24.4	26.3	26.2	26.2	26.8	28.5	28.7
Loans to non-financial corporations	14.5	14.8	14.6	14.6	14.9	15.6	15.2
Geographic Distribution of Total Loans							
Germany	71.2	72.9	74.9	75.7	76.8	76.8	74.6
EU-member countries	20.2	19.5	17.6	16.8	16.0	16.0	15.8
Others	8.6	7.6	7.4	7.5	7.2	7.2	9.6
Profitability							
Return on average assets (after-tax)	-0.3	-0.1	0.2	0.3	0.2	0.2	
Return on average equity (after-tax)	-8.1	-2.0	3.7	6.5	5.6	3.5	
Interest margin to gross income	84.6	72.5	73.2	72.9	71.5	71.9	
Noninterest expenses to gross income	73.4	65.1	63.7	63.9	64.2	69.1	
Trading income to gross income	0.0	0.0	4.5	3.7	5.5	4.9	
Personnel expenses to noninterest expenses	53.4	54.7	52.7	52.0	52.9	51.9	
Liquidity							
Liquid assets to total short-term liabilities	120.3	144.1	137.0	137.9	144.2	140.5	145.5
Customer deposits to total (non-interbank) loans	77.7	76.5	73.6	73.6	75.7	84.5	86.9
FX Risk							
Net open positions in FX to capital	6.6	5.3	4.4	4.5	3.9	3.8	

Source: Deutsche Bundesbank.

[1] Spread in basis points.

Table 6. Germany: Risk Assessment Matrix (RAM)

Source of Risks	Overall Level of Concern	
	Likelihood of severe realization in 1-3 years	**Expected Impact on financial stability**
Protracted period of slower growth in key advanced economies and sharp downturn in China and other EMs, leading to slowdown of external demand and dampening of global growth	***Medium*** Slow and incomplete implementation of structural reforms in Europe, China and Japan could hamper medium term growth Lower demand from EMs would lead to decline in global trade, while activity in EMs and commodity exporters would be dampened. Oil prices would drop further. A hard-landing in China would further worsen the global slow-down, create more financial market volatility in EMs and AEs and impact capital flows and commodity prices. The global downturn would impact Germany though falls in export demand, financial linkages, and confidence effects.	***Medium*** A global recession would fuel credit and market risk, and deteriorate asset quality. The correction of overvalued asset prices triggers wealth and confidence effects which weigh on consumption and investment. Provisioning needs for banks would increase considerably, negatively affecting already low profitability. Some banks may search for yield and take up excessive short-term risks in an environment of higher financial market volatility. German banks' direct exposures to EMs are small, and the corporate sector can absorb parts of demand shocks due to strong internal buffers and low debt. However, covered bond and lower-quality corporate bond spreads could increase, leading to a rise in firms' financing cost. These risks will be analyzed through macroeconomic adverse scenario I ("Global Stress Scenario").
Reemergence of EA sovereign bond market volatility and peripheral sovereign contagion. Financial stress in the euro area could re-emerge triggered by policy uncertainty, faltering reforms, or political unrest.	***Medium*** Policy uncertainty, delays in structural reforms as well as social resistance to austerity programs combined with generally lower investor sentiment towards the EA, could boost peripheral sovereign default risk. Reemergence of peripheral bond market volatility could intensify the bank-sovereign link, leading to tighter financial conditions, weaker investor sentiment and consequently lower investment in Germany.	***Medium*** Tighter financial conditions could lead to a decline in credit supply. Increased default risk for banks would further impair already low profitability. Substantial increases in peripheral sovereign yields would cause valuation losses in banks. While still present, flight-to-quality effects have diminished since 2013. Therefore yields on sovereign papers issued by core countries would also rise, but less than in the periphery. Banks would take a hit on capital ratios, as interest and trading income

		deteriorate further. Alternatively, banks may search for yield and take up excessive risks. These risks will be analyzed through macroeconomic adverse scenario II ("Euro Area Crisis Scenario").
Excessive risk-taking associated with the low interest rate environment.	***Low*** Faced with falling net interest margin, and generally low profitability, banks and insurance companies may be tempted to adopt more risky search-for-yield strategies. The problem is particularly acute for life insurance companies that may no longer be able to distribute guaranteed yields. Search for yield may turn the recent strength in pockets of the German housing market into a nationwide real estate assets overvaluation. Changes in market microstructure dry up certain market segments, fueling asset price volatility.	***Medium*** A correction of asset prices, together with squeezes in liquidity, characterized by net outflows of liquidity and loss of certain funding sources, force financial institutions to sell liquid assets at a loss. Balance sheets may generally become more risky as higher short-term profits are traded imply increased long-term risks. As a consequence, credit and market risks in banks increase, and investment in less liquid assets fuels liquidity risk. Increasing market volatility induces higher uncertainty going forward, and mark-to-market requirements would force the realization of losses, further weighing on profitability. These risks are analyzed through specific interest rate risk tests, as well as through combined market and funding liquidity risk tests.
Distress in a major financial institution	***Low*** Low profitability and high leverage in one of Germany's systemic financial institutions may result in distress if the sector is faced with significant shocks.	***High*** The highly interconnected nature of German SIFIs could trigger a systemic event both domestically and globally.

Annex I. Germany: Implementation Status of 2011 FSAP Recommendations

Recommendations	Status
Structural issues	
Develop a comprehensive strategy aimed at improving the efficiency and stability of the banking system, which includes the following: (a) urgently establishing viable business models for the Landesbanken; (b) loosening the regional constraints under which local banks operate; (c) opening up the public banks to private participation; and (d) strengthening these banks' governance to reduce noncommercial influences.	The restructuring of the Landesbanken is under way. There are no plans however to loosen regional constraints nor to open up public banks to private participation, and limited progress has been made to reduce non-commercial influences. Notwithstanding, some progress has occurred and HSH Nordbank has almost 10 percent private ownership and is to be privatized by the end of February 2018 (with the option of a six-month extension subject to approval of the EU Commission in case of a delay of the technical implementation) or wound down. This may happen through a sale to strategic investors or with the participation of other Landesbanken. ***Limited implementation***
Prudential supervision	
Continue to improve stress testing in the banking and insurance sectors, for example, with respect to longer-term risks, liquidity risk, and group-wide spillovers.	Banks: In 2014, 24 large banking groups participated in the Comprehensive Assessment/EBA EU-wide stress test. The Bundesbank's macroeconomic top-down stress test has been significantly upgraded, which led to a broadening of risk factor coverage for the largest banks. Further refinements are warranted, however, as well as improvements in Bundesbank's top-down surveillance tools. The Bundesbank and BaFin recently concluded a bottom-up exercise that addressed the profitability of banks in a low-interest rate environment. Insurance: The Bundesbank developed top-down approaches to insurers. Bafin carried out bottom-up surveys on a regular basis, both based on national accounting standards and in preparation for introduction of Solvency II. ***In progress***
Rigorously ensure that any financial institution that displays weaknesses on a forward-looking basis strengthens its balance sheet and take managerial action.	EU CRD IV establishes the SREP, by which competent authorities are empowered to review the arrangements, strategies, processes and mechanisms implemented by institutions. For significant institutions, the SREP in 2015 is already carried out in accordance with the requirements of the SSM Supervisory Manual by the ECB in cooperation with the Bundesbank and BaFin. For less significant institutions, the ECB and NCAs are currently developing joint standards. Based on these, BaFin and the Bundesbank will adjust the current risk assessment system for the national SREP in 2016. Supervisors have required capital but action regarding provisions and NPLs is still evolving.

Recommendations	Status
	Regarding the insurance sector, the 2014 German Life Insurance Reform Act introduced more stringent risk-management requirements and increased the powers of intervention of BaFin. Stress-tests are expressly required to include a long-term view. ***In progress***
Grant supervisors power to vet in advance bank acquisitions of subsidiaries.	Neither European laws nor national laws foresee a prior approval process for acquisitions. Supervisory interventions may follow if an assessment shows that acquisitions adversely affect the risk profile of an institution or that the requirements concerning a proper due diligence and new products/ new transaction process have not been met. ***No progress***
Keep reporting requirements under review to ensure that timely and systemic information is available on emerging risk factors, and shorten publication lags.	Reporting requirements have been upgraded in 2014 both through new supervisory reporting on financial information and modernization of the German Central Credit Register. Further developments will take into account ongoing ECB projects. However, frequency and granularity of information under harmonized requirements are still insufficient for supervision. Both, surveillance and financial stability analysis would profit from establishing a readily available, consistent set of data for both large and smaller banks (both consolidated and unconsolidated), more frequent balance sheet reporting for smaller banks with due regard for proportionality, and more regular and granular reporting of market risk positions, including hedges. ***Partially implemented***
Continue to strengthen on-site supervision.	Banking Supervision: The Bundesbank and BaFin improved the intensity of on-site inspections and the level of expertise in all relevant topics over the years since the last FSAP. Inspection planning takes into account macroeconomic and strategic issues. Further work will take into account ongoing ECB projects. Onsite verification of several risks still to be developed and fully implemented. Insurance Supervision: BaFin's insurance supervision has increased the number of on-site inspections over the last three years, e. g. for regular inspections / event-driven inspections /short on-site visits from 44 (2013) to 60 (2015). In addition, BaFin improved inspection planning, identification of topics and best practice sharing among staff. ***In progress***

Recommendations	Status
Macroprudential framework	
Define the role of the Bundesbank as macroprudential supervisor, and institute free exchange of information between macro and microprudential supervisors.	The Financial Stability Act creates the Financial Stability Committee, with the Ministry of Finance, the Bundesbank, and BaFin as voting members. The Act specifies a central role for the Bundesbank in macrofinancial oversight, and reinforces cooperation and information sharing between BaFin (national competent and designated authority) and the Bundesbank, but information sharing is still constrained. ***Partially implemented***
Crisis management and bank resolution	
Ensure the financial strength of the new bank restructuring fund, and clarify the interaction between the restructuring fund and the various DGS and mutual protection schemes.	The new SRF was established as of 2016. In 2016 banks started providing their annual contributions to the SRF. The SRF will be built up over 8 years with a target level of at least 1 percent of EA-wide covered deposits or approximately EUR 55 billion. During this transitional phase the SRF will consist of national compartments, which will be gradually merged. Germany has concluded a Loan Facility Agreement (LFA) with the SRB under which Germany can decide to provide a national bridge financing for its national compartment of around EUR 15.2 billion. A common backstop for the SRF still has to be agreed. During the transitional period, Germany and the other euro area Member States will provide, as a last resort, bridge financing to their respective national compartments in the SRF that must be repaid by banks through ex post contributions. The relationship between the SRF and IPS with respect to the SRF has been clarified. The DGS can only be used in a limited manner to finance resolution measures. The IPS will fund restructuring of their members and this is separate from the SRF. The latter will only fund the resolution measures of IPS members insofar as the IPS are not used first. ***Partially implemented***
Reform the DGS regime by instituting a harmonized and legally binding deposit guarantee of EUR 100,000, backed by adequate prefunding.	The 2015 German law implementing the EU deposit guarantee scheme directive implements these recommendations. However, the DGS system remains fragmented. ***Implemented***

Recommendations	Status
Finalize specific strategies for exiting from the government support to banks, and require the affected banks to formulate strategic plans.	The government support is being wound down. There are no SoFFin guarantees outstanding as at end 2014. The amount of SoFFin capital measures was reduced from EUR 17.1 billion (end-2013) to EUR 15.8 billion (July 2015). Effective December 19, 2014, Hypo Real Estate Holding AG sold DEPFA Bank plc, Dublin – together with its subsidiaries – to the wind-down agency "FMS Wertmanagement AöR." Besides winding-down DEPFA Bank plc, Dublin, FMS Wertmanagement AöR continues to actively reduce its existing portfolio. On July 16 2015 Hypo Real Estate Holding AG sold 80 % of its shares in Deutsche Pfandbriefbank AG via an initial public offering (IPO). Thereby, the EU mandated loss of control requirement was met before the end-2015 deadline; prior to the IPO, Deutsche Pfandbriefbank AG had returned SoFFin's EUR 1 billion silent participation on July 6, 2015. The wind-down agency "Erste Abwicklungsanstalt" (EAA) decreased its exposure substantially. On February 22, 2015 EAA signed a share purchase agreement regarding the sale of Westdeutsche ImmobilienBank AG to Aareal Group. EAA had acquired Westdeutsche ImmobilienBank AG from former WestLB AG in 2012. The final transfer of the shares of Westdeutsche ImmobilienBank AG to Aareal Group took place on June 1, 2015. The sale of Westdeutsche ImmobilienBank AG reduced the loans and securities in EAA's portfolio by approximately EUR 10 bn compared to year-end 2014. The private capital increase of Commerzbank AG in April 2015 has further reduced SoFFin's stake to about 15.6 percent. ***Implemented***

Annex II. Structure of the German Banking System

The system is structured around three pillars and comprises 1,776 institutions. The consolidation in the last five years mainly took place at local savings and cooperative banks levels and the number of institutions has declined by more than 100 since the last FSAP.

The first pillar, 273 private commercial banks (of which 107 are branches of foreign banks), represents the largest segment of the banking sector, accounting for 39 percent of assets. Among the private commercial banks, the four big banks cover retail, corporate banking and investment banking business, both domestically and internationally, and act as the principal banking partners of Germany's major industrial enterprises.[1] Some large commercial banks have undergone major cost cutting exercise and reduced the exposure to non-core business.

The second pillar, public savings banks, includes seven independent regional Landesbanken and 425 savings banks, covering about 27 percent of banking system assets. The savings banks operate under a regional principle, providing a range of banking services to households and small- and medium- enterprises (SMEs). While local savings banks weathered the 2008 financial crisis relatively well, Landesbanken, their central institutions, endured large losses due to their involvement in structured finance and derivative products. A number of Landesbanken have undergone major consolidation since 2011 FSAP. Asset quality remains below system average, with an NPL ratio at 6.7 percent. Moreover, the provisioning of NPLs is relatively low compared with other pillars.

The third pillar, cooperative banks, includes more than 1000 financial institutions, accounting for about 14 percent of the banking assets. The cooperative banks are owned by their members, who tend to be their depositors and borrowers, and usually offer core banking services to their customers. The cooperative banks have the highest net interest margins across different pillars, and undertook considerable consolidation since the last FSAP, in part, responding to the low interest rate environment. The number of local credit cooperatives reduced by about 100 since end-2010, and the two central institutions for cooperative banks, DZ Bank AG and WGZ Bank AG will be merged effective August 1, 2016.[2]

The remaining 20 percent of the German banking sector comprises 57 mortgage banks, building and loan associations and special purpose banks. Mortgage banks suffered losses during the financial crisis, and subsequently went through restructuring and resolution. Their asset size has declined to under five percent of the banking system in 2015.

[1] The big bank group includes Commerzbank, Deutsche Bank, Deutsche Postbank, and UniCredit.

[2] Some rating agencies such as Fitch, consider the planned merger a supporting factor in affirming the rating of cooperative banks in Germany.

Annex III. Landesbanken—Recent Developments

The need for reform of the public banking sector in Germany, and specifically the Landesbanken, intensified after the financial crisis.[1] Such reform was one of the principal recommendations of the 2011 FSAP. Several institutions had to be rescued by the government. Pressure increased for reforms in ownership, governance, and business models of the sector.

The sector has seen important consolidation since the financial crisis began. There are now only seven independent Landesbanken, excluding Dekabank, the central asset manager of the sector. The ownership structure varies, and will evolve further in the next few years (Table A1). The sector deleveraged, as banks have refocused on core businesses (Annex Figure 1). Non-core assets and participations have been reduced, foreign offices have been closed, and a number of subsidiaries have been sold. Foreign currency activities and refinancing risks have been cut back. Dependence on wholesale market financing has declined.

Business models are changing. Some banks are focusing on developing customer lending business in the corporate and/or retail sectors, sometimes concentrating on specific industries. Others are taking a broader approach, including the development of investment banking activities. Financing patterns vary, with some banks able to rely on customer deposits for at least part of their funding, while others continue to be supported by loans from regional savings banks and wholesale borrowing. The result is a diversified sector with institutions of varying sizes and ranges of business activity (Table A2).

Notwithstanding this progress, the sector still faces considerable challenges. The Landesbanken in general are more efficient than before, but with large differences across individual banks. Business models are evolving and have not yet been fully tested, and profitability continues to be low even when adjusted for risk. Viable restructuring for some institutions is likely to require further downsizing, opening of capital to private investors and further reform of governance structures.

[1] See, for example, Hüfner, Felix, The German Banking System: Lessons from the Financial Crisis, OECD Economics Department Working Paper No 788, July, 2010. Also, Hilgert, Heinz, Jan Pieter Krahnen, Günther Merl and Helmut Siekmann, On a Fundamental Reorganisation of the Landesbanks and Savings Bank Sector in Germany, Johann Wolfgang Goethe Universität, Institute for Monetary and Financial Stability Working paper No. 44, 2011.

Annex Table 1. Germany: Ownership Structure of Landesbanken, 2015					
Bank	Legal Form	Ownership Share (in percent)			
		State Govt.	Local Govt.	Savings Banks	Other
BayernLB	Public Law Institution (plus holding co.)	75.0		25.0	
HSH Nordbank[3]	Limited Co.	85.4		5.3	9.3[1]
LBBW	Public Law Institution	40.5	19.0	40.5	
Helaba	Public Law Institution	12.2		87.8	
NordLB	Public Law Institution	64.7		35.3	
BremerLB	Public Law Institution	41.2		4.0	54.8[2]
SaarLB	Public Law Institution	74.9		25.1	

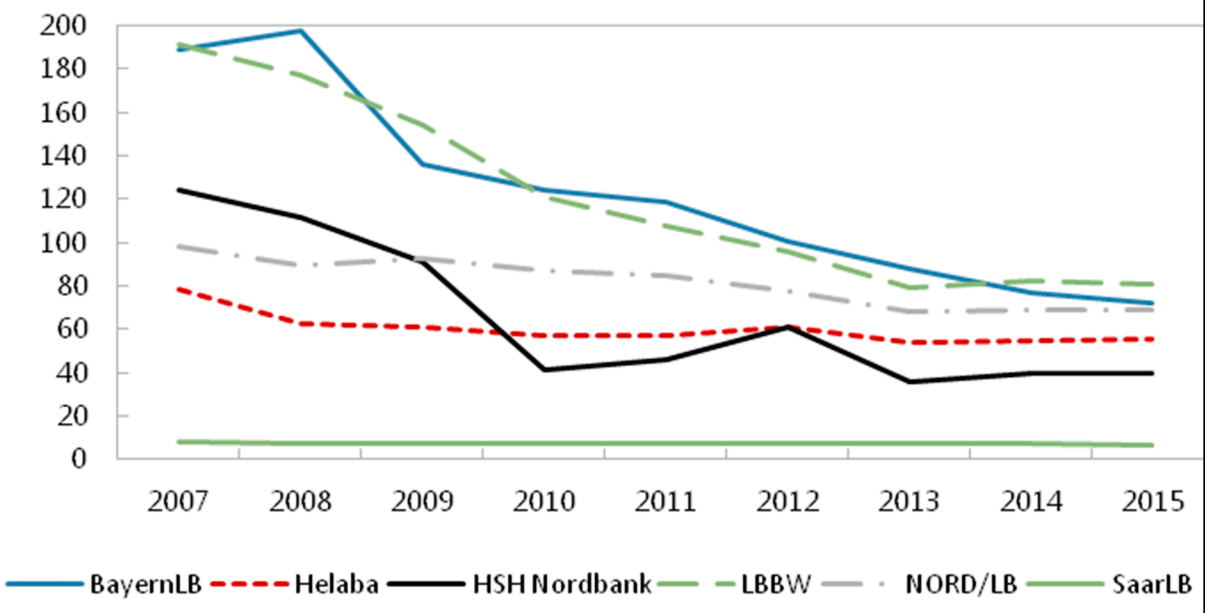
Source: Association of German Public Banks
[1] Private sector investors
[2] NordLB.

[3]Under the March 2016 agreement with the EC, HSH Nordbank will be privatized by end-August 2018 at the latest or wound down.

Annex Table 2. Germany: Business Models of Landesbanken, 2015						
	Total Assets '14	Central/Main Bank for:		Retail Bank Subsidiary	Development Subsidiary	Building Society Subsidiary
	IFRS (in EUR bn)	States	Savings Banks			
BayernLB	232.1	1	72	DKB	BayernLabo	
HSH Nordbank	110.1	2	14			
LBBW	266.2	3	90	BW-Bank		
Helaba	179.5	4	170	Frankfurter Sparkasse	WIBank	LBS Hessen-Thuringen
NordLB	197.6	3	70	Braunschweiger	LFI MV	
				Landessparkasse	IB Sachsen-Anhalt	
BremerLB	32.1	2	13			
SaarLB	16.5	1	7			LBS Saar

Source: Association of German Public Banks.

Annex Figure 1. Germany: Risk-Weighted Assets of Landesbanken, 2007–15
(In EUR billion)



Source: Association of German Public Banks

Domain		Assumptions	
		Bottom-Up by Banks	Top-down by Bundesbank and FSAP Team
BANKING SECTOR: SOLVENCY RISK			
1.Institutional Perimeter	Institutions included	• Around 1,500 institutions	• 1776 institutions operating in Germany
	Market share	• 28 percent of total banking sector assets	• Nearly 100 percent of total banking sector assets
	Data and baseline date	• Balance sheet, income statement, and portfolio data as of December 2014	• Publicly available data and reporting data. • For small and medium banks (LSIs), the FSAP team applied national reporting data from various reporting templates. Specifically, the FSAP applied bank-by-bank supervisory data on regulatory capital and income statement, the borrower statistics on credit risk exposure, together with data on trading income, FX exposure and sovereign exposure for 1,755 banks. • Due to incomplete and/or inconsistent data for large banks and banking groups (SIs) the FSAP had to establish a stress testing database using five different sources: the European reporting templates (FINREP and COREP), publicly available data from the 2015 EBA Transparency Exercise, supervisory data from the Bundesbank, and Bankscope for 21 banks. In particular, the COREP database provided regulatory information, while the FINREP and the EBA database cross-validated the income statement and regulatory information. For those large banks that do not apply IFRS accounting (and therefore not

Domain		Assumptions	
		Bottom-Up by Banks	Top-down by Bundesbank and FSAP Team
			reported under FINREP), the data were complemented by supervisory data from the Bundesbank and Bankscope (for 1 bank). • The cut-off date for data was December 2015 for large banks. Small and medium-sized banks report to the Bundesbank their balance sheet only once a year and, therefore, December 2014 had to be used. Regulatory information was as of June 2015. • Consolidated and unconsolidated, depending on type of bank and reporting format/schedule. • Full coverage of sovereign exposures for large banks.
2. Channels of Risk Propagation	Methodology	• Banks' own models • For some scenarios, methodology and shocks provided by Bundesbank and BaFin (see below)	• Detailed balance sheet stress test, covering key risk-sensitive on- and off-balance sheet exposures. For *small and medium-sized banks*, certain market risk exposures, including sovereign paper, could not be stress tested as the necessary detailed information is not reported to Bundesbank. For this category of banks, foreign exposures were also excluded from the exercise, first, because of incomplete risk and geographic information and, second, because foreign exposures constitute only around 1 percent of small and medium-sized banks' total assets). *Large banks* were analyzed on the group/holding level, taking into account both domestic and foreign exposures. In order to stress test sovereign risk, net direct sovereign exposures published by EBA were used. In one

Domain		Assumptions	
		Bottom-Up by Banks	Top-down by Bundesbank and FSAP Team
		•	single case, interest rate hedges were taken into account. For the other banks, hedges could not be taken into consideration as that information is not available to Bundesbank. FX shocks were applied to net open (unhedged) positions. For both categories of banks, trading losses were estimated by applying scenario-specific haircuts on asset and equity values. • Economic sector-specific credit risk parameters were used for calculating macro-financial elasticities. The following sectors of economic activity were treated individually: agriculture; electricity and mining; manufacturing; construction; wholesale and retail trade; transportation (incl. shipping); financial intermediation excluding MFIs; services; household/retail; non-profit institutions. • Market risk shocks were either included in the macroeconomic scenarios, or applied separately to banks' risk exposures. The house price shock (assuming over three years a 10 percent reduction in real estate values vis-à-vis the starting point) further affected mortgage exposures through higher loss rates (modeled via stressed LGD) compared to other loan exposures.
	Satellite Models for Macro-Financial linkages	• Banks own models used to translate common scenarios into risk parameter shifts • For certain constrained bottom-up tests, risk parameter shifts are provided by	• Credit losses for large, small and medium-sized banks were modeled via macroeconomic credit risk models, using Moody's KMV 12-month expected default frequencies (EDFs). • Sovereign risk was assessed through haircuts on

Domain		Assumptions	
		Bottom-Up by Banks	Top-down by Bundesbank and FSAP Team
		Bundesbank and BaFin (see below)	sovereign exposure holdings, estimated separately for each accounting portfolio, and depending on duration. An instantaneous and permanent shock was assumed, with realization of valuation loss in first year, and no recovery in yields.
	Stress test horizon	• Five-year horizon: 2015-2019.	• Three-year horizon: 2016–2018.
3. Tail shocks	Scenario analysis	Constrained BU tests include the following common shocks for all scenarios: Increase in PDs between 60 and 155 percent; haircut on collateral of 10% and 20%; widening of credit spreads on trading book exposures. • Scenario 1: Banks estimate their performance under a scenario that assumes a continuation of the current low interest rate environment. Here, banks are required to state how they would be reacting to the shocks. Under these assumptions, performance is then estimated. • Scenario 2: Banks estimate their performance under a constrained scenario, where the yield curve shape is fixed at December 2014. No behavioral response. • Scenario 3: -100 basis points parallel shift (drop) in yield curve as of December 2014,	"Baseline Scenario" was the IMF October 2015 World Economic Outlook. "Global Stress Scenario" features: • a serious recession, triggered by a tightening of global financial conditions, accompanied by credit cycle downturns in emerging economies; • realization of financial stability risks delays or stalls monetary normalization in the systemic advanced economies, including an abrupt decompression of asset risk premia relative to the baseline; • secondary market liquidity drops in all of the systemic advanced economies as financial risk taking unwinds. • credit cycle downturn in emerging economies, accompanied by a disorderly deleveraging in China, and suppressed economic risk-taking worldwide. Substantial drop in private domestic demand induced by negative investment and consumption demand shocks, representing a loss in confidence by nonfinancial corporates and

Domain		Assumptions	
		Bottom-Up by Banks	Top-down by Bundesbank and FSAP Team
		with behavioral response (dynamic balance sheet)	households, which raise their saving rates and delay expenditures. Both weigh heavily on aggregate demand. • House prices decline by 10 percent over three years vis-à-vis the starting point. • Over two (three) years, the scenario constitutes a shock to real annual GDP growth equaling 3.8 standard deviations (3.2 standard deviations). "Euro Area Crisis Scenario" features: • a return of the balance sheet recession experienced in 2011-2013, induced by a collapse of financial risk taking, a complete dry-up of secondary market liquidity throughout the euro area, and renewed financial stress in the euro area periphery, represented by the divergence of long-term government bond yields between the periphery, where they rise by 100 basis points more during 2016, and the core, where they rise by 50 basis points less. • a pro-cyclical expenditure-based fiscal consolidation reaction in the Euro Area periphery to public debt sustainability concerns there, which raises the primary fiscal balance ratio by 2 percentage points during 2016 and 2017 • a massive selloff in stock markets due to generally lower risk appetite, and substantial investor sentiment shocks. • Consistent with that, house prices decline by 10 percent over three years vis-à-vis the starting point.

Domain		Assumptions	
		Bottom-Up by Banks	Top-down by Bundesbank and FSAP Team
			Over two (three) years, the scenario constitutes a shock to real annual GDP growth equaling 3.5 standard deviations (3.0 standard deviations).
	Sensitivity analysis	• Scenario 3: +200 basis point parallel shift (increase) as of December 2014 yield curve • Scenario 4: -100 basis points parallel shift (drop) in yield curve as of December 2014, without behavioral response (i.e., static)	NA
4.Risks and Buffers	Risks/factors assessed	• Interest rate risk, credit risk, asset price risk	• Credit risk • Market risk (FX risk, equity price risk, house price risk, interest rate risk, incl. sovereign risk)
	Behavioral adjustments	• Conditional on test and scenario (see scenarios and tests described above)	• Constant balance sheet assumptions, with full replacement of defaulted exposures. Risk weighted assets (RWAs) are kept constant for STA banks and stressed for IRB banks in adverse scenarios, following the approach and formulas foreseen in Chapter 3 of the EU CRR for the IRB banks. • Dividend payout (assumed at 40 percent) conditional on positive net profit. A 30 percent tax rate is applied to remaining net profit. Post tax net profit is calculated towards capital. • Invariant asset allocation, i.e., no change in business models, lending standards, or investment pattern in response to shocks (over three years).
5. Regulatory	Calibration of risk	• Either internal parameters or determined	• For small and medium firms, point-in-time PDs

Domain		Assumptions	
		Bottom-Up by Banks	Top-down by Bundesbank and FSAP Team
and Market-Based Standards and Parameters	parameters	by Bundesbank and BaFin (in constrained bottom-up tests)	• (Moody's KMV Expected default frequencies), and point-in-time LGDs, estimated from the borrowers statistics. • For large banks, point-in-time PDs and LGDs are taken from COREP, with the exposure adjusted downwards to account for performing exposures and those to the non-financial private sector only. Specifically, PDs are taken from COREP template 8.2, excluding defaulted exposures.
	Regulatory/ Accounting and Market-Based Standards	• National regulation and accounting (GAAP)	• CRD IV / CRR fully loaded levels for CET1, Tier 1, and Total Capital, including Capital Conservation Buffer (CCB) and G-SIB and O-SII buffers. Capital shortfalls were measured for CET1, in order to reflect the effect of injecting high-quality capital on other capital definitions. • IAS 39 accounting standards (no mark-to-market for held-to-maturity portfolio; to sovereign exposures accounted in the available-for-sale portfolio, the AFS Prudential Filter (60 percent) was applied. Fair value option and held-for-trading sovereign exposures.
6. Reporting Format for Results	Output presentation	• Evolution and distribution of operating profit	• Evolution of capital ratios. • Aggregate results according to type and size of banks. • Impact of different result drivers, including profit components, losses due to realization of different risk factors. • Capital shortfall as sum of individual shortfalls; in euro and in percent of nominal annual GDP. • Number of banks and corresponding percentage of assets below regulatory minimum.

Domain		Assumptions	
		Bottom-Up by Banks	Top-down by Bundesbank and FSAP Team
BANKING SECTOR: LIQUIDITY RISK			
1. Institutional Perimeter	Institutions included	• 44 German banks participating in Basel Quantitative Impact Study (QIS)	• All 1,800 banks operating in Germany
	Market share	• More than 90 percent of total banking sector assets and liabilities	• 100 percent of total banking sector assets and liabilities
	Data and baseline date	• Basel QIS data for German banks participating in the study • Results for 2011Q2 to 2015Q2, in 6-month intervals	• Supervisory and regulatory reporting data as of June and December 2015
2. Channels of Risk Propagation	Methodology	• Bottom-up: LCRs and NSFRs as calculated by the banks • Basel III Liquidity Coverage Ratio (LCR) • Basel III Net Stable Funding Ratio (NSFR) • Bank run and dry up of wholesale funding markets, taking into account haircuts to liquid assets.	• Top-down: cash-flow-based, short-term liquidity stress test, assessing resilience to multifactor scenario. This analysis constitutes an approximation of banks' CRD IV Liquidity Coverage Ratio (LCR), using supervisory and regulatory reporting data.
3. Risks and Buffers	Risks	• Funding liquidity risk • Market liquidity risk • Medium-term maturity mismatch analysis	• Funding liquidity risk • Market liquidity risk
	Buffers	• Counterbalancing capacity after the application of market liquidity shocks, stressed liquidity inflows • Assessment of available and required stable funding across maturity buckets • Central bank facilities	• Counterbalancing capacity after the application of market liquidity shocks, stressed net liquidity outflows • Stressed available and required stable funding (NSFR)

Domain		Assumptions	
		Bottom-Up by Banks	Top-down by Bundesbank and FSAP Team
4. Tail shocks	Shocks	• For LCR, see: BCBS (2013), The Liquidity Coverage Ratio and liquidity risk monitoring tools, Basel, January 2013. • For NSFR, see: BCBS (2014), Basel III: The Net Stable Funding Ratio – Consultative Document, Basel, April 2014.	• Regulation (EU) No. 575/2013 of the European Parliament and the Council on prudential requirements for credit institutions and investment firms. • BCBS (2013), The Liquidity Coverage Ratio and liquidity risk monitoring tools, Basel, January 2013. • CRD IV/ CRR liquidity standards
5. Regulatory and Market-Based Standards and Parameters	Regulatory standards	• Basel III liquidity standards for LCR and NSFR	• Liquidity ratios, disaggregated by type and size of bank • Counterbalancing capacity • Whisker plots for different groups of banks: total; small and medium-sized banks; foreign banks; savings banks; and cooperative banks.
6. Reporting	Output presentation	• Liquidity ratios, disaggregated by type and size of bank • Counterbalancing capacity • Box plots with whiskers at 5th and 95th percentile, and weighted average separately for Group 1 and Group 2 banks.	• All 1,800 banks operating in Germany

Annex V. Stress Test Matrix (STeM) for the Insurance Sector

Domain		Assumptions
		Top-down by BaFin and FSAP Team
1.Institutional Perimeter	Institutions included	• German life insurance companies
	Market share	• 93 percent of life insurance companies' assets
	Data and baseline date	• QRT as of the end of 2014, comprehensive life survey 2015, EIOPA stress test 2014, local GAAP-accounting, BaFin sovereign survey basis
2. Channels of Risk Propagation	Methodology	• Solvency II Standard Formula
	Stress test horizon	• Instant shocks
3. Tail shocks	Scenario analysis	One in 200 years event using Solvency II parameters as a basis, including: • A shift of the risk free yield curve down by 20 percent (LT) to 75 percent (ST) • A 22 to 49 percent fall in the price of equities • A 4.5 to 37.5 percent haircut of corporate bonds (with 5 year maturity) • 100 b.p. higher spreads of peripheries sovereign bonds, 25 b.p. higher spread of core sovereign bonds and 50 b.p. for US, UK and Japan • Shocks of 25 percent for both commercial and residential real estate
	Sensitivity analysis	One in 200 years event using Solvency II parameters as a basis, including: • Increased lapse rate • Decreased mortality rate relative to latest observed actuarial data
4.Risks and Buffers	Risks/factors assessed	• Interest rate, equity, property, credit risks
	Behavioral adjustments	• No management actions after the stress scenario assumed
5. Regulatory and Market- Based Standards	Regulatory/Accounting and Market-Based Standards	• Solvency II own funds and SCR with and without transitional measures
6. Reporting Format for Results	Output presentation	• Dispersion of solvency ratios: average with 25 and 75 percentile of distribution, with and without transitional arrangements, with additional segmentation information of large, medium and small insurers

Domain		Assumptions
		Top-down by BaFin and FSAP Team
		• Capital shortfall to reach 100% SCR coverage ratio, system-wide
7. Key assumptions	Conservative assumptions	• Four market scenarios are calibrated as one in 200 years event. However, sovereign shocks are added on the top of the scenarios, which make the entire exercise more conservative than one in 200 years event in terms of calibration of the Solvency II market risk standard formula. • No management actions are considered, such as de-risking. In reality, insurers may be able to reduce the risky position without material impacts on the market prices. • Some insurers did not apply the volatility adjustment at the end of 2014. In addition, spread widening in the stress scenario would result in a higher volatility adjustment. This would have an offsetting effect on own funds as the risk free rate used for valuing technical provisions would be increased. • Loss amount from sovereign shocks are applied without taking into account the convexity. • Some companies didn't provide FDB figures and assumed FDB equal to LAC_TP.
	Other assumptions, which impact is either unknown or positive	• LAC_DT could be higher or lower depending on the magnitude of the stress and the extent that DTA is recoverable. • Reduction of policyholders' participations does not have any negative impact on the future profitability of the existing policies. • LAC_TP and LAC_DT after the shocks are recognized in the same way as before the shocks as long as FDB and net DTL are remaining.

Annex VI. Stress Test Matrix (STeM) for Systemic Risk Analysis

Domain		Framework
		Top-down by FSAP Team
Interconnected-ness and contagion analysis	Data and Methodology	The FSAP team applies two main approaches to examine interconnectedness and contagion, based on cross border exposure and market data: Espinoza-Vega and Sole (2010) methodology • Examine cross-border banking sector exposures, using the BIS consolidated banking statistics (2015 Q1) and regulatory capital data from FSI. • Positions include aggregated bilateral banking and total exposures (bank, non-bank private sector and public). • Consider both initial credit and funding shocks to the banking sector. Diebold and Yilmaz (2014) methodology Analysis 1: Bank and insurance linkages within Germany • Examine the spillover risks among publically listed German bank and insurance companies • Use daily equity returns data from 16 July 2015 to 23 February 2016 for publically listed German banks and insurers. • Interconnectedness measure is derived from the variance decomposition of the VAR Analysis 2: Interlinkages among Deutsche Bank, Commerzbank and GSIBs • Examine the spillover risks among Deutsche Bank, Commerzbank and other GSIBs • Use daily equity returns data from 11 October 2007 to 26 February 2016 for systemically important international banks.

Annex VII. Methodology for Systemic Risk and Spillover Analysis

Contagion risks and interconnectedness are assessed using two different approaches. The first approach applies the Espinoza-Vega and Sole (2010) methodology to examine cross-border bank exposures, using BIS consolidated Banking Statistics. The second approach uses the Diebold and Yilmaz (2014) methodology with daily equity returns data to examine the contagion between publicly traded banks and insurance companies in Germany, and the spillover among Deutsche Bank, Commerzbank and GSIBs.

Network Analysis Framework (Espinoza-Vega and Sole, 2010)

The analysis based on the network framework of Espinoza-Vega and Sole (2010) considers both credit and funding shocks to the banking systems:

Credit shock: "Failure" of banking system A will incur credit losses to system B that has claims against A. The credit loss rate assumption controls for the severity of credit cost upon failure. A loss given default rate of 100 percent is assumed to capture the impact of an extreme credit shock.[1]

- Funding shock: "Failure" of banking system A will force system B (that has claims against A) to find alternative sources of funding. This may result in the fire sale of liquid assets by system B to fill the funding gap. The fraction of lost funding that is not replaceable is assumed to be 35 percent (65 percent rollover) and the haircut in the fire sale is assumed to be 50 percent.[2]

The sample consists of 16 BIS reporting countries including those with the highest banking sector exposure to Germany.[3] Cross-border banking exposure data are based on BIS consolidated statistics on ultimate risk basis. Tier 1 regulatory data are taken from IMF's FSI Statistics. The analysis is based on 2015Q1 data.

An initial negative credit or funding shock to a country's financial system could be propagated through the network of bilateral claims across countries (based on the BIS consolidated banking statistics), and could distress banking systems in other countries beyond the direct losses from the initial shocks.

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[1] A loss given default rate of 100 percent is also assumed in Espinoza-Vega and Sole (2010), the Italy 2013 FSAP and the 2012 Japan FSAP. Espinoza-Vega and Sole (2010) and Wells (2004) argue that network studies should consider higher loss-given-default estimates than typically assumed, as banks tend to face substantial uncertainty over recovery rates in the short run. The simulation results should be interpreted as the maximum possible impact of systemic instability. Note that collaterals and hedging instruments are not taken into account due to data limitations.

[2] The same assumptions on the funding shock were made in Espinoza-Vega and Sole (2010). While the final numerical results are sensitive to these assumptions; however, the relative importance of systemic countries remain the same.

[3] The sample consists of Australia, Austria, Belgium, Canada, Finland, France, Germany, Italy, Japan, Korea, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom and the United States.

If any banking system incurs losses larger than their total Tier 1 capital, the system "fails." This failure can subsequently cause some other banking system to fail, triggering domino effects, where a failure of a banking system in a network transmits to other banking systems.

Two sets of simulations are considered in the analysis. The first simulation applies to reporting banks' exposure to foreign banks, and the second one applies to the total exposure of the banking sector.

Spillover Analysis with Market Data (Diebold and Yilmaz, 2014)

The spillover analysis using the Diebold and Yilmaz (2014) methodology first estimates a Vector Autoregression (VAR) model with market data. The interconnectedness measure is then derived from the Generalized Variance Decomposition (Pesaran and Shin, 1998) of the underlying VAR. In contrast to the traditional Cholesky and other structural identification strategies, the Generalized Variance Decomposition (GVD) does not impose any assumptions on the order of variables, instead, it relies on a largely data-based identification scheme ("let the data speak").

Two sets of simulations are conducted as part of the market-based spillover analysis. The first set of simulations examines the interconnectedness between publically traded banks and insurers in Germany, while the second studies the spillover and the contribution to systemic risks among GSIBs. Daily equity returns, as constructed as the log difference of equity prices are used in both exercises. The sample spans from 16 July 2015 to 23 February 2016 for the German bank-insurer analysis, and from 11 October 2007 to 26 February 2016 for the GSIB analysis.[4]

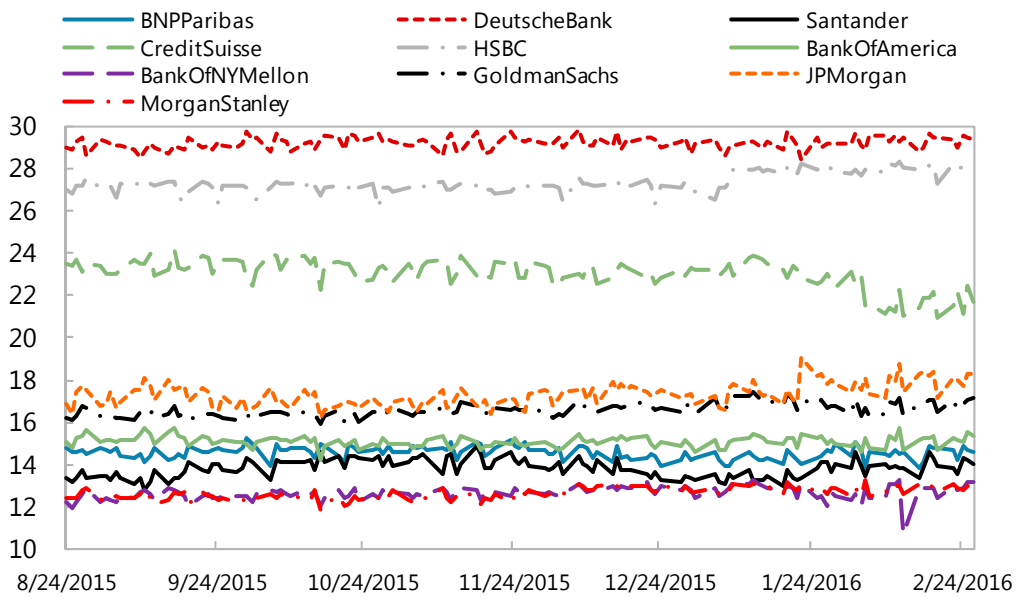
The FSAP team derives a set of pair-wise directional connectedness measure between financial firms, based on the Generalized Variance Decompositions. On aggregate, the from-degree measure captures exposures of individual firms to systemic shocks from the network (inward spillover), in a fashion analogous to Marginal Expected Shortfalls (MES). The to-degree measure captures contributions of individual firms to systemic network events (outward spillover), in a fashion analogous to Delta CoVaR (see Diebold and Yilmaz, 2014). In addition, the net-degree measure (the difference between to- and from- measures) describes the relative contribution to systemic risks from each financial firm.

The results are based on rolling window estimations and the relative importance of each institution's contribution to systemic risks (the net-degree measure) is broadly stable and robust over time. The following charts present the net contribution to systemic risks in the German financial sector (among publically traded firms) and among GSIBs. For space considerations, only select firms with a positive net contribution to systemic risks are presented.

[4] The sample size for the German bank-insurer analysis was restricted by data availabilities, in particular, for the Deutsche Pfandbrief bank. The data source is Bloomberg.

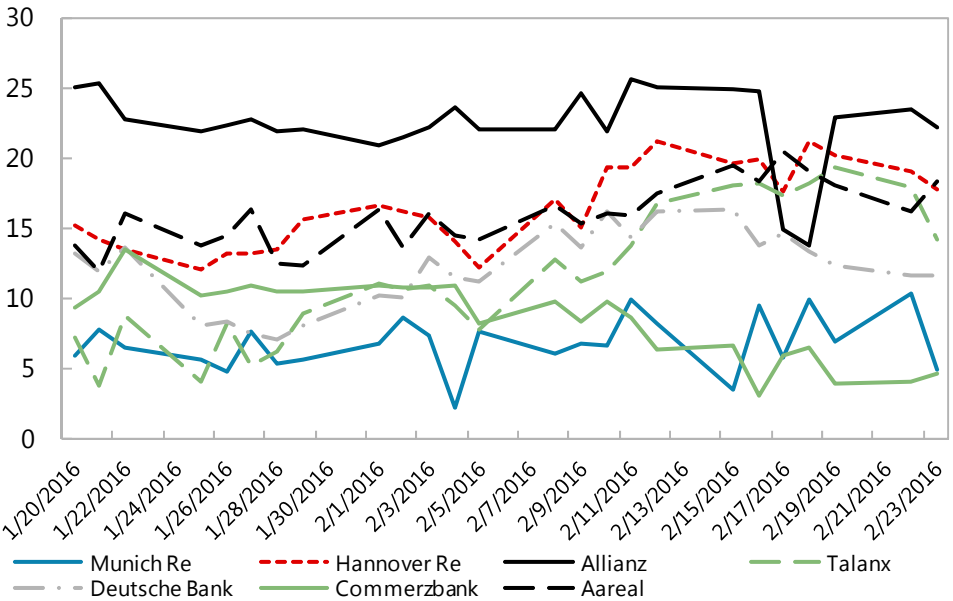
Annex Figure 2. Net Contributions to the Systemic Risk

Top Ten Net Contributors to Systemic Risks among GSIBs



Source: IMF Staff Calculations based on the Diebold and Yilmaz (2014) methodology using daily equity returns from 11 October 2007 to 26 February 2016. Net spillover for each entity is computed as the difference between the outward spillover to the financial system from the entity and inward spillover to the entity from the financial system based on variance decomposition of the underlying Vector Autoregression (VAR) model.

Net Contributors to Systemic Risks in the German Financial Sector



Note: Results are based on the Diebold and Yilmaz (2014) approach using daily stock returns data. Net spillover for each entity is computed as the difference between the outward spillover to the financial system from the entity and inward spillover to the entity from the financial system based on variance decomposition of the underlying Vector Autoregression (VAR) model.

Appendix I. Report on the Observance of Standards and Codes (ROSCs)—Summary Assessments

Basel Core Principles for Effective Banking Supervision

A. Introduction

At the request of the German authorities, this assessment of the current state of the implementation of the Basel Core Principles for Effective Banking Supervision (BCP) in Germany was completed as a part of the Financial Sector Assessment Program (FSAP) mission undertaken by the International Monetary Fund (IMF) during March of 2016.[1] It reflects the regulatory and supervisory framework in place as of the date of the completion of the assessment. It is not intended to represent an analysis of the state of the banking sector or crisis management framework, which are addressed in other parts of the FSAP.

An assessment of the effectiveness of banking supervision requires a review of the legal framework, and 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 BaFin, the Deutsche Bundesbank (BBk) and the European Central Bank as the joint supervisors of the banking system, and did not cover the specificities of regulation and supervision of other financial intermediaries. It is important to note, however, that to the extent that BaFin is a unified supervisor responsible for other entities of the financial sector, the assessment of banking supervision in Germany may provide a useful picture of current supervisory processes applicable to other financial institutions supervised by it.

B. Information and Methodology Used for Assessment

Germany requested to be assessed according to the Revised Core Principles (BCP) Methodology issued by the BCBS (Basel Committee of Banking Supervision) in September 2012. The current assessment was performed according to a revised content and methodological basis as compared with the previous BCP assessment in 2011. Importantly, that the two assessments will not be directly comparable, as the revised BCPs have heightened focus on corporate governance and risk management and its practice by supervised institutions and its assessment by the supervisory authority, raising the bar to measure the effectiveness of a supervisory.

The German authorities chose to be assessed against the highest standards of supervision and regulation, choosing to be assessed and rated against both the Essential Criteria and the Additional Criteria. To assess compliance, the BCP Methodology uses a set of essential and additional assessment criteria for each principle. The essential criteria (EC) were usually the only

[1] This Assessment Report has been prepared by Fabiana Melo (IMF), Jose Tuya (Consultant) and Christopher Wilson (IMF).

elements on which to gauge full compliance with a Core Principle (CP). The additional criteria (AC) are recommended best practices against which the authorities of some more complex financial systems may agree to be assessed and rated. The assessment of compliance with each principle is made on a qualitative basis. A four-part grading system is used: compliant; largely compliant; materially noncompliant; and noncompliant. The assessment of compliance with each CP is made on a qualitative basis to allow a judgment on whether the criteria are fulfilled in practice. Effective application of relevant laws and regulations is essential to provide indication that the criteria are met.

The assessment team reviewed the framework of laws, rules, and guidance and held extensive meetings with officials of BaFin, the Bundesbank and ECB supervision, and additional meetings with auditing firms and banking sector participants. The authorities provided a self-assessment of the CPs rich in quality and comprehensiveness, as well as detailed responses to additional questionnaires, and facilitated access to supervisory documents and files, staff and systems.

The team appreciated the very high quality of cooperation received from the authorities. The team extends its thanks to staff of the authorities who provided excellent cooperation, including extensive provision of documentation and access, at a time when staff was burdened by many initiatives related to the European and global regulatory changes, and still adapting to the new European supervisory framework.

The standards were evaluated in the context of the German financial system's structure and complexity. The CPs must be capable of application to a wide range of jurisdictions whose banking sectors will inevitably include a broad spectrum of banks. To accommodate this breadth of application, a proportionate approach is adopted, both in terms of the expectations on supervisors for the discharge of their functions and in terms of the standards that supervisors impose on banks. An assessment of a country must recognize that its supervisory practices should be commensurate with the complexity, interconnectedness, size, risk profile and cross-border operation of the banks being supervised. In other words, the assessment must consider the context in which the supervisory practices are applied. The concept of proportionality underpins all assessment criteria. For these reasons, an assessment of one jurisdiction will not be directly comparable to that of another.

An assessment of compliance with the BCPs is not, and is not intended to be, an exact science. Reaching conclusions required judgments by the assessment team. The team assessed the supervisory and regulatory framework in the midst of great changes, and the assessment should reflect the transition phase in which it took place. Nevertheless, the assessment of the current legal and regulatory framework and supervisory practices against a common, agreed methodology should provide the supervisors of German banks with an internationally consistent measure of the quality of its banking supervision in relation to the CPs, which are internationally acknowledged as minimum standards, and point the way forward.

C. Preconditions for Effective Banking Supervision[2]

The macroeconomic environment has been stable in recent years. Borrower-related credit risk and stock of nonperforming loans are low, particularly when compared to other European countries. Results of the Bundesbank Bank Lending Survey suggest that lending policies were stable in recent years. With interest margins stable so far, banks active in the traditional banking business extended their balance sheets and maturity transformation risk. If the low interest environment prevails, the shrinking interest rate margin will force banks to look for alternative business opportunities potentially raising new risks.

The Financial Stability Act provides the legal framework for the FSC, Germany's macroprudential institution. The FSC discusses the factors that are key to financial stability, strengthens cooperation between the institutions represented on it, advises on the handling of warnings and recommendations issued by the ESRB and reports annually to the lower house of Parliament. The FSC can issue warnings and recommendations to all public bodies in Germany in order to promptly combat any adverse developments which may cause risks to financial stability. The addressees of these recommendations must adhere to a "comply or explain" mechanism.

As the German credit market is dominated saving and co-operative banks which typically conduct business with retail customers and SMEs, the credit culture is traditional and collateralization, e.g., by mortgages, prevails. More recently one can see the tendency of larger corporates, the typical clients of the bigger banks, to fund themselves directly on the capital market. This might be driven by an increased willingness of investors to take these risks while funding costs of larger banks went up due to rating downgrades.

Germany has a well-developed public infrastructure, including a comprehensive legal system covering in particular areas relevant for the banking system. These laws relate, for example, to corporate law setting out the requirements regarding the setting up and winding down/liquidating of joint stock companies, limited companies, partnerships, and cooperatives, their internal governance structures, detailed accounting provisions as well as rules regarding mergers and acquisitions.

The financial sector regulation covers all relevant areas. As a member state of the EU, large parts of the German framework are rooted in the transposition or implementation of EU directives and directly applicable EU regulations. Specific national rules exist where topics considered relevant are not regulated by EU law or where EU law leaves room for additional national rules. Furthermore, BaFin as an integrated supervisory authority is member of the European Supervisory Authorities (EBA, ESMA and EIOPA). In this context, BaFin is obliged to cooperate with and support the work of

[2] This section draws from other documents produced for the FSAP. A complete analysis of the macroeconomic framework is contained in Article IV reports.

the ESAs. This also includes the implementation of ESA guidelines and recommendations. The same applies to the cooperation of BaFin and ECB within the SSM.

Germany enjoys a system of independent external audits and comprehensive accounting principles and rules that are contained in the German Commercial Code (HGB). All German public accountants are organized in the Chamber of Public Accountants (WPK), a corporation under public law. The requirements on the profession of a certified public accountant are stringent. The Auditor Oversight Commission (AOC), comprised entirely of persons independent from the profession, carries out public oversight on the Chamber of Public Accountants (WPK), and all auditors associated in the WPK.

Terms and conditions of contracts are, in general, not regulated in supervisory law but in civil law. The Civil Code (Bürgerliches Gesetzbuch - BGB) for example sets legal framework for consumer credits including consumer protection regulations and the act on insurance contracts (Versicherungsvertragsgesetz - VVG) also stipulates consumer protection regulations. Recently the German legislator adopted a new law to improve the protection of retail investors ("Kleinanlegerschutzgesetz"). Moreover BaFin supervises compliance of financial market players with consumer protecting provisions in supervisory laws, e.g., German Banking Act (Kreditwesengesetz – KWG), Insurance Supervision Act (Versicherungsaufsichts-gesetz – VAG) and Securities Trading Act (Wertpapierhandelsgesetz - WpHG).

Germany has transposed the European directive on deposit guarantee schemes (DGSD) into national law (Einlagensicherungsgesetz-EinSiG). Under the Directive, all credit institutions have to be allocated to a statutory guarantee scheme or an institutional protection scheme that is officially recognized as a deposit guarantee scheme. Customers of all institutions have a legal claim to compensation for their covered deposits up to an amount of EUR 100,000.

The German Act for Recovery and Resolution of Institutions and Financial Groups (SAG) spells out the different responsibilities and tools available in crisis management and for bank resolution which complement the powers and measures granted by the Banking Act (KWG). The Federal Agency for Financial Market Stabilization (FMSA) was appointed as resolution authority on a national level. The supervisory authority reviews and assesses the recovery plan in consultation with the Bundesbank. Banks that are deposit taking institutions as defined in section 1 (3d) first sentence KWG also have to be members of a deposit insurance scheme which further bolsters public confidence in the stability of the financial system.

D. Main Findings

Responsibility, Objectives, Powers, Independence, Accountability (CPs 1-2)

The legal framework for banking supervision is well established by German laws and regulations, directly applicable EU regulation, and Single Supervisory Mechanism Regulation (SSMR). While the division of responsibilities between BaFin and the Bundesbank regarding LSI

supervision is well established, the framework for the SSM is evolving and there are still uncertainties regarding the specific operational roles of each agency in the new environment. These uncertainties reflect the complex legal and operational framework but do not to affect the overall understanding of responsibilities by the market or authorities. The three supervisory agencies enjoy operational independence, in the sense that there is no government or industry interference in individual supervisory decisions. However, there is potential for indirect influence of government and industry in the execution of BaFin's supervisory objectives through the budget approval process and the mandatory approval of BaFin's internal organization and structure by the MoF. The decision making process at the ECB is complex and does not foster effectiveness and timeliness of day-to-day supervisory decisions (although there are processes in place for emergency decisions).

Ownership, Licensing, and Structure (CPs 4-7)

The ECB is the licensing authority, who makes decisions on the basis of applicable German and EU laws. While criteria and procedures are well established, in general, the financial suitability of shareholders is limited to the availability of the initial capital, and the assessment of the supervisory board does not play a relevant role in the licensing process, although assessors noted these elements are gradually being incorporated in the licensing process. In addition, there is no requirement for the bank to notify the supervisor when they become aware of events that may cause a significant shareholder to no longer be fit-and-proper. The review of fit-and-proper qualification would benefit from expanded requirements and standards. The team welcomes the new guidelines issued by BaFin in January 2016, which emphasize the prudential importance of the professional qualification of the Board.

There is no need for prior supervisor approval of investments below a 10 percent threshold, other than investments in other German institutions (significant holdings regime). This may create situations where acquisitions occur that increase the risk to the banking group beyond management skills and have a negative impact on the group that greatly the amount of the investment. While the regulator requires higher capital or may be able to force the bank to unwind the investment, it is more prudent to require ex-ante review.

Methods of Ongoing Supervision (CPs 8-10)

The transition to the SSM for SIs has had many benefits, although some aspects of the supervision methodology are still undergoing implementation. Much has been achieved in a short space of time and the supervision framework lays the foundation for a risk-based approach with the SREP as the core element. Elements of the framework are still being implemented and will take time to mature and be applied consistently across banks.

The supervisory approach for LSIs is established but evolving and scope exists for greater verification of compliance with regulations. Onsite examinations verify adherence with MaRisk and are undertaken by the Bundesbank and BaFin through testing and interviews of management. The MaRisk Inspection Guide used by LSI supervisors lays the foundation for a consistent

examination process and the use of the external auditor is also a key aspect of the supervision architecture to confirm compliance. Annual meetings with the Management Board, analysis of the Internal Capital Adequacy Assessment Process(ICAAP) and the risk profile form core elements of a sound framework. However, much reliance is placed on the external audit long form report and while rich in detail, greater emphasis is needed to verify the reliability, accuracy, and integrity of the information used for risk assessments as inputs into a forward looking view of risk.

Supervisory reporting is not sufficiently granular to support offsite supervision. Not all data needs are covered by EBA ITS reporting. To fill the gaps, short-term exercises and surveys are used, such as for concentration, liquidity, and IRRBB. While the data contributes to the risk assessment process, using peer group analysis and benchmarks is not systematic. Currently, supervisors are challenged by differences between reporting based on the national GAAP and IFRS data which complicates systematic and consistent comparisons between different account treatments. Technical work is underway to address this issue. Timely and accurate data is fundamental to effective supervision and the issues with data need to be addressed as a matter of priority.

Corrective and Sanctioning Powers of Supervisors (CP 11)

German law and SSMR provide a broad range of actions that can be taken by supervisors in their respective responsibilities. Direct enforcement powers and sanctions of ECB are limited; however the ECB can make use of the enforcement and sanction powers available to BaFin. Assessors had access to evidence of such indirect actions, however the complex legal framework may make it operationally difficult and time consuming for ECB to impose enforcement actions. The actual use of formal powers by both BaFin and the ECB in practice is not intensive.

Cooperation, Consolidated and Cross-Border Banking Supervision (CPs 3 - 12- 13)

The collaboration and coordination framework with domestic and cross-border supervisors is highly developed. The EU has adopted a supervisory coordination process that is based on joint supervision through the SSM, colleges of supervisors led by the home country coordinator and signed MOUs with third country supervisors and nonbanking sector regulators.

A consolidated supervisory approach is in place at both the SI and LSI levels. A detailed planning approach is in place through supervisory colleges and MOUs that result in a comprehensive review for the consolidated group. Additionally, ring-fencing powers are available to ensure that the group can be insulated from related companies that may adversely impact the group. Banking groups may be required to close reorganize to correct a non-transparent structure.

Corporate Governance (CP 14)

The role of supervisory boards is weak and passive with most policy, and risk management duties and responsibilities placed on the management board. In the past few years there has been some evolution in supervisors focus on the supervisory board within the SREP process, and a

thematic review on Risk Governance has been conducted that resulted in recommendations addressed to banks aimed at making the supervisory board involvement more robust. Additionally, MaRisk is being amended and will include code of conduct requirements.

Supervisory guidance should clearly delineate that ultimate responsibility for establishing the risk culture, developing business plans and risk appetite statement rests with the supervisory board. The fit-and-proper process is streamlined for supervisory board members as are technical knowledge requirements. As established by KWG, the primary responsibility for internal controls, governance, business strategy, and internal audit is assigned to the management board.

Prudential Requirements, Regulatory Framework, Accounting and Disclosure (CPs 15-29)

While risk management standards are generally sound, the reporting line between the internal risk control function and the Supervisory Board should be strengthened. Reporting of risk management is through the Management Board and the CEO which is responsible for setting the business plan and risk taking. The risk function does not report directly to the Supervisory Board but to the Management Board and therefore the CEO. This approach may weaken the independence of the risk management function and the CRO to raise issues as also highlighted by the SSM methodology. In particular, the reporting line to the management body (with supervisory and management function) was a topic assessed within the thematic review on Risk Governance and Risk Appetite. While banks had in place formal "whistle-blowing" processes, the structure may inhibit the independence of the CRO and the risk function to report weaknesses in the RMF. This is further aggravated by the ex-post notification of removal of the CRO by the management board which is the prescribed minimum of MaRisk.

Banks are well-capitalized and supervisors have the powers to impose additional requirements. The deviations of the EU capital framework in relation to the Basel standards regarding the definition of capital do not appear material for German banks in general, although some may be for specific banks (such as deduction of participation in insurance). Regarding the calculation of risk weighted assets, a few elements for which the RCAP found deviations may be significant for Germany, such as sovereign exposures under the permanent and temporary partial use, lower risk weights for covered bonds, and the counterparty credit risk framework. Assessors observed some cases where these deficiencies were being addressed by banks' internal capital adequacy assessments and supervisory action, and it is impossible to determine that that existing framework is not in general resulting in overstated CET1 ratios. Both the ECB and BaFin can require banks to hold capital in excess of the minima under Pillar 2. However, the practice was not commonly used by German authorities. The ECB has only concluded one SREP cycle so far, in which some banks were required to implement Pillar 2 add-ons. Leverage is specifically taken into account in the SSM SREP methodology, while BaFin has not systematically incorporated it in the analysis yet.

Supervisors have not provided guidance on loan portfolio management expectations. For example, broad guidelines on general characteristics of various loan risk buckets; definitions of non-performing, restructured, forborne and cured loans. Granularity of credit portfolio data is limited.

The role of the supervisors in loan classification and supervision primarily involves a review of policy and procedures. The focus of supervision is to provide bank management with considerations when setting loan classification parameters and provisioning such as items to consider for residential mortgages and commercial real estate classification triggers. Collateral valuation considerations, such as, conservative valuations of realizable net values are important.

Loan classification and provisioning have been viewed as an accounting issue; however, supervisors recently conducted a thematic review of loan valuation and impairment. To implement a supervisory approach that asks supervision staff to review loan files and value loans and determine adequacy of provisions in a market where the practice was not present, ex-ante discussions with bankers and accountants should take place and supervisor expectations on loan valuation and provisioning communicated. It is also important to provide supervisory staff with training and support to be able to challenge management valuation of collateral or failure to rate an asset as impaired. The process of developing the capacity of supervisors to challenge bank management valuation of loans has started.

Market risk management standards are generally sound and supervisors take an active approach. MaRisk establish the requirements for banks to implement effective risk management frameworks to measure and manage market risk. For the larger more systemic banks with a trading bias, greater supervisory intensiveness and intrusiveness takes place. Market risk has been a focus of the supervisors during 2014 and 2015. In addition, a targeted review of banks' internal models is planned. Supervisors periodically review banks to assess that their market risk management processes are consistent with the risk bearing capacity and the market risk management framework. Banks with the largest trading books are subject to enhanced focus, while the remaining banks are on a normal cycle based upon their SREP score and risk profile. Assessors observed supervisory practice for both SIs and LSIs and verified compliance with the core principle.

IRRBB has received a significant amount of the supervisor's attention during the last several years and features as a key priority for both SIs and LSIs. Banks are required to measure, calculate and report their exposure to IRRBB on a quarterly basis. Banks are also required to conduct regular stress testing using both standardized and bespoke scenarios, especially for those banks with more complex business models and optionality in the portfolio. Supervisors make an assessment of IRRBB through the SREP process as well as a key topic in discussions with bank senior management. The German authorities have also conducted short term data collection exercises in the last several years to deepen the understanding of the systems exposure.

Concentration risk and country risk treatment warrant enhancement. The definition of concentration risk is limited to credit exposures, and not in a broader sense including different types of exposures. The expectations of the supervisors with respect to concentration risk and country risk management are not clearly communicated to the banks. There is no requirement that all material concentrations to be regularly reviewed and reported to the bank's supervisory board. Reporting and

monitoring of country risk and concentrations can be improved, and their inclusion in banks' stress tests specifically required.

The framework for transactions with related parties is weak, although the definition of related parties is wide and detailed. The framework covers loans in a broad definition that includes off-balance sheet exposures and leasing operations, albeit not dealings such as service contracts, asset purchases and sales, and construction contracts. Related party loans must be granted on market terms, but there is no requirement that individuals with conflict of interest are excluded from the whole process of granting and managing such exposures. There is no requirement that related party exposures are monitored and controlled separately or in aggregate. There is no regular reporting of exposures to related parties. Supervision of related party risk is mostly carried out to external auditors, whose analysis of related party risk is very limited. No limits on related party are imposed by laws, regulation, or the supervisor.

Supervisors have stepped up the frequency and intensity of interaction with credit institutions regarding their management of liquidity risk, contingency plans and funding requirements. Supervisors have built-up in-depth understanding of liquidity funding risks at individual institutions, they periodically meet with treasury staff and receive monthly monitoring of LCR data. Funding plans and results of stress testing are reported and evaluated periodically. The LCR adopted in EU has a number of elements that are less stringent than the Basel agreed rule, most notably wider definition of HQLA. German banks make use of the wider definition of HQLA, mainly of covered bonds included as Level 1 assets. Guidance for assessing Internal Liquidity Adequacy Assessment Processes (ILAAP) will be implemented for 2016 which will help strengthen the assessment of liquidity risk management as part of the SREP. To this regard, SSM issued a letter in the beginning of the year on Supervisory expectations on ILAAP and harmonized information collection on ILAAP to enhance the analysis of ILAAP and its integration in the SREP. Benchmarks for liquidity risk indicators will be developed during 2016.

While operational risk has undergone several enhancements since the last FSAP, more attention is needed to ongoing monitoring of the effective implementation of operational risk management frameworks. Dedicated IT risk specialists mainly conduct onsite examinations but also develop supervision approaches for IT risk more generally. This team has been successful at deepening the institutional knowledge of IT risks and vulnerabilities and identifying where standards need to be raised. The most recent example is in the area of data centers where IT risk specialists have attended DR testing for several of the larger LSIs.

The independence of the internal audit and compliance is undermined as they report to the management board. The internal audit function, as an instrument of the management board, is under its direct control and has to report to management board members. The internal auditor can also be subject to the direct control of one management board member, who should, if possible, be the chairperson. Additionally, the supervisory board is only informed of a replacement of the internal auditor, compliance officer and risk officer ex-post.

Banking supervisors do not have legal power to access external auditors' work papers. Although this is not an essential requirement, Germany chose to be assessed against the best international practices, and given the heavy reliance on external auditors for reviewing not only the reliability of financial statements but also reporting on whether the banks comply with all risk management guidelines, this gap should be addressed.

Overall, the AML/CFT framework appears strong, but some weaknesses remain, mainly in supervisory practices. BaFin has established a risk-based framework to discriminate banks' risk profiles and exposure to risks from AML/CFT. The framework is designed to help identify those institutions where enhanced monitoring and attention is required. While the framework should help focus supervisory attention on the highest risk institutions, inputs into the process need to be refined to be fully risk-based. The framework is heavily reliant on the EA report to identify deficiencies or weaknesses in risk management. Ongoing monitoring of banks' compliance with the regulations needs to be more systematic through the ongoing receipt of a range of inputs. Lastly, coverage of the banking sector through onsite examinations needs to be expanded.

Appendix Table 1 offers a principle-by-principle summary of the assessment results, while recommendations to improve compliance with the BCPs are summarized in Appendix Table 2.

Appendix Table 1. Summary Compliance with the BCPs

Core Principle	Comments
1. Responsibilities, objectives and powers	
While the division of responsibilities between BaFin and the Bundesbank regarding LSIs supervision seems to be clear, the framework for the SSM supervision is evolving and there are still uncertainties regarding the operational roles of each. These uncertainties reflect the complex legal and operational framework of the SSM, in particular on imposition of sanctions and enforcement actions, but do not seem to affect the overall understanding of responsibilities by market or authorities.	
2. Independence, accountability, resourcing and legal protection for supervisors	
The three supervisory agencies responsible for German banks enjoy operational independence, in the sense that there is no government or industry interference in individual supervisory decisions. However, the fact the MoF is responsible for approving minutely all of BaFin's organizational matters may indirectly affect the execution of supervisory priorities. In addition, while BaFin does not depend on government funding, its budget is approved by a committee composed of government and industry representatives, chosen by the MoF in consultation with the associations of supervised entities. Decision making process in the newly established SSM does not foster effectiveness and timeliness of supervisory decisions	
3. Cooperation and collaboration	
Cooperation channels are highly developed and effective.	
4. Permissible activities	
Permissible activities are well defined in German legislation and the use of the word "bank"	
5. Licensing criteria	
The ECB, which is the licensing institution for new banks and for subsidiaries of foreign banks establishing in Germany, and BaFin, which is the licensing institution for branches of non-EEA banks, have available a clear set of criteria and are able to reject applications that not meet it. In general, financial suitability of shareholders is limited to the availability of the initial capital. The assessment of the supervisory board does not play a	

relevant role in the licensing process; in particular, ensuring the professional qualification and collective knowledge of the supervisory board was not customarily assessed. The assessors have reviewed samples of more recent licensing files and observed there is a growing concern with these elements.
6. Transfer of significant ownership
Process identifies ultimate beneficial owners but fit and proper requirements should be strengthened.
7. Major acquisitions
Investments not exceeding 15 percent of capital do not require ex-ante consultation or approval. The acquisition of holdings in an EU-regulated financial entity is assessed from the perspective of the target undertaking. The acquisition by a bank of a non-EU bank is not covered by the CRR or CRDIV. This may create situations where acquisitions occur that increase the risk to the banking group due to financial products that exceed the bank's risk appetite or managing ability.
8. Supervisory approach
The introduction of the SSM has had positive externalities for supervision of German SIs and LSIs. For example, more focus on quantitative analysis and the SREP process. There are several aspects of the framework which are still a work in progress at the time of the assessment: application of a consistent methodology to make meaningful comparisons between banks will need time to develop as the SREP and RAS process matures. To date, the SREP process has been mainly focused at the consolidated level and has not penetrated deep into the organizational structure. While there is a sound understanding of group structures generally, application of the SREP process across the group structure will help identify potential pockets of risk that deserve greater supervisory attention and incorporated into SEPs. For larger and more complex banks this is an important part of the assessment that will help drive a thorough analysis of risk and help identify where further documentation is needed to better inform of the risk assessment process. Greater emphasis is needed to verify the reliability, accuracy, and integrity of the information used for risk assessments and prudential outcomes.
9. Supervisory techniques and tools
Overall supervisors of German banks take an active approach to using supervisory tools. The supervisory manual and associated frameworks provide a sound basis for supervisors to perform comprehensive risk assessments using a mix of on-site and off-site supervision activities. Annual risk assessments and the SREP process allow for the results of offsite and onsite supervision to be integrated and combined for form a single overall view of all material risks and the necessary measures. Supervision manuals are detailed and help guide the risk assessment process in a systematic way. Onsite examinations were demonstrated to be an effective tool to focus on deficiencies in risk management. There are, however, gaps in the approach for onsite and offsite that need to be attended to. For LSI offsite supervision there is an undue reliance on the work of the external auditor and while the annual EA report contains a significant amount of detail, a greater use of other inputs to offsite supervision is needed in the risk assessment process. The results of onsite examinations for SIs are not ranked in degree of severity. While there is a clear process for the communication of findings at the conclusion of the examination process, the ultimate communication to the bank does not prioritize findings from high priority to low. As a result, it is not always clear for banks the prioritization of actions to address onsite findings. A ladder of severity will help ensure management and supervisory boards are able to prioritize remedial action according to severity of onsite findings.
10. Supervisory reporting
The requirements associated with supervisory reporting are now predominantly governed by a harmonized EU regime. However, regulatory data requirements (FINREP/CoRep) are not sufficient to meet supervisors' need. do not meet is not uniform resulting in circumstances where some banks do not report a comprehensive suite of data with a sufficient amount of granularity for systematic offsite analysis across peer groups using benchmarks of a sufficiently long time series. Processes to address differences in supervisory data resulting from different accounting treatments are in the process of being completed and at the time of the mission this process was not consistently applied.
11. Corrective and sanctioning powers of supervisors

German law and SSMR provide a broad range of actions that can be taken by supervisors in their respective responsibilities. Direct enforcement powers and sanctions of ECB are limited; however, the ECB can make use of the enforcement and sanction powers available to BaFin. Assessors had access to evidence of such indirect actions. At the time of this mission, ECB had not directly applied any sanction or enforcement action. While BaFin seems to have adequate set of supervisory tools at its disposal, actual use of these formal powers in practice is not intensive. There are no laws or regulations that guard against BaFin or ECB unduly delaying appropriate corrective actions.

12. Consolidated supervision

A consolidated supervisory approach is in place at both the SI and LSI level. A detailed planning approach is in place through supervisory colleges and MOUs that results in a comprehensive review for the consolidated group. Additionally, ring-fencing powers are available to ensure that the group can be insulated from related companies that may adversely impact the group. Banking groups may be required to close reorganize to correct a non-transparent structure.

13. Home-host relationships

Collaboration and coordination framework with domestic and cross-border supervisors is highly developed. The EU has adopted a supervisory coordination process that is based on joint supervision through the SSM; colleges of supervisors led by the home country coordinator and signed MOUs with third country supervisors and nonbanking sector regulators.

14. Corporate governance

While Germany has well-developed corporate governance requirements, the oversight role of the supervisory board is passive and its operational oversight role is limited. The fit-and-proper process is streamlined for supervisory board members as are technical knowledge requirements.

15. Risk management process

The risk management standards for German banks are anchored in MaRisk which require banks to have regard to all material risks calibrated against a bank's risk bearing capacity. MaRisk has been revised on several occasions and most recently in January 2016 to incorporate areas such as risk culture and risk data aggregation. The standards encourage a generally sound approach to risk management. For the largest and more complex banks, an enterprise-wide approach to risk management is often employed using more sophisticated measurement systems and tools to assess required capital, capital allocation etc. (e.g. economic capital models) consistent with their risk profile and systemic risk. Supervisory practice is also generally well developed and a number of techniques are used by the supervisor to confirm and assess the quality and effectiveness of risk management systems. Furthermore, the ICAAP is an integrated part of the risk assessment framework for German banks. ICAAP and ILAAP guidelines have recently been released by the ECB which will be the standard banks will be expected to adhere to going forward. To date, there have been no published minimum standards.

The reporting of risk management is through the Management Board and the CEO which is responsible for setting the business plan and risk taking. The risk function does not report directly to the Supervisory Board but to the Management Board and therefore the CEO. This approach may weaken the independence of the risk management function and the CRO to raise issues. While banks had in place formal "whistle-blowing" processes, the structure may inhibit the independence of the CRO and the risk function to report weaknesses in the RMF.

16. Capital adequacy

The deviations from Basel standards regarding the definition of capital do not seem to be material for German banks in general, although some may be for specific banks (deduction of participation in insurance, for instance).

For Germany, a few elements for which the RCAP found deviations regarding the calculation of capital requirements may be significant, such as sovereign exposures under the permanent and temporary partial, lower risk weights for covered bonds, and counterparty credit risk framework. Assessors observed some

cases where these deficiencies were being addressed by banks' internal capital adequacy assessments and supervisory action. Nevertheless, assessors do not feel comfortable that existing framework is not in general resulting in overstated CET1 ratios. Both ECB and BaFin can require banks to hold capital in excess of the minima under Pillar 2; however, the practice is not commonly used by German authorities, which in general prefer to address these through direct discussion with the banks on the adequacy of ICAAP. ECB as a supervisor has only concluded one SREP cycle, in which some banks were required to implement Pillar 2 add-ons. The leverage is specifically taken into account in the SSM SREP methodology, not yet systematically so by BaFin
17. Credit risk
General guidance on credit risk exists and is monitored. Granularity of data on credit portfolios is limited (see CP 18)
18. Problem assets, provisions, and reserves
Loan valuation is performed by external auditors with limited supervisory involvement. Loan classification guidelines have not been issued and neither MaRisk nor the KWG define nonperforming, cured, restructured and renewed loans. Loan classification and provisioning are viewed as an accounting issue. The supervisors do not re-classify loans or request increased provisions and rely on capital add-on. Supervisor expectations on loan valuation and guidelines should be communicated and discussed with bankers and auditors. Provisioning and impairment views of the supervisor should also be discussed with the objective of issuing conservative parameters for bank management's broad judgment granted by IFRS.
19. Concentration risk and large exposure limits
Both ECB and BaFin focus on concentration as part of credit risk, and occasionally discuss concentration of other types when some material risk is detected. MaRisk provides a general framework for the supervision of concentration risk, and while the ECB internal procedures for credit concentration are aligned with the CP, the expectations of the supervisor with respect to concentration risk management are not clearly communicated to the banks. In addition, there is no requirement that all material concentrations to be regularly reviewed and reported to the bank's supervisory board.
20. Transactions with related parties
The definition of related parties is wide and detailed. The framework covers loans in a broad definition that includes off-balance sheet exposures and leasing operations, albeit not exposures such as dealings such as service contracts, asset purchases and sales, construction contracts. Related party loans must be granted on market terms, but there is no requirement that individuals with conflict of interest are excluded from the whole process of granting and managing such exposures. There is no requirement that related party exposures are monitored and controlled separately and in aggregate. There is no regular reporting of exposures to related parties. Supervision of related party risk is mostly carried out by external auditors, whose analysis of related party risk is limited. No limits on related party are imposed by laws, regulation, or the supervisor.
21. Country and transfer risks
Banks have little guidance from supervisors on their expectations regarding country risk. Standard reporting on the basis of LrV excludes several countries. There is no specific requirement that banks MIS are able to identify, aggregate, monitor and mitigate country risk. There is no specific requirement to include country risk in bank's stress testing. Assessors saw no evidence that country risk is indeed a regular part of stress testing. While an increase in Pillar 2 or imposition of provisions would be possible if country risk concentrations are detected, there is no specific guidance for banks on measures to provision and mitigate country risk.
22. Market risk
The obligations in MaRisk are generally sound and establish the requirements for banks to implement effective risk management frameworks to measure and manage market risk. Market risk has been a focus of the supervisors during 2014 and 2015. Supervisors periodically reviews banks to assess that their market risk

management processes are consistent with the risk bearing capacity and the market risk management framework.
23. Interest rate risk in the banking book
IRRBB has received a significant amount of the supervisor's attention during the last several years and features as a key supervisory priority. Banks are required to measure, calculate and report their exposure to IRRBB on a quarterly basis. Banks are also required to conduct regular stress testing using both standardized and bespoke scenarios, especially for those banks with more complex business models and optionality in the portfolio. Supervisors make an assessment of IRRBB through the SREP process and assessors saw evidence that showed this risk featured in the SREP assessment as well as a key topic in discussions with bank senior management.
24. Liquidity risk
Since 2007-08 German supervisors have stepped up the frequency and intensity of interaction with credit institutions regarding their management of liquidity risk, contingency plans and funding requirements. Over time the level of frequency of contact has moderated given considerably more stable market conditions where calls were daily at the height of the crisis to weekly and now less frequent but periodic. Supervisors have built-up in-depth understanding for liquidity funding risks at individual institutions through over this period. The LCR and LiqV requirements apply to all credit institutions as a pillar 1 minimum standard. Banks are also required to run regular stress tests where the results are incorporated into the assumptions for contingency funding plans. While coverage is comprehensive across all banks, the LCR adopted in EU has a number of elements which are less stringent than the Basel agreed rule, most notably wider definition of HQLA. Given EC1 clearly states that for internationally active banks the prescribed liquidity requirement should not be lower than the applicable Basel Standard, and the analysis by the EBA shows relatively large impact from these changes, the EU regulatory framework's compliance with the EC is problematic, even if the impact of these modifications concentrates on non-internationally active banks. Discussions with the authorities at the time of the mission suggested that banks make use of the benefits from the modifications although the impact has been reduced since the EBA study. Aspects of the assessment of liquidity risk management as part of the SREP was under development at the time of the mission. For example, benchmarks for liquidity risk indicators were developed during 2016. Also, guidance for assessing ILAAPs will be implemented for 2016. As a result, the analysis of the ILAAP was not fully implemented at the time of the mission and many aspects of the qualitative assessment of ILAAP had not featured in the SREP for SIs. Supervisors are aware however of bank's liquidity risk management processes and have established relationships with key areas within the bank managing liquidity funding risk. To this regard, the SSM issued a letter in the beginning of the year on Supervisory expectations on ILAAP and harmonized information collection on ILAAP to enhance the analysis of ILAAP and its integration in the SREP.
25. Operational risk
The area of operational risk has undergone several enhancements since the time of the last FSAP, most notably in the strengthening of dedicated IT risk specialists. Nonetheless, there are a number of areas where the regulations and supervisory activities need to be strengthened: data reporting, collection and use of loss data, verification that risk management is effectively implemented and DR/business continuity.
26. Internal control and audit
The independence of the internal audit and compliance is compromised as they report to the management board.
27. Financial reporting and external audit
Banking supervisors do not have legal power to access external auditors' work papers. Although this is not an essential requirement, Germany chose to be assessed against the best international practices, and given the heavy reliance on external auditors for reviewing not only the reliability of financial statements but also reporting on whether the banks comply with all risk management guidelines, this gap should be addressed.

28. Disclosure and transparency
Disclosure standards are generally sound and promote transparency reflecting the substance of the Basel II pillar 3 standards. As part of their routine activities, supervisors confirmed compliance with the standards through both sample testing and thematic reviews. German banks do not disclose related party exposures or transactions with related parties as part of the Pillar 3 disclosures (EC2). Instead, related party disclosures are covered by the Commercial Code (HGB) and will be presented as part of a credit institution's annual report. In relation to disclosure of data which is not end of period data, supervisors have made attempts to adjust the frequency of disclosures in some cases, however data which is not end of period has not been made use of in the supervisory process with any impact on outcomes of analysis (AC1).
29. Abuse of financial services
As the competent supervisor, BaFin has established a risk-based framework to discriminate banks' risk profiles and exposure to risks from AML/CFT. The framework is designed to help identify those institutions where enhanced monitoring and attention is required. The framework is based on a matrix of inherent risk and quality of safeguards. While the framework should help focus supervisory attention on the highest risk institutions, inputs into the process need to be refined to be fully risk-based. The framework is heavily reliant on the EA report to identify deficiencies or weaknesses in risk management. Ongoing monitoring of banks' compliance with the regulations needs to be more systematic through the ongoing receipt of a range of inputs into offsite surveillance especially those sources that it gathers from first-hand analysis and verification of bank's risk management and controls for AML/CFT. Lastly, coverage of the banking sector through onsite examinations needs to be expanded.

Appendix Table 2. Recommendations to Improve Compliance with the BCPs

Reference Principle	Recommended Action
Principle 1	Ensure new consumer protection responsibilities do not affect BaFin's ultimate responsibility for safety and soundness
Principle 2	Reduce scope for potential influence of industry and government in the execution of supervisory priorities and allocation of resources at BaFin through budget and organizational structure Streamline SSM decision making processes for supervisory measures
Principle 5	Include systematic analysis of availability of additional resources in the licensing process Include systematic analysis of the collective knowledge of the management and of the supervisory board Enhance qualification criteria for Supervisory Board members
Principle 7	Review significant bank investments ex-ante
Principle 8	Greater focus on first hand verification of compliance with regulations.
Principle 9	Complete implementation of the supervisory framework.
Principle 10	Collect more granular data as part of routine supervisory reporting as a way to strengthen offsite analysis using peer group benchmarks. Implement a data mapping solution to compare IFRS and nGAAP supervisory data.
Principle 14	Strengthen supervisory board qualifications and responsibilities

Principle 15	Strengthen reporting lines of the CRO and risk control function to the Supervisory Board. Implement a prior notification requirement to the Supervisory Board in the event a CRO is removed.
Principle 18	Issue guidance on loan classification and provisioning
Principle 19	Issue guidance on management of concentration risk in a broader sense (beyond credit exposures). Introduce requirement that all material concentrations to be regularly reviewed and reported to the bank's supervisory board Monitor large exposures beyond the compliance with LE limits
Principle 20	Introduce a regime for the management, monitoring, and actual supervision of related party risk.
Principle 21	Issue guidance on the management of country and transfer risk, including requirements for banks' MIS, and specific requirements for country and transfer risk to be included in bank's stress testing if applicable. Enhance reporting of country and transfer risk. Issue guidance on provisioning and mitigation for country risk.
Principle 24	Develop a greater suite of industry benchmarks for liquidity risk analysis.
Principle 25	Collect more granular data for operational risk. Place more emphasis on confirming that operational risk management systems are effectively implemented.
Principle 26	Provide opportunity for independent reporting to supervisory board without management board participation
Principle 27	Find workaround to gain access to external audit work papers
Principle 29	Place more emphasis on ongoing surveillance to confirm bank's risk management and controls for AML/CFT, especially those sources that it gathers from first-hand analysis and verification.

E. Authorities' Response to the BCP Assessment

a) German Authorities´ Response

The German authorities wish to express their appreciation to the IMF and its assessment teams for this assessment since they strongly support the Financial Sector Assessment Program, which promotes the soundness of financial systems in IMF-member countries and contributes to improving supervisory practices around the world.

The German authorities appreciate the assessment in general. Some clearly unsatisfactory ratings are considered as an encouragement to critically reflect current supervisory practices and to make changes and adjustments where appropriate.

However, there are a number of recommendations where the German authorities believe that the current regime effectively fulfils the IMF's requirements. These are set out below:

The following comments are ordered in the sequence of the DAR text (*factual corrections*):

Licensing, qualifying holdings and major acquisitions (CPs 5-7)

Regarding Principle 5 the German authorities want to point out, that although the assessment of the members of the supervisory board is not explicitly a part of the licensing procedure the appointment of any member of the supervisory board undergoes an assessment process by the competent supervisor. According to section 25d (1) of the German Banking Act [Kreditwesengesetz – KWG], the members of the supervisory board of an institution, a financial holding company or a mixed financial holding company must be trustworthy, have the necessary expertise to fulfil their control function as well as to assess and monitor the business of the undertaking, and devote sufficient time to performing their duties. Pursuant to section 36 (3) sentence 1 KWG BaFin is entitled to force a bank to withdraw a member of the supervisory board which does not fulfil these standards. According to section 25d (2) KWG the supervisory board as a whole shall have the necessary knowledge, skills and experience to fulfil its control function as well as to assess and monitor the management board of the institution, group of institutions or financial holding group, financial holding company or mixed financial holding company.

Regarding Principle 5 and 6 the authorities want to point out that BaFin has published Guidelines regarding the licensing procedures, qualifying holding procedures and the assessment of managing directors and members of the supervisory board. The Guidelines regarding the licensing procedures that were published in 2007 and especially the Guidelines regarding the assessment of the managing directors and the members of the supervisory board which were published for the first time in 2012 and 2013 contain passages regarding the term "trustworthiness" and provide an overview of the standards applied by BaFin in so far. The Guidelines regarding the assessment of managing directors and members of the supervisory board which were revised in 2016 will be published in English shortly as well.

Regarding Principle 7 the authorities are convinced that although German legislation does not provide for the authority to ex ante review and (dis)approve such participations the qualification as materially non-compliant is not justified. Firstly, Article 89 Capital Requirements Regulation [CRR] is directly applicable in Germany and in so far Germany does not see the possibility to apply a stricter approach than the one set out in directly applicable Union law. Secondly, in our view the acquisition of participating interests outside the financial sector is a business decision in which the supervisor should not intervene. The potential risks stemming from an institutions' acquisition and investment policies are sufficiently limited by quantitative limits and by the fact that the institutions' managers are responsible and accountable for the handling and monitoring of the institutions' risks which includes acquisitions and investments. The managers' performance in turn is subject to review by auditors and supervisory interventions in case the requirements are breached. Thirdly, the qualifying holding procedures also apply for significant participations in insurance companies according to section 17 of the German Act on the Supervision of Insurance companies [Versicherungsaufsichtsgesetz - VAG] and other financial services institutions (i.e. investment firms) according to section 1 (1a), (2) KWG. The requirement of a pre-approval by the competent supervisor for any significant participation in one of these regulated entities also applies if the proposed acquirer is a bank.

Supervisory reporting (CP 10)

The authorities cannot agree with the overall assessment. Taking into account their entire supervisory environment, their experience with the information available and their capacity to react if necessary promptly on banks' situations which are not satisfactory the isolated assessment of **Principle 10** is too harsh and should be upgraded. Moreover, we would like to emphasize that the assessment does not take future developments into account. According to the ECB regulation 534/2015 which further elaborates Regulation (EU) 680/2014 the required information will be available next year.

Corporate Governance (CP 14)

On Principle 14, Corporate Governance, on basis of its findings the IMF concludes that the following actions are needed to strengthen the role of the supervisory board:

- *Supervisory guidance should clearly state that ultimate responsibility for establishing the risk culture, developing business plans and risk appetite statement rests with the supervisory board.*
- *Supervisory enforcement and sanctioning programs should explicitly address supervisory board member liability.*
- *The knowledge/experience requirements for supervisory board members should be commensurate with the complexity of the bank.*
- *Reporting to the board should be frequent and with sufficient detail to enable the board members to challenge management.*
- *Banking supervisors should continue to increase dialogue and discussions with the supervisory board on results of supervisory activities and concerns.*

Reference has been made to BCP standards, requiring increased emphasis on the role of the supervisory board's oversight of management and the institution. According to paragraph 6, page 2, of the Basel Principles for enhancing corporate governance of October 2010, insufficient board oversight of senior management, inadequate risk management and unduly complex or opaque bank organizational structures and activities failures and lapses were one of the reasons for the financial crisis that began in mid-2007. For this reason, Principle 1 of the Basel Principles for enhancing corporate governance of October 2010 states, that "The board has overall responsibility for the bank, including approving and overseeing the implementation of the bank's strategic objectives, risk strategy, corporate governance and corporate values. The board is also responsible for providing oversight of senior management."

Also Principle 1 of the Basel Corporate Governance Principles for banks, published July 2015, requires that "the board has overall responsibility for the bank, including approving and overseeing management's implementation of the bank's strategic objectives, governance framework and corporate culture."

However, neither the above cited guidelines nor the BCP address the "supervisory board" in specific but the "board" in general, which is defined, according to Basel Corporate Governance Principles for banks of July 2015 as,

> "The body that supervises management. The structure of the board differs among countries. The use of "board" throughout this paper encompasses the different national models that exist and should be interpreted in accordance with applicable law within each jurisdiction."

Footnote 27, page 25 of BCP states that the BCP "[…] refers to a governance structure composed of a board and senior management. The Committee recognizes that there are significant differences in the legislative and regulatory frameworks across countries regarding these functions. Some countries use a two-tier board structure, where the supervisory function of the board is performed by a separate entity known as a supervisory board, which has no executive functions. Other countries, in contrast, use a one-tier board structure in which the board has a broader role. Owing to these differences, this document does not advocate a specific board structure. Consequently, in this document, the terms "board" and "senior management" are only used as a way to refer to the oversight function and the management function in general and should be interpreted throughout the document in accordance with the applicable law within each jurisdiction."

Also, paragraph 7 of the Basel Principles for enhancing Corporate Governance of October 2010 points out that "the application of corporate governance standards in any jurisdiction is naturally expected to be pursued in a manner consistent with applicable national laws, regulations and codes." Paragraph 15 of the Basel Corporate Governance Principles for banks of July 2015 states that the Principles are "intended to guide the actions of board members, senior managers, control function heads and supervisors of a diverse range of banks in a number of countries with varying legal and regulatory systems, including both Committee member and non-member jurisdictions. The Committee recognizes that there are significant differences in the legislative and regulatory frameworks across countries which may restrict the application of certain principles or provisions therein. Each jurisdiction should apply the provisions as the national authorities see fit. In some cases, this may involve legal change. In other cases, a principle may require slight modification in order to be implemented."

Against this background we would like to point out that the German two tier structure differs from the one tier structure. However, the abovementioned Basel principles in general and especially the BCP 14 requirements have been fulfilled.

As regards the responsibilities of both boards, it seems that the interaction between the management board and the supervisory boards and the full range of the supervisory board`s tasks and powers in German banks have not been made sufficiently clear yet.

The German two-tier system allocates the board's responsibilities in two institutionally independent bodies, the management board, which has the direct responsibility for the management of the

company, including the exercise of management control over the lower hierarchical levels, and the supervisory board, which in turn supervises the management activities of the management board. The basic idea is to separate the supervision in an own body, which is staffed and functionally separate from the management board, namely the supervisory board. The aim of this separation of responsibilities is not only to prevent that management responsibilities become so extensive that there is not enough room for the monitoring responsibilities, but also to avoid an involvement of the supervisory board members in management decision-making and accordingly as a final consequence the need to monitor themselves with all resulting potential conflicts of interest. The clear separation of management and supervisory responsibilities as well as the independence of the supervisory board members are major advantages of this system. Requiring an ultimate responsibility for establishing the risk culture, developing business plans and risk appetite statement rests with the supervisory board would contravene this separation.

The role of both, the management board and the supervisory board, is not only governed by supervisory law, i.e. the KWG, but to a large extent subject to the respective company law. In order to facilitate a better understanding of the German two-tier structure and especially the role of the supervisory board, the main responsibilities and powers are outlined below (where governed by company law, using the public limited company (Aktiengesellschaft) as an example).

With respect to the management board, we firstly refer to our explanations in the Preliminary remarks of the German specific part of the Detailed Self-Assessment on BCP 14. Furthermore, we would like to emphasize the fact that due to corporate law it is the management board which has to manage the company on its own responsibility (sec. 76 German Stock Corporation Act [Aktiengesetz – AktG]). This means on the one hand performing the management tasks - or in other words the leadership tasks - and on the other hand bearing the ultimate management responsibility. In its leadership function, the management board is not limited to performing day-to-day management, but also responsible for developing the corporate strategy as well as determining the corporate policy and ensuring their implementation (cf. sec. 4.1 of the German Corporate Governance Code (GCGC); cf. also sec. 25c KWG). The tasks of the management board also encompass the exercise of management control in the sense of ongoing and subsequent monitoring of the performance and success of delegated management tasks. Concerning the latter, the main responsibility of the supervisory board is normally to assess whether such delegation is appropriately organized, e.g., whether the responsible individuals are properly selected and sufficiently monitored by the management board.

With regard to the qualifications of the supervisory board members, we would like to refer to BCP 14, EC 4, German specific part, and to highlight the fact that, when assessing whether a member of the supervisory board has the necessary expertise, the scope and complexity of the business conducted by the institution, group of institutions or financial holding group, financial holding company or mixed financial holding company has to be taken into account (sec. 25d para. 1 sentence 2 KWG). We also refer once more to BCP 14, EC 9, German specific part, with special regard to corrective measures against supervisory board members.

As already said in the preliminary remarks of the German specific part of the Detailed Self-Assessment on BCP 14, the main responsibility of the supervisory board is the supervision of the management board. For credit institutions, sec. 25d para. 6 KWG specifies that the supervisory board shall oversee the management board, also with regard to its adherence to the applicable prudential supervisory requirements, and shall devote sufficient time to the discussion of strategies, risks and remuneration systems for management board members and employees. Credit institution specific responsibilities also follow from sec. 25d para. 7-12 KWG, where the tasks of the supervisory board`s committees are laid down.

For the purpose of supervising the management board, the supervisory board has quite significant powers:

- The supervisory board is responsible for the appointment and dismissal of members of the management board (sec. 84 AktG), including the service agreement and its termination, the compensation of each management board member (cf. sec. 25d (12) KWG in accordance with sec. 3 (2) Remuneration Ordinance for Institutions [Institutsvergütungsverordnung – InstitutsvergVO]) as well as the representation of the company vis-à-vis the members of the management board (sec. 112 AktG). Where necessary, the supervisory board has to consider and to pursue claims for damages against members of the management board (cf. sec. 116, 93 AktG). Corresponding to the liability of the members of the management board, supervisory board members can also be held liable personally for damages in case of infringements of their duty of care (sec. 116 AktG).

- The management board is subject to comprehensive regular and case-specific reporting obligations vis-à-vis the supervisory board (sec. 90 AktG). In addition, the supervisory board may require at any time further reports from the management board on the affairs of the company (sec. 90 para. 3 AktG). It may also inspect and examine the books and records of the company as well as the assets of the company, in particular cash, securities and merchandise (sec. 111 para. 2 AktG). A specificity for all credit institutions is the right of the chairs of the risk committee and the audit committee, or, if such committees have not been established, the chair of the supervisory board, to make direct enquiries to both the head of the internal audit function and the head of the risk control unit (sec. 25d para. 8 and 9 KWG). Correspondingly, the chair of the remuneration committee (or the chair of the supervisory board) may make direct enquiries to both the head of the internal audit function and the heads of the organisational units responsible for the structure of the remuneration systems (sec. 25d para. 12 KWG).

- Within the scope of its supervising function, the task of the supervisory board is also to advise the management board in the management of the enterprise regularly. The

supervisory board must be involved in decisions of fundamental importance to the enterprise. (cf. sec. 5.1.1 GCGC)

- The supervisory board shall instruct the auditor as to the annual financial statements and consolidated financial statements according to sec. 290 of the Commercial Code (sec. 111 para. 2 sentence 3 AktG). It shall itself examine the annual financial statements, the annual report and the proposal for appropriation of distributable profit and shall report on the results of its examination in writing to the shareholders' meeting (sec. 171 AktG). The annual financial statements shall be deemed to have been approved, upon approval thereof by the supervisory board, unless the management board and the supervisory board resolve that the annual financial statements are to be approved by the shareholders' meeting (sec. 172 AktG).

- While it is explicitly stipulated that management responsibilities may not be conferred on the supervisory board, the articles of association or the supervisory board have to determine that specific types of transactions may be entered into only with the consent of the supervisory board (sec. 111 para. 4 AktG).

- The supervisory board shall call a shareholders' meeting whenever the interests of the company so require (sec. 111 para. 3 AktG), e.g. to achieve a vote of no confidence by the shareholders' meeting in order to revoke the appointment of a member of the management board.

- The strategies and, where applicable, adjustments to the strategies shall be brought to the attention of and discussed with the institution's supervisory board (guidance provided by AT 4.2 para. 5 Minimum Requirement for Risk Management [MaRisk], an administrative regulation issued by BaFin).

- Risk management creates a basis for the proper performance of the supervisory board's monitoring functions and thus shall also include the adequate involvement of the supervisory board (guidance provided by AT 1 para. 1 MaRisk).

Against this background, we would like to emphasize that the management board is the right body regarding the reporting lines of the control functions. All control functions are instruments of the management board due to its responsibility to manage the company on its own responsibility. Therefore, the control functions report directly to the management board. The management board, then again, is obliged to report to supervisory board. This reporting line does not mean that risk reporting to the supervisory board is influenced in an unduly manner. Firstly, the control functions are clearly (up to and including management board level) segregated from the operational functions (front office) to enable the control functions to monitor and report on risk issues independently from divisions where risks may arise. Secondly, it is not up to the management board members to decide about form and extent of the information provided by the control functions. German supervisors have the clear expectation that reports to the supervisory function are identical or at least

coextensive to those that are provided to the management board in order to ensure the same level of information for the supervisory board and the management board (please see also responses to BCP 15).

However, to a certain extent reporting lines of the control functions to the supervisory board are also in place. As already mentioned above, the supervisory board has direct access to the heads of control functions, namely the CRO and the head of internal audit. According to sec, 25d (8) KWG), the chair of the risk committee, and if no risk committee has been established, the chair of the supervisory board, may make direct inquiries to the head of internal audit function and the head of risk control unit. The management board shall be informed thereof. The same applies to the chair of the audit committee and the head of supervisory board if an audit committee has not been established, according to sec. 25d (9) KWG.

Specific guidance regarding reporting requirements to the supervisory board are also laid down in the MaRisk. According to the guidance provided by AT 4.4.2 para. 6 MaRisk, the reports of the compliance function shall (next to the primary reporting line to the management board) additionally be passed to the supervisory board. Additionally, according to the guidance provided by BT 2.4 para. 4 of MaRisk's amended version, the Internal Audit function has to write an overall report on its performed audits on a quarterly basis and provide them to both, the management board and the supervisory board. Regarding the reporting obligation of the risk management function, please see the comments regarding the preliminary assessment of BCP 15.

Regarding remuneration topics, the chair of remuneration committee or, if a remuneration committee has not been established, the chair of the supervisory board may make direct inquiries to the head of the internal audit function and the heads of the organizational units responsible for the structure of the remuneration systems. The management board shall be informed thereof according to sec. 25d (12) KWG.

In this regard, it is important to point out, that all members of the respective committees are only supervisory board members; no management board member is included.

Regarding the assessment that "*Banking supervisors should continue to increase dialogue and discussions with the supervisory board on results of supervisory activities and concerns"* we do not understand on which basis this assessment has been made. We believe that the dialogue between the German banking supervisors and the respective institution`s bodies is commensurate with the role of each board.

Consequently, we do not think that the findings made by the IMF are sufficiently justified. Considering the content of the Basel Core Principles, we are convinced that the requirements relating to the "board" are addressed correctly against the background of the German two-tier system.

Therefore, we are convinced that the German system is compliant with the requirements of Principle 14.

Prudential Requirements, Regulatory Framework, Accounting and Disclosure (CPs 15-29)

Comment on the Assessment of BCP 15 Risk management process: We do not share the view of the IMF that the existing dual system of the legal structure in German companies and banks (strict separation of the management board and the supervisory board) and the resulting implications for their tasks in Germany leads to a weakening of independence of the control functions (risk management function, compliance function, internal audit function) within the institutions in general and with regard to the risk management function in particular. The responsibility of the supervisory board according to German company law is clear: it is in the responsibility of the supervisory board to observe and monitor the business management of the management board. Furthermore, the supervisory board must not perform business management tasks. This fact implies some modifications concerning the reporting requirements (reporting lines) and the organisational and operational structure in which the risk management function is embedded. For more details concerning the specific role of the supervisory board and the resulting implications see response to BCP 14.

To begin with, it has to be emphasized that all control functions, including risk management function, are instruments of the management board (due to their responsibility for the business management) and therefore organizationally subordinated to the management board. This is why the risk management function reports initially to the management board. The fact that it is in the responsibility of the management board (not automatically the CEO but usually the CRO – when the CRO is member of the management board, as it is the case in the most largest institutions in Germany – or the management board member where the risk management function is subordinated) to report to the supervisory board (at least quarterly) does not mean (and should not lead to the conclusion) that risk reporting to the supervisory board could be influenced in an unduly manner. Two facts in this context are particularly important: Firstly the risk management function is clearly (up to and including management board level) segregated from the operational function (front office) to enable this function to monitor and report on risk issues independent from those divisions of the institution where risks arise. Secondly, it is not left to the discretion of the management board members in what form and to what extent risk related information is reported to the supervisory board. German supervisors have the clear expectation (and review if these expectations are met by institutions, especially in the context of onsite inspections) that risk reports to the supervisory function to be identical or at least coextensive to those which are presented to the management board in order to ensure the same level of information for the supervisory board and the management board. The compliance with this requirement are reviewed during ongoing supervision and on-site inspections.

In addition, the chair of the supervisory board (or the chair of the audit committee if such a committee exists, see also section 25d (9) KWG in connection with section 25d (7) KWG) has direct access to the head of the risk management function and can call for further information. The fact that the management board shall be previously informed is a direct implication of the organisational

and disciplinary subordination of those staff members and does not imply that the chair of the supervisory board cannot discuss with the head of risk management in confidence (without presence of a management board member). Please note that large institutions are required to implement the head of risk management function exclusively on management board level ("CRO"). In those cases the CRO has always the access to supervisory board (and vice versa) at all times.

For these reasons it is sufficiently ensured that the risk management can act independently and can provide both management board and supervisory board with risk information without any influence of the management board.

With regard to the required notification of the supervisory board in cases where the head of the risk management function is removed (for removals of the head of compliance and head of internal audit there are identical requirements; see guidance provided by AT 4.4.1, AT 4.4.2, AT 4.4.3 MaRisk) we would like to point out that this notification is not only required ex-post but a sufficient time before the removal in order to enable the supervisory board to discuss those issues with the management board. German supervisors have addressed this topic in the draft of a revised version of the MaRisk (consultation process was opened in February 18th 2016) and will amend the respective sections of the MaRisk to make clear that the notification has to be given due in advance and under specification of the reasons of the removal.

Comment on Assessment of Principle 18: Based on the experience and the results of AQR from 2014, BaFin is aware that there has to be a stronger focus on questions in terms of valuation. For that reason, BaFin established a new division, BA 53, Financial Accounting and Valuation Practices, with the task to get a better understanding of the institutions' valuation practices, the underlying assumptions and the calculation of provisions.

In this way, BaFin aims for a deeper insight into the institutions' processes and their valuation methods to discuss the institutions' appraisals in terms of a prudential perspective. Based on the various banking practices, a guidance for the supervisor might be a helpful tool. Nevertheless, a conflict with existing accounting legislation should be avoided. In this regard, the new division will explore a possible balanced way forward. Nevertheless, we expect that challenging the institutions results and comparisons might lead to an increase of quality of valuation methods and its results.

Additionally BaFin and BBK implemented a supervisory approach for LSI in 2015 (PAAR – Prudential Assessment of Adequate Risk-Provisioning) and set up a supervisory training program which was enrolled in 2015. Regarding that it is a completely new inspection approach for BBK there are no public issued guidelines yet, however there are comprehensive internal guidelines for inspectors available. This safeguards to keep room for adjustments in this early stage of this new inspection approach.

On SSM-level there is an on-site methodology for credit risk available and detailed information for loan valuation and provisioning are yet to be finished.

Regarding Principle 19 we would like to point out that the CEBS Guidelines on the management of concentration risk under SREP (GL 31) still are applicable and establish a framework on the EU level which relates to Art. 81 Capital Requirements Directive [CRD]. Without explicit mentioning the definition of these Guidelines, all aspects referred to in the Core Principle as footnote are covered. At the same time, the definition is congruent with the guidance provided by the MaRisk (see AT 2.2, para Annotations).

Furthermore, the MaRisk definition of intra-risk concentrations includes market-risks aspects (market, currencies) as well as funding risk concentrations. The requirement to analyse regularly the access to relevant refinancing - even in the event of tight markets - clearly points in this direction (BTR 3.1. Tz. 4).

Regarding the regular review of all material concentrations by a bank´s supervisory board we cannot agree with the statement that there is no such requirement: MaRisk do require a special reporting about risk concentrations and their potential consequences (see AT 4.3.2., para 4). Besides, according to AT 4.3.3 para 1 stress tests have to be extended on risk concentrations. The results of the stress tests have to be reported as well and shall therefore cover the assumed risk concentrations additionally.

According to the guidance provided by BTR 1 para 7a MaRisk the risk report on credit risk has to contain information regarding the development of the credit portfolio. Risk concentrations as well as large exposures (Para 7b) have to be considered. The risk reports are generally sent via the management board in identical or at least coextensive form to the supervisory board so it is ensured that the supervisory board gets the same information as the management board in a timely manner.

Regarding Principle 20 the statement that there is no regular reporting of exposures to related parties is correct, but it doesn't mean that German supervisors never obtain information on loans to related parties. According to section 34 (2) No. 4 of the Audit Report Regulation [Prüfungsberichtsverordnung – PrüfbV], stricter (single-loan-based) reporting requirements apply where loans to related parties must be regarded as noteworthy because of their size or the way they are structured or because indications of conflicts of interests occur. Furthermore, in case of reaching or exceeding certain thresholds (large loans according to section 14 KWG and large exposures according to Article 394 CRR), exposures to related parties have to be reported to the supervisor, too.

In addition, granting exposures to related parties is part of the institution's credit granting and surveillance process. Therefore, not only section 15 of the KWG, which, among other things, defines transactions with related parties and regulates the unanimous decision by all general managers of the institution in advance of the credit granting, but also all the other provisions as section 18 KWG or the guidance provided by the MaRisk have to be respected. Consequently, related party exposures have to be monitored and controlled and there is no need for a separate regulation in this context.

Even if there is no separate legal limit for exposures with related parties, the large exposure limit according to Article 395 of the CRR is applicable. Besides, according to section 15 (2) KWG, BaFin can impose limits on exposures to related parties on a case by case basis.

Finally, regarding the definition of related party transactions or the relevant provision, the supervisor can always decide on a case by case basis if there are some doubts.

Regarding Principle 21 we have difficulties in understanding the basis for your assessment that banks would have little guidance on country risk. Country risk as part of credit risk is subject to the guidance provided by MaRisk standards to credit business like "normal" credit risk. Country risk includes an economical and a political aspect which of course has to be analysed. According to BTO 1.2 para 3 MaRisk all important aspects of a credit engagement have to be fleshed out (not only at the time of the granting of the loan but also during the ongoing monitoring), whereby country risks are to be considered in an appropriate way. The bulk of German banks operate regionally and are usually not engaged in foreign exposures (with the exception of some EU sovereign bonds) so that country risk is rather in exceptional cases an essential risk in the LSI-context. According to the national Guidelines on the supervisory assessment of bank-internal capital adequacy concepts (published in December 2011) unrealised losses in relation to hidden burdens which have occurred with European sovereign bonds in the near past must be considered.

In addition, reporting requirements regarding country risk follow from the guidance provided by BTR 1, para 7 MaRisk: according to lit. a information must be given on the development of the credit portfolio, inter alia broken down by countries. If significant positions with country risk exist, a special presentation of these risks is necessary (see para 7c).

Finally, regarding the verification of internal limits we would like to mention that auditors of Bundesbank also examine the limit system in the context of their audits and whether country risks are appropriately taken into account and limited, of course (the guidance provided by MaRisk emphasizes that country risks as part of the credit risk have to be regarded). However as mentioned above, this is a rather exceptional case with LSIs as most LSIs don´t have significant country risks.

Regarding Principle 25: We disagree with the classification because it is not clear where Germany does not comply with the Basel framework.

We agree that there might be room for improvements, which is always the case. But the benchmark has to be the BCP requirement and not what seems to be desirable.

However, we do not agree that the findings justify a verdict of material non-compliance. The Basel text is fully covered by the CRR and the guidance provided by the MaRisk. OpRisk management, disaster recovery and BCP are regular topics of bank examinations, in dedicated operational risk audits as well as in examinations with a broader or different scope where it is implicitly covered. As a material risk, operational risk is covered by the guidance provided by MaRisk examinations by default. It is also touched upon in market and credit risk examinations where boundary issues are

concerned. Moreover, in our opinion some of the requests of the IMF assessors went beyond what the Basel text asks for. We would therefore like to ask for clarification on the conclusion of the assessors. For any details with respect to the individual ECs, please refer to our statements below.

Concerning the findings of EC1, Bundesbank has both supervisors dedicated exclusively to operational risk as well as quantitative and qualitative experts with a lot of experience on operational risk examinations. Bundesbank furthermore offers in-house trainings for supervisors on operational risk that covers both regulation and presentations from bank practitioners.

Concerning the findings of EC3, we disagree that the use test does not receive sufficient attention during AMA examinations. AMA banks are thoroughly examined before given accreditation and the monitoring of KRIs and other risk management instruments is part of our ongoing supervision. The four elements of an AMA and their use are also an explicit part of AMA first-time inspections and a common part of follow-up inspections. In the past, AMA examinations have rendered 12 findings with respect to the integration of the AMA into day-to-day management and an additional 36 findings with respect to the four data elements.

While a benchmarking of losses is currently not performed by Bundesbank, such an exercise is in progress by ECB (DG IV). Please be mindful that the (desirable) supervisory collection of loss data for BIA-banks would exceed BCBS requirements. We agree that a cross-sector analysis of operational risks is not performed; however, this is not envisaged by the Basel text either. We also see no basis for such an analysis as the Basel text does not require small banks to systematically collect loss data and we consider the BIA capital requirement to be not risk sensitive enough to allow for comparisons.

The assessors criticize that the frequency, scope and depth of operational risk examinations could be enhanced. In the past we have had dedicated operational risk exams for large banks, which have each lasted several weeks with teams of more than 6 people. While the frequency of follow-up AMA assessments varies from bank to bank, our largest bank is examined on at least a yearly basis. All other banks that do not have an approved AMA are regularly examined for compliance with BTR 4 MaRisk, which regularly results in findings with regard to the banks' operational risk management. In total, MaRisk examinations have yielded more than 90 operational risk findings since 2013. We are hoping for a statement from the assessors what is considered an adequate frequency, scope and depth for operational risk examinations.

Concerning EC4, the assessors state that there are “no provisions within the regulations to establish minimum expectations with respect to testing, review and approval by board of DR and BCP plans.” However, the German banking act clearly states in section 25a that "risk management shall comprise, in particular, (...) the definition of an adequate contingency plan, especially for IT systems.” Further in section 25c, the banking act states that "As part of its overall responsibility to ensure a proper business organization of the institution pursuant to section 25a (1) sentence 2, the management board of an institution shall ensure that the institution has in place the following strategies, processes, procedures, functions and frameworks:

adequate contingency plans pursuant to section 25a (1) sentence 3 number 5 for contingencies affecting time-critical activities and processes; as a minimum, the management board shall ensure that regular contingency tests are carried out in order to verify the suitability and effectiveness of the contingency plan and the results are communicated to the respective responsible staff." Between 2012 and 2014, Bundesbank has conducted more than 50 audits with a focus on DR and BCP (MaRisk AT 7.3) that have resulted in 71 findings.

The assessors also criticize that in relation to DR and BCP, the MaRisk contains high level guidance and does not prescribe minimum standards for the frequency, scope or nature of DR and BCP testing and that banks are obliged to follow industry standards instead. In addition, the assessors criticize that there is scope for the JST to pay greater attention to the assessment of DR and BCP planning and the results of DR tests. In addition to the banking act and the MaRisk which are more principle based, it should be mentioned that all Bundesbank supervisors are given guidelines on how to examine DR and BCP and that we have done roadshows and in-house training to create awareness for this topic. Furthermore, industry standards are not only defined by regulators but also by independent bodies such as the federal office for information security (BSI) which sets ISO norms among others.

Regarding EC6, the assessors criticize that loss data from AMA SI banks should be collected and compared. Once again, we reference to the on-going SSM exercise. It should also be noted that large loss events are discussed with JSTs on a regular basis and that management awareness is created through the regular reporting of operational risk losses and scenarios. While a cross-sector comparison for Germany might seem desirable, we still see no legal basis to ask this from the supervisors.

It is also not correct that MaRisk does not contain a level of specificity for the collection and classification of operational risk data. MaRisk specifically states in its BTR 4 that "It shall be ensured that any material operational risk is identified and assessed at least once a year." The upcoming revisions of the MaRisk guidance will also include the requirement to use loss databases.

In total, further clarification where exactly Basel rules are violated would be useful so we can further improve our supervisory approach.

Regarding the assessment of BCP 26, we would like to refer to the comments regarding the assessment of BCP 14 and 15.

In addition, we would like to point out, that in contrary to the statements in the assessment, the internal audit function and the compliance function have alternative reporting lines to the supervisory board.

According to sec. 25d (8) and (9) KWG, the chair of the risk committee and internal audit committee respectively or, if the respective committee has not been established, the chair of the supervisory board may make direct inquiries to the heads of the both control functions. Additionally, according

to the guidance provided by BT 2.4 para. 4 of MaRisk's amended version, the Internal Audit function has to write an overall report on its performed audits on a quarterly basis and provide them to both, the management board and the supervisory board.

Since the internal audit function is an instrument of the management board, the function is obliged to report directly to this body in the first instance (BT 2.4 MaRisk). However, if management board members might be involved, the internal audit function has to report directly to the supervisory board. According to BT 2.4 para. 5 MaRisk, in case the audit reveals serious findings concerning members of the management board, the internal audit function shall inform the chair of the supervisory board if the management board fails to meet its reporting obligation or if it fails to adopt appropriate remedial measures.

As already pointed out in the comments to BCP 14, the compliance function is also an instrument of the management board regarding the specific responsibility of this body. For this reason, the compliance function has to report to the management board directly. But in addition, according to the guidance provided by AT 4.4.2 para. 6 MaRisk, the reports of the compliance function shall additionally be passed to the supervisory board (and the internal audit function).

Finally, we do not share the view that the supervisory board is informed of a replacement of the internal auditor, compliance officer and risk officer ex-post only. According to the guidance provided by MaRisk, the supervisory board shall be notified, if the head of the risk control function (AT 4.4.1 para. 5) and the compliance officer (AT 4.4.2 para. 7 MaRisk) and the head of internal audit function (AT 4.4.3 para. 6 MaRisk) respectively is replaced. It is clearly not required to provide any of this information ex-post but instead in a sufficient time before the removal so that the supervisory board is able to discuss these issues with the management board. The draft of the revised version of the MaRisk (consultation process was opened in February 18th 2016) will be clearer in this regard. In future, if the head of the risk control function (AT 4.4.1 para. 6 revised version) and the compliance officer (AT 4.4.2 para. 7 revised version) and the head of internal audit function (AT 4.4.3 para. 6 revised version) respectively is replaced, the supervisory board shall be notified in advance in a timely manner, stating the reasons for the replacement.

Therefore, we are convinced that Germany is compliant with the BCP 26 guidelines.

b) ECB´s Response

The ECB welcomes the assessment prepared by the IMF based on the "Basel Core Principles (BCP) for Effective Banking Supervision" in the context of the Germany FSAP. In general, the ECB concurs with the views expressed in the report, as they generally reflect in a very balanced and thoughtful manner the reality of the SSM and take due account of the complexity of the matter. The ECB highlights the excellent cooperation with the IMF mission team and the German authorities all throughout the process.

The ECB strongly supports the IMF in its objective to promote globally best supervisory practices via FSAPs, as this is fully in line with the SSM's objective of ensuring that banks across the euro area are supervised according to the same high standards. More specifically, SSM banking supervision does not have a national focus, but takes a European perspective, allowing the ECB to compare and benchmark banks across institutions and identify problems at an early stage. In addition, it combines the experience and expertise of 19 national supervisors, enabling the ECB to draw on the best national practices. Finally, SSM banking supervision is shielded against undue influence from different stakeholders.

The ECB also welcomes that the report acknowledges that in 2015 the European banking supervision took a great step towards harmonised and unbiased supervision by conducting a euro area-wide Supervisory Review and Evaluation Process (SREP) according to a common methodology. For the first time, all significant institutions in the euro area were assessed against a common yardstick. Quantitative and qualitative elements were combined through a constrained expert judgment approach, which ensured consistency, avoided supervisory forbearance and accounted for institutions' specificities.

Notwithstanding the general positive view on the report, the ECB considers that the assessment of BCP 25 on operational risk does not fully take into consideration the initiatives undertaken by the SSM, by means of the actions of the Joint Supervisory Teams, to measure and assess these risks in significant institutions. The ECB is of the view that, while recognizing that of course there is still room for improvement, the progress made so far and the initiatives that are still ongoing to improve the supervision of operational risk were not fully recognised in the assessment. Most notably, the SSM supervisory assessment guidance, which, while tailored to more advanced risk management practices as applicable under AMA, in practise also provides BIA banks with guidance on this matter. In addition, operational risk issues are addressed in the specific risk control assessments that are part of the regular supervisory activity of the JSTs. In this regard, for example, questions relating to adequate risk management processes, potential data weaknesses or risks resulting from technical or human errors are covered in JSTs' assessments not only for operational risk itself but also when analysing credit, liquidity or market risk, as well as in governance risk control assessments.

Regarding the remarks included in the report that there should be more supervisory focus on ensuring reported data quality, including the verification that risk management policies exist and are effectively implemented, the ECB indicates that the JSTs – following the SSM Supervisory manual – undertake quantitative and qualitative assessments to determine respectively the actual level of exposure to this risk and the internal risk controls established by the banks. These assessments are included in the RAS assessment and in the monitoring reports that are produced at least once per year, which are complemented with additional supervisory assessments for AMA banks. In addition, JSTs perform specific assessments, the so-called 'deep dives', and cover these issues through on-site inspections.

Finally, it is also worth to be noted that the SSM undertook a number of reviews – notably on CyberCrime, BCBS 239 and cybercrime incident reports – and is currently in close contact with key service providers to assess preparedness to risks related to systemic threats.

The ECB will duly consider the observations and recommendations included in the report to further improve the quality of the SSM banking supervision.

Report on the Observance of Standards and Codes: CPMI-IOSCO Principles for Financial Market Infrastructure

A. Executive Summary

Eurex Clearing observes the CPSS/IOSCO Principles for Financial Market Infrastructures (PFMIs). In particular, it has a sound, coherent, and transparent legal basis. Its governance arrangements and composition of Boards and management are well defined, and the Boards are adequately staffed to promote the safety and efficiency of the central counterparty (CCP) while supporting the stability of the financial system through a conservative approach to risk appetite. It has developed a comprehensive and adequate risk management framework to address financial, business, and operational risks. The participant default rules and procedures are comprehensive and adequate. Participant assets as well as Eurex Clearing's collaterals are safely kept in regulated central securities depositories and deposited at central banks accounts.

While Eurex Clearing has managed well to cope with volatile markets and strengthened international standards, it is encouraged to enhance some functionalities to further contribute to its soundness and to financial stability. In particular, cross-managerial responsibility at the level of heads of departments should be abolished in order to eliminate the appearance of potential conflict of interest. Moreover, it is crucial to ensure effective business continuity arrangement by strengthening the secondary site with appropriate arrangements in order to allow swaps of operations between the primary and secondary sites on a business-as-usual basis.

The regulatory, supervisory, and oversight framework is comprehensive and effective. The authorities' objectives, policies, and roles are well defined and made public. Nevertheless, the legal basis in the German law for the Bundesbank's oversight function over CCPs should be strengthened. Given the increasing systemic relevance of Eurex Clearing as a global CCP at a time where clearing obligations enter into force, enforcement of supervisory and oversight framework can be further improved by being more proactive and increasing the intensity of on-site inspection.

B. Methodology used for Assessment

The assessment of Eurex Clearing against the CPSS/IOSCO Principles for Financial Market Infrastructures (PFMIs) was undertaken in the context of the IMF's Financial Sector Assessment Program (FSAP) Update for Germany, November 2015.[1] Prior to the mission, Eurex Clearing conducted a comprehensive self-assessment following the methodology of the PFMIs published in 2012. The assessors also benefited from discussions with BaFin, the Deutsche Bundesbank, as well as market participants. The assessors also benefited from discussions with ESMA

[1]The assessment was performed by Elias Kazarian of the IMF's Monetary and Capital Markets Department, and Marguerite Zauberman, IMF expert.

and the European Central Bank (ECB). The mission would like to thank the German authorities, Eurex Clearing management and staff, and other stakeholders for their cooperation and hospitality.

C. Institutional and Market Structure

Eurex Clearing is a global CCP that clears a broad range of both listed and over-the-counter (OTC) products. It offers fully automated and straight-through post trade services to the derivatives markets Eurex Deutschland and Eurex Zürich, the Frankfurt Stock Exchange, the multilateral trading systems of Eurex Bonds GmbH and Eurex Repo GmbH, the Irish Stock Exchange as well as clearing services for OTC interest rate derivatives (EurexOTC Clear), as well as clearing services for transactions in cash equities, bonds, repos, derivatives, secure funding, securities financing and transactions. This comprises a trade management functions, comprehensive risk management services, and collateral management tools.

Eurex Clearing maintains accounts at multiple central securities depositories (CSD) and International CSDs (ICSDs). It reports to the trade repository REGIS-TR in order to fulfill the reporting requirements out of European Market Infrastructure Regulation (EMIR). Eurex Clearing does not have any link to other CCP.

Eurex Clearing serves more than 186 clearing members, located in 17 European countries, at end-2015. As of end-2015, Eurex Clearing processed approximately 1.8 billion transactions with a total value of cleared transactions of EUR 200,949 billion and an average daily value of transactions amounting to EUR 794 billion, and held a Clearing fund of EUR 3.8 billion.

D. Main Findings

Eurex Clearing has a well-founded legal basis, and its governance arrangements and risk management framework promote safety and efficiency, and support financial stability. Its rules, procedures and contracts are clear and consistent with German laws and regulations. It is managed by highly skilled professionals and its Executive Board ensures that major decisions reflect appropriately the interests of its participants and relevant stakeholders. The Executive Board and Supervisory Board are advised by several Committees. Eurex Clearing has a comprehensive risk management framework. It pays considerable attention to identify, monitor, and mitigates its risks. This framework, periodically reviewed by the Executive Board, involves its clearing members in designing its policies and provides various incentives for members to monitor the risk they pose to Eurex Clearing.

Eurex Clearing has established a comprehensive risk management framework for credit and liquidity risks. This framework is based on collateral requirements and credit limits to maintain the credit risk within acceptable parameters and maintains sufficient financial resources to cover losses resulting from the default of the two largest clearing members. To cover its current and future exposures, Eurex Clearing has developed multiple layers of defense, including pre-funded clearing

fund, calibrated to cover losses resulting from the default of the two largest clearing members, and a dedicated amount of Eurex Clearing equity.

Eurex Clearing has adequate risk management arrangements and developed comprehensive recovery plan. It developed policies, procedures, and systems to identify, monitor, and manage its business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses. Eurex Clearing holds sufficient liquid resources to cover potential business losses and sufficient own funds for a winding down or the recovery of its own business during a period of 6 months. Eurex Clearing has developed a comprehensive recovery plan in line with ongoing international best practice aimed at ensuring continuation of critical operations. The plan, which was approved by the authorities, identifies CCP's critical activities and the measures to be undertaken in order to ensure business continuity of these activities.

Eurex Clearing has effective and sound procedures to reduce custody risk. It has rules and procedures that enable the segregation and portability of positions of a Clearing Members' customers and the collateral provided to Eurex Clearing with respect to those positions, and publishes the appropriate disclosure document. Furthermore, it assesses the robustness and sound accounting practices, safekeeping procedures, and internal controls that fully protect these assets.

While Eurex Clearing has a robust operational risk management framework, it should strengthen the functionality of the secondary site. Eurex Clearing's business continuity plan is a group-wide policy covering Deutsche Börse Group. However, the critical services for Eurex Clearing are defined separately, which was approved by the Eurex Clearing Executive Board. Eurex Clearing conducts annually workspace and staff unavailability tests, during business hours. It also involves clearing members, external providers and relevant institutions with which interdependencies have been identified in the BCM Plans in the testing process. In order to ensure the continuity of critical functions, it should establish a fully-fledged secondary site cloning the primary site with appropriate staffing arrangements which would allow swaps of operations between the primary and secondary sites.

Eurex Clearing's participation is risk based. Market participants are required to have sufficient financial resources and operational capacity to meet their obligations and minimize the risks toward Eurex Clearing. The admission requirements are clearly defined in the Clearing Conditions and available on Eurex Clearing website. Furthermore, Eurex Clearing has in place rules, procedures, and agreements to identify and monitor and manage risks arising from clearing members' customers.

Eurex Clearing has in place adequate processes for taking into account the needs of its participants and the markets it serves. In particular, it has set up several specialized committees with its market participants as an integral part of its consultation process. It also defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk management expectations, and business priorities. Moreover, it has clear and comprehensive rules and procedures that are fully disclosed to participants to allow the assessment of their rights, obligations, and related risks.

Eurex Clearing is regulated and supervised by several authorities, including BaFin, the Deutsche Bundesbank, and the Federal Agency for Financial Market Stabilization. BaFin is the regulatory authority responsible for the supervision. Furthermore, BaFin is designated as a National Competent Authority for the supervision of Eurex Clearing, as defined by European Market Infrastructure Regulation (EMIR). According to the German Banking Act, the Bundesbank shall, as part of the ongoing supervision process, conduct off-site and onsite-inspections. As a financial market infrastructure, it is also subject to the Bundesbank's oversight. In addition, it falls within the scope of the Recovery and Resolution Act. The regulatory and supervisory objectives and policies are clearly defined and publicly disclosed. Eurex Clearing has been recognized by the Swiss authorities as a systemically important FMI to the Swiss market, and an MOU has been signed by BaFin/Bundesbank and the SNB/Switzerland Financial Markets Regulator. In February 2016, Eurex Clearing was approved by the U.S. Commodity Futures Trading Commission (CFTC) as a registered derivatives clearing organization to offer proprietary OTC clearing services to clearing members domiciled in the U.S. The German authorities and the CFTC signed an MOU for cooperation and exchange of information in the supervision and oversight of Eurex Clearing.

Appendix Table 3. Eurex Clearing Summary Compliance with the CPMI-IOSCO Principles for FMIs—ROSC

Principle	Comments
1. Legal basis	Eurex Clearing's legal framework supports the enforcement of its clearing models, novation and open offer, netting procedures, collateral arrangements, set-off, and close-out netting. There are adequate rules for addressing the event of a clearing member default, as well as Eurex Clearing default. Clearing transactions when final are protected from insolvency procedures. Eurex Clearing's actively identifies and mitigates risks arising from its activities across jurisdictions.
2. Governance	Eurex Clearing is managed by highly skilled professionals and its Executive Board ensures that major decisions reflect appropriately the interests of its participants and relevant stakeholders. The Executive Board and Supervisory Board are advised by several Committees. The most important Committees are for both the Supervisory and the Executive Board, the EMIR Risk Committee, and for the Supervisory Board, the Audit and Risk Committee, focusing on risk management of Eurex Clearing's daily operation, and overall risk appetite and compliance, respectively.

3. Framework for the comprehensive management of risks	Eurex Clearing has a comprehensive risk management framework. It pays considerable attention to identify, monitor, and mitigates its risks. This framework, periodically reviewed by the Executive Board, involves its clearing members in designing its policies and systems and provides various incentives for them to monitor the risk they pose to Eurex Clearing. A recovery plan covering orderly wind-down is prepared, reviewed annually, and submitted to relevant authorities. For the sake of transparency, Eurex Clearing should prepare in addition and publish a consolidated document of its risk management framework.
4. Credit risk	The credit risk framework is based on collateral requirements and credit limits to maintain the credit risk within acceptable parameters and maintains sufficient financial resources to cover losses resulting from the default of the two largest clearing members. To cover its current and future exposures, Eurex Clearing has developed multiple layers of defense, including pre-funded clearing fund, calibrated to cover losses resulting from the default of the two largest clearing members, and a dedicated amount of Eurex Clearing equity.
5. Collateral	Eurex Clearing has established a list of eligible collateral, which have to meet stringent eligibility criteria, including high credit quality, minimum market risk, high liquidity, immediate accessibility and valuation. Furthermore, it has comprehensive risk management procedures to reduce the impact of procyclicality and wrong way risk, and defined dedicated concentration risk thresholds which are applicable to all counterparties.
6. Margin	The margining framework is a multifaceted and time critical that takes into account a variety of factors in order to accurately calculate margins. It has the power and operational capacity to make intraday margin calls and payments to participants. It regularly reviews and validates the adequacy of the overall margin methodology. For the ongoing revision and improvement of the model, Eurex Clearing regularly seeks the advice of its Risk Committee,

	which is composed by clearing members and authorities' representative.
7. Liquidity risk	Eurex Clearing has a robust framework to manage its liquidity risk, which is designed to ensure that Eurex Clearing is able to effect payment and settlement obligations in all relevant currencies as they fall due. Furthermore, the potential simultaneous default of the two largest clearing members needs to be covered at all times (liquidity Cover-2 stress test). However, it should more frequently conduct liquidity stress tests taking into account potential losses from price volatility or fire sale of securities holdings.
8. Settlement finality	Finality of clearing transactions is achieved in Eurex Clearing system. It is based on the German civil code for irrevocability and on the basis of the insolvency law for enforceability, and supported in the Clearing conditions. However, Eurex Clearing conditions should, for the sake of clarity, explicitly reflect how the moment of irrevocability and the moment of entry of a clearing transaction are specified in German law.
9. Money settlements	Eurex Clearing uses mainly central bank money for the settlement of cash transactions. The central bank model is used for Euros and Swiss Francs, accounting for more than 90 percent of total liquidity transactions. For other currencies, US Dollar and British Pound, Eurex Clearing relies on commercial payment banks. Eurex Clearing has rigorous risk management procedures to assess and monitor commercial settlement banks.
10. Physical deliveries	Not applicable
11. Central securities depositories	Not applicable
12. Exchange-of-value settlement systems	Eurex Clearing is not an exchange-of-value settlement system. However, it has mechanisms in place that ensure the elimination of principal risk. Eurex Clearing settlement process is supported by a delivery-versus-payment/receipt-versus-payment (DvP/RvP) settlement eliminating principal risk.

13. Participant-default rules and procedures	Eurex Clearing has effective and clearly defined rules and procedures to manage a participant default. These rules and procedures are designed to ensure that Eurex Clearing can take timely action to contain losses and liquidity pressures and continue to meet its obligations. The procedures involve clearing members who are well prepared through simulation exercise and participation in Default Management Committee to assist Eurex Clearing in the management of the Default. Eurex Clearing conducts regular default simulations and fire drills.
14. Segregation and portability	Eurex Clearing has rules and procedures that enable the segregation and portability of positions of a Clearing Members' customers and collaterals. Customer collateral is held separately from both clearing member's collateral and Eurex Clearing own assets. Eurex Clearing offers three clearing models which provide for different levels of segregation, either an individual client segregation model or an omnibus segregation model.
15. General business risk	Eurex Clearing has adequate risk management arrangements. It developed policies, procedures, and systems to identify, monitor, and manage its business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses. Eurex Clearing holds sufficient liquid resources to cover potential business losses and sufficient own funds for a winding down or the recovery of its own business during a period of 6 months.
16. Custody and investment risks	Eurex Clearing holds its own and its participants' assets at supervised and regulated entities. Furthermore, it assesses the robustness and sound accounting practices, safekeeping procedures, and internal controls that fully protect these assets. Moreover, effective and sound procedures are in place that allow prompt access to its and participants' assets. Eurex Clearing investment strategy is consistent with its overall risk management strategy and fully disclosed to its participants.

17. Operational risk	Eurex Clearing has established a robust operational risk management framework. This framework is comprised of appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks. Eurex Clearing has set up a secondary processing site that has IT capacity, resources, and functionalities to ensure the continuity of critical functions but is not a fully-fledged secondary site cloning the primary site, in particular, with appropriate staffing arrangements which would allow swaps of operations between the primary and secondary sites.
18. Access and participation requirements	Eurex Clearing's participation requirements are risk based and transparent. Eurex Clearing assesses its admission requirements continuously, monitors compliance with its participation requirements on an ongoing basis, and has clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.
19. Tiered participation arrangements	Eurex Clearing has in place rules, procedures, and agreements to identify and monitor and manage risks arising from clearing members' customers. The rules allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to its activities. An important tool to monitor the risks in relation to undisclosed clients of clearing members is the obligation to record transactions related to undisclosed clients on a dedicated account. In addition, different minimum requirements for the Clearing Fund contribution are applicable depending on the type of clearing membership.
20. FMI links	Eurex Clearing does not have any link to other CCPs. It is connected to designated settlement and payment systems for the settlement of securities and cash that result from Eurex Clearing's activities. The risk management framework ensures the safety and soundness of these connections.
21. Efficiency and effectiveness	Eurex Clearing has in place adequate processes for taking into account the needs of its participants and the markets

	it serves. It has defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk management expectations, and business priorities.
22. Communication procedures and standards	Eurex Clearing uses internationally accepted communication procedures and standards. It uses SWIFT ISO 15022 for communication with other Financial Market Infrastructures. For the derivatives markets, FIXML, an internationally accepted standard, is used to communicate with participants.
23. Disclosure of rules, key procedures, and market data	Eurex Clearing has clear and comprehensive rules and procedures that are fully disclosed to participants to allow the assessment of their rights, obligations, and related risks. In particular, Eurex Clearing publicly discloses the prices and fees associated with the services provided for clearing. It has reviewed its methodologies and risk management practices against the PFMIs and the results are published in the Disclosure Document on the Eurex Clearing website.
24. Disclosure of market data by trade repositories	Not applicable

Appendix Table 4. Germany: Prioritized List of Recommendations for Eurex Clearing

Principles	Issue of Concern	Recommended Action	Relevant Parties	Timeframe for Recommended Action
P3 Management of Risks	Enhancing transparency of Eurex Clearing's risk management framework.	Consolidate in an overarching document Eurex Clearing's risk management framework.	Eurex Clearing	6 months
	Potential conflict of interest between two heads of departments	Consider eliminating cross-managerial deputizing at the level of heads of departments, in particular, between head of CCP Risk Management and that of		

		Clearing Product Design and Supervision		
P7: Liquidity risk	Business-as-usual liquidity stress test are conducted only quarterly	Consider conducting business-as-usual stress tests more frequently	Eurex Clearing	6 months
P8: Settlement Finality	Eurex Clearing conditions do not reflect on timing of finality, although finality of clearing is achieved in German law.	For sake of clarity, reflect in the Clearing Conditions explicitly how the moment of irrevocability and the moment of entry of a clearing transaction are specified in German law.	Eurex Clearing	3 months
P17: Operational Risk	Eurex Clearing business continuity arrangement includes a hot secondary site to ensure effective business continuity. However, not all members of the back-up business team are present at the secondary site all the time; some will work via remote access or can be called in if needed.	As a CCP systemically important in multiple jurisdictions, Eurex Clearing should ensure the presence of a secondary business team on the premises of the secondary site to allow swaps of operation between the primary and secondary sites during business-as-usual.	Eurex Clearing	12 months

Appendix Table 5. Authorities' Summary Compliance with the CPMI-IOSCO Responsibilities—ROSC	
Recommendation	**Comments**
A. Regulation, supervision, and oversight of FMIs	The authorities have clearly defined and publicly disclosed the criteria used to identify FMIs that should be subject to regulation, supervision, and oversight. Full consistency with the PFMIs is achieved by the policy-based central bank oversight authority on the top of supervisory authority, based on EMIR and the accompanying regulatory technical standards, and complemented by the German Recovery and Resolution Act concerning recovery planning.
B. Regulatory, supervisory, and oversight powers and resources	Authorities have the powers and resources consistent with their relevant responsibilities, including the ability to obtain timely information and to induce change or enforce corrective action. BaFin and the Deutsche Bundesbank have different and complementary mandates. However, the German law does not explicitly provide the Deutsche Bundesbank oversight power consistent with this responsibility over CCPs nor disclose its activities in the field. Therefore, the legal basis in the German law for the Bundesbank's oversight function over CCPs should be strengthened.
C. Disclosure of policies with respect to FMIs	The policies of BaFin, the Deutsche Bundesbank, and FMSA (as resolution authority), are clearly defined. They are outlined in the laws and legally binding policy statement concerning their role, objectives and regulations applicable. These policies are publicly available and disclosed on the relevant authorities' websites.
D. Application of the principles for FMIs	The PFMIs for CCPs have been adopted by the regulatory, supervisory, and oversight authorities. BaFin implemented these principles, as a rules-based approach through EMIR and accompanying technical standard, and for recovery of CCPs through the German Recovery and Resolution Act. The PFMIs have also been adopted by the Deutsche Bundesbank, as overseer, through the adoption by the ECB of a policy statement for the conduct of Eurosystem oversight in relation to all types of financial market infrastructures, among which CCPs.

Appendix Table 5. Authorities' Summary Compliance with the CPMI-IOSCO Responsibilities—ROSC	
Recommendation	**Comments**
E. Cooperation with other authorities	BaFin, the Deutsche Bundesbank, and the FMSA, cooperate with each other, both domestically and internationally. In the European context, this is achieved through college participation. At the international level, this cooperation is formalized by MOUs. Although it is considered a good practice, there is presently no staff exchange program with other relevant authorities.

Appendix Table 6. Germany: Prioritized List of Recommendations for Authorities				
Responsibility	**Issue of Concern**	**Recommended Action**	**Relevant Parties**	**Timeframe for Recommended Action**
Resp B: Regulatory, Supervisory, and Oversight	The overseer's legal basis for its oversight responsibility lacks specificity	Strengthening the legal basis for the Bundesbank's oversight function over CCPs in the national law in order to clarify its powers consistent with this responsibility.	Bundesbank	12 months
Resp E: Cooperation with other authorities	Enhancing understanding of the foreign regulatory environment where Eurex clearing authorities have cooperation arrangements in effect or in preparation	Establish a short-term staff exchange program with other jurisdictions relevant authorities where Eurex Clearing authorities have cooperation arrangements in effect or in preparation.	BaFin, Bundesbank	Immediately

E. Authorities' response to the CPMI-IOSCO Assessment

The German authorities BaFin, Deutsche Bundesbank, and FMSA, thank the IMF assessment team for their valuable work and detailed study on the application of the CPMI/IOSCO Principles for Financial Market Infrastructures regarding Eurex Clearing.

The German authorities indicate that on 1 February 2016, between the completion of this report by the IMF assessment team and its publication, Eurex Clearing was registered with the U.S. Commodity Futures Trading Commission (CFTC) as a Derivatives Clearing Organization (DCO). Shortly before, on

25 January 2016, BaFin and Deutsche Bundesbank signed a Memorandum of Understanding with the CFTC to enhance the existing supervision arrangements of cross-border clearing organisations.

As a consequence, CFTC, BaFin and Deutsche Bundesbank will cooperate even closer in order to ensure the sound supervision of Eurex Clearing. We envisage a tightened cooperation with the CFTC including but not limited to the exchange of information both on ad hoc basis and upon request, periodic and ad hoc meetings and joint on-site visits.

The German authorities take note of the areas of concern where the IMF identifies room for improvement. With regard to operational risk (Principle 17), the German authorities would like to emphasize that Eurex Clearing has a secondary site with hot backup-arrangements in place. Even though not all members of the business team at the secondary site are present on a permanent basis, the members of the team can be called in on short notice or fulfil their duties via remote access, as appropriate. The German authorities are convinced that these arrangements fully observe the regulatory requirements on operational risk management.

With respect to Responsibility E, the enhanced cooperation with the CFTC will add to the understanding of the foreign regulatory environment both for the German and the US authorities. In addition, Deutsche Bundesbank and BaFin are in close contact with the Monetary Authority of Singapore (MAS), including by meeting in person on a regular basis, with regard to CCP supervision.

In general, the German authorities cooperate closely with other CCP supervisors to strengthen and widen their expertise in CCP-supervision (e.g. Eurex Clearing and LCH.Clearnet Ltd., a CCP supervised by the Bank of England, recently conducted a multi CCP fire drill with the supervisory authorities from the United Kingdom and Germany acting as sponsors).