

# RISK REPORT 2016

Saxo Bank Group – 2016



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# 1 Management Declaration

The Board of Directors assesses that the Group's risk management framework are adequate in relation to the Group's risk profile and strategy, and that they also comply with the applicable regulation. Furthermore, it is the Board of Directors' assessment that the following description of the Group's overall risk profile associated with the Group's business strategy and business model, reflects the actual risks. In addition, this Risk Report provides a relevant and a comprehensive review of the Group's risk management.

The Group's Board of Directors and Board of Management have approved the Risk Report for 2016 in accordance with article 435 in the CRR<sup>1</sup>.

## Board of Directors

Lone Fønss Schrøder  
*Chairman*

Henrik Normann  
*Vice Chairman*

Asiff Hirji  
*Board Member*

Wikawi Oei  
*Board Member*

Thomas Plenborg  
*Board Member*

Jacob Polny  
*Board Member*

## Board of Management

Kim Fournais  
*CEO*

Søren Kyhl  
*COO*

Steen Blaafalk  
*CFO/CRO*

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<sup>1</sup> Capital Requirement Regulation 575/2013

## 2 Introduction

Saxo Bank A/S (the Bank) is a licensed Danish bank with headquarters based in Copenhagen. The Bank and the Saxo Bank Group (the Group) are therefore subject to the Capital Requirements Directive and Capital Requirements Regulation (CRR)<sup>2</sup>, which is the implementation of the Basel III framework into European law.

The EU Commission on a regular basis publishes Regulatory Technical Standards (RTS) and Implementing Technical Standards (ITS), based on recommendations from the European Banking Authority (EBA), which are referred to throughout the Risk Report.

The information in the Risk Report has not been audited by the Group's internal or external auditors.

## 3 Scope of Application

CRD IV applies to:

**Saxo Bank A/S, Philip Heymans Allé 15, DK-2900 Hellerup, company registration no. 15 73 12 49.**

Additional Pillar III disclosure requirements are covered by an excel appendix with tables published separately – “Risk Report 2016 – Additional Pillar III Disclosures”. Together, the report and the additional Pillar III requirements cover the CRD IV disclosure requirements with the below exceptions.

The Risk Report concerns Saxo Bank Group but a separate risk report is prepared for Saxo Privatbank.

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<sup>2</sup> Directive 2013/36/EU together with Capital Requirement Regulation 575/2013 jointly referred to as CRD-IV.

# 4 Risk Management Objectives and Policies

## 4.1 Governance and Risk Management Framework

The Group's overall risk management framework and governance structure is established by the Board of Directors, based on recommendations from the Board Risk Committee.

The Board of Directors have in the Board Instructions laid out a set of instructions to the Board of Management on how to manage the day-to-day business of the Group.

The Board Instructions are supplemented by the Group Risk Management Governance & Policy and Risk Appetite Statements, which define the Group's risk management framework and articulate the Group's risk appetite, including specific limits for the Group's risk taking activities.

The Chief Risk Officer (CRO) has the overall responsibility for maintaining and developing the risk management framework, as well as, controlling and reporting of the Group's risk profile.

## 4.2 Lines of Defence

In order to ensure adequate oversight, the Group utilises the generally accepted industry standard "Three lines of defence" approach to its risk management framework. The "Three lines of defence" approach creates clarity in regards to roles and responsibility related to risk ownership, oversight and the management of the Group's risks.

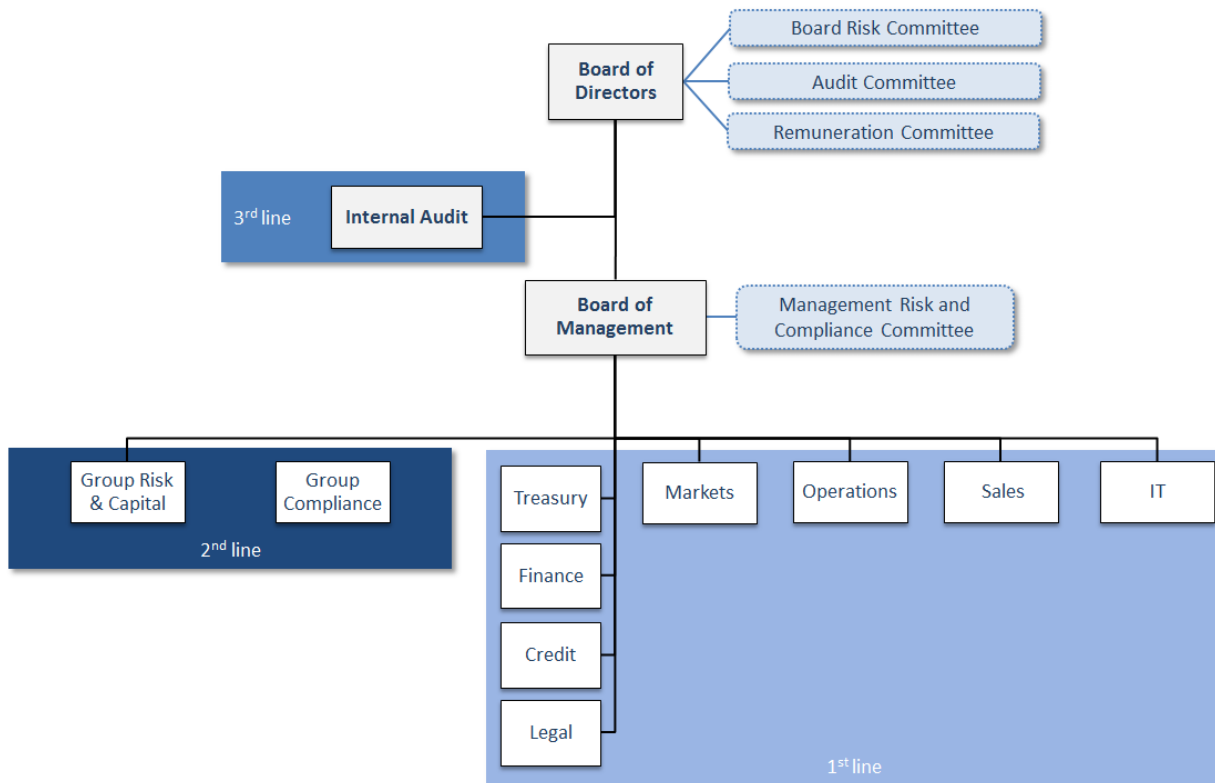
The first line of defence actively takes risks as part of the daily operations, and as risk owners they are responsible and accountable for the ongoing management of such risks. They make the primary risk-return trade-off decisions within the risk framework and limits determined and approved by the relevant executive bodies and governed by the second line of defence. The first line of defence is the Business Units and Group Treasury (in capacity of being owner of the Group's investment risks and structural financial risks).

The objective of the second line is to align Strategy, Risk appetite and Group Policy. The second line of defence shall design policies, provide oversight, guidance, review (and potentially approval when needed) along with advice, facilitation, and challenge to the first line in their risk management activities and risk-return considerations. Furthermore the second line shall introduce best practice and ensure compliance. Group Risk and Capital Management and Group Compliance constitute the second line of defence risk functions in the Group.

Third line of defence is Internal Audit. Third line of defence shall independently evaluate the adequacy and effectiveness of the governance, risk management and control processes that are implemented by first and second line of defence.

An organisational overview of the three lines of defence can be found the figure below.

**Figure 1: Three lines of defence**



### 4.3 Risk Committees

In order to strengthen the risk governance and to foster transparency, accountability and ownership of risk oversight and management, the Group has established the following committees:

**Table 2: External Executive Bodies**

<b>Governing Body</b>	<b>Members</b>	<b>Responsibilities, which are further detailed in the respective Committee charters:</b>	<b>No. of meetings in 2016</b>
Board Risk Committee	Henrik Normann (Chair) Asiff Hirji Lone Fønss Schrøder (appointed in March 2016)	<ul style="list-style-type: none"> <li>- Advise the Board of Directors regarding current and future risk appetite and risk strategy.</li> <li>- Assist the Board of Directors in overseeing the Board of Management's implementation of the strategy.</li> <li>- Provide recommendations and oversee the Risk Management functions.</li> <li>- Review incentive schemes pertaining to risk, capital and liquidity.</li> <li>- Prepare the Group's Risk Management Framework and Risk Appetite Statements for the Board of Directors' review and approval.</li> </ul>	6
Audit Committee	Thomas Plenborg (Chair) Lone Fønss Schrøder Jacob Polny	<ul style="list-style-type: none"> <li>- Supervise the preparation of financial statements.</li> <li>- Supervise and assess the effectiveness of the Group's internal controls, risk management and internal audit.</li> <li>- Supervise the statutory audit of the annual financial statements.</li> <li>- Supervise the Group's external auditors</li> </ul>	3
Remuneration Committee	Thomas Plenborg (Chair) Jacob Polny	<ul style="list-style-type: none"> <li>- Establish and review the overall remuneration philosophy of the Bank and approve guidelines for incentive programs</li> <li>- Review the compensation level of the Bank's employees</li> <li>- Review the list of Risk Takers</li> <li>- Review succession planning</li> </ul>	2

**Table 3: Internal Managerial Bodies**

<b>Governing Body</b>	<b>Members</b>	<b>Responsibilities, which are further detailed in the respective Committee charters:</b>	<b>Minimum Meeting Frequency</b>
Management Risk and Compliance Committee	GCRO (Chair) CEO COO CRO Head of Compliance CHRO CIO Global Head of Sales	<ul style="list-style-type: none"> <li>- Review the reporting on the risks engaged by the Group</li> <li>- Develop and update the Group's Risk Management Framework including governance, risk policies, the Risk Appetite Statements etc. to be presented to the Board of Directors for approval.</li> </ul>	Monthly
Client Risk Management Committee	CRO (Chair) Head of Markets Head of Market Risk Management Head of Financial Risk Deputy Head of Markets COO Sales Head of Markets GST Deputy CRO	<ul style="list-style-type: none"> <li>- Monitor and assess the aggregated client credit risk exposure profile, related critical risk issues, potential emerging risks, and initiate actions as appropriate (Risk Profile Review).</li> <li>- Support development, stakeholder coordination, decision making, alignment and prioritization of the Margin Trading Client Risk Management Framework</li> </ul>	Weekly
Information Security Risk Committee	CRO (Chair) Head of Operational Risk Management Principal Information Security- Manager Head of Enterprise Architecture Head of IT(SRC)	<ul style="list-style-type: none"> <li>- Establish targets for information and IT security governance and make principle decisions on methods for implementation, monitoring and enforcement.</li> <li>- Review and provide input on information security and IT security initiatives, including prioritising resources for maintenance and investments based on security analysis, business and risk requirements.</li> <li>- Coordinate information security activities across the Group's organisation.</li> <li>- Provide recommendations to the MRCC concerning the Group's stance on principle information security issues (not addressed in internal/external requirements)</li> </ul>	Quarterly

Operational Risk Committee	CRO (Chair) Head of Operational Risk Management Head of Finance, Head of HR Head of Legal Head of Compliance Senior Management Team members in Operations, Markets, Sales, and IT	<ul style="list-style-type: none"> <li>- Endorse operational risk management policies prior to them being endorsed by the Board of Management, Board Risk Committee, and approved by the Board of Directors.</li> <li>- Endorse risk identification and assessments and agree on the Group's key risks identified through the risk control and assessment process</li> <li>- Monitor the operational risk profile and material exposures to losses for the Group and subsidiaries and escalate as appropriate. The operational risk profile includes proactive and reactive measures performed by the business and support areas to mitigate operational risk.</li> <li>- Promote a sound risk culture and open discussion on operational risk matters throughout the Group.</li> <li>- Monitor and define the New Product and Services approval process</li> </ul>	Monthly
New Product & Services Committee	GCRO (Chair) CEO COO CRO Head of Compliance CHRO CIO Global Head of Sales Deputy CRO	<ul style="list-style-type: none"> <li>-The objective of the NPS Committee is to ensure a comprehensive, effective and prudent oversight of new Products and Services being manufactured and/or distributed by the Saxo Bank Group.</li> <li>-The role and responsibility of the NPS Committee is to review, challenge and provide input to the NPS Proposal along with other relevant project deliverables.</li> <li>-Assess and provide input during two stages of the product or service development process: Preliminary review and NPS approval.</li> </ul>	Quarterly
Outsourcing Committee	General Counsel / Head of Group Legal (Chair) CIO Global Head of Operations Head of Operational Risk CPO (Chief Procurement Officer) Deputy Head of Markets Head of White Label Product Head of Compliance	<ul style="list-style-type: none"> <li>-The Outsourcing Committee is responsible for reviewing all critical outsourcing agreements and pre-approving all outsourcing and 3rd party arrangements which affect 'critical' functions</li> <li>-Evaluation of outsourcing proposals received from Executive Sponsors or Service Delivery Managers and request any clarifications required.</li> </ul>	Quarterly

The Executive Team and/or CRO designate the members of internal managerial bodies, which shall be relevant employees within business units, support and second line of defence functions and further detailed within the respective committee charters. Though members bring knowledge from specific areas of the Group, members represent the entire Group when performing committee work.

#### 4.4 Risk Definitions

The Bank and the Group are exposed to a number of risks, which can be categorised as follows:

**General Credit risk:** The potential risk that a borrower or counterparty will fail to meet its obligations in accordance with agreed terms.

- **Counterparty Credit risk:** The risk that the counterparty to a derivative transaction could default before the final settlement of the transaction's cash flows.



- **Settlement risk:** The risk of a counterparty failing to deliver money or securities according to contractual terms at the time of settlement.

**Market risk:** The risk of loss in value as a result of changes in market rates and parameters that affect the market values, e.g. interest rates, credit spreads, FX rates, equity prices, commodity prices and option volatilities.

**Operational risk:** The risk of direct or indirect financial losses or damaged reputation due to failure attributable to technology, employees, procedures or external events. Operational risk includes legal, compliance risk, and model risk, but excludes strategic risk.

**Liquidity risk:** The risk that the Group's cost of funds rise to disproportionate levels or in worst case prevents the Group from continuing as a going concern under its current business model. Also, the risk that the Group does not have sufficient liquidity to fulfil its payment obligations as and when they fall due. Finally, the risk that the Group does not comply with regulatory liquidity requirements, e.g. Liquidity Coverage Ratio.

**Business risk:** The risk of a direct or an indirect loss, or damaged reputation as a result of changes in external circumstances or events.

The Board of Management and the Board of Directors are informed on the Group's risk profile, capital requirements and liquidity situation on a regular basis.

The Danish FSA receives reporting on the Bank's and the Group's capital requirements and liquidity situation on a regular basis and at least quarterly.

## 5 Capital Requirements and Capital Management

The purpose of the Group's capital management is to ensure that the Group has sufficient capital at all times to cover the risks profile adopted with its activities. The framework for the Group's capital management is rooted in the CRD IV Pillars I, II and III, and the primary capital management tool is the Group's Internal Capital Adequacy Assessment Process (ICAAP).

As of 31 December 2016, the Group's ICAAP showed a capital requirement of 12.9% of REA, equivalent to DKK 1,986 million including the combined buffer requirement of DKK 98 million. The Common Equity Tier 1 excess capital (including effects of trigger capital) was DKK 993 million corresponding to 6.4% of REA. Additional information is found in the Group's ICAAP report available at [www.home.saxo/about-us/investor-relations](http://www.home.saxo/about-us/investor-relations).

The Group is continuously monitoring the regulatory landscape and takes the potential capital effects into consideration when estimations are possible with a certain confidence and impact deemed relevant.

### 5.1 Total Capital

The Group's Total Capital is given by the Common Equity Tier 1 (CET1), Additional Tier 1 and Tier 2 capital calculated in accordance with CRR and takes into account Danish transition rules. At the end of 2016, Total Capital amounted to DKK 3,006 million.

The amounts recognised in the Total Capital are based on accounting values in accordance with the Danish Executive Order on financial reporting for credit institutions and investment companies. Reconciliation with the balance sheet can be found in the Additional Pillar III disclosure.

The Group redeemed a nominal amount of EUR 20 million Tier 2 (grandfathered) capital during December 2016. The redemption had no effect on the Total Capital due to transitional rules.

Additional own funds disclosures requirements, according to Commission Implementation Regulation No 1423/2013 laying down implementing technical standards with regard to disclosure of own funds requirements for institutions according to CRR are disclosed in the Additional Pillar III disclosure.

### 5.1.1 Common Equity Tier 1 Capital

The CET1 capital is calculated as shareholder's equity per accounting rules subject to certain deductions in accordance with CRR and the Danish Executive Order concerning transitional rules in accordance with CRR. Main deductions are listed below:

- Expected dividend
- Intangible assets, including goodwill
- Deferred tax assets
- Prudent valuation adjustment (AVA adjustment)

On Prudent valuation adjustments the Group has implemented the core approach model according to draft RTS issued by EBA. As the largest part of the fair value assets in the Trading Book are highly liquid, these only account for a very small part of the deduction, while illiquid assets such as unlisted equities account for the largest part.

### 5.1.2 Additional Tier 1 And Tier 2 Capital Instruments

The Group's Additional Tier 1 Capital amounted to DKK 335 million and Tier 2 Capital to DKK 369 million at the end of 2016.

The Group's issuance in 2014 of additional Tier 1 Capital includes a level (trigger level) at which a write-down of the additional Tier 1 would take effect. Likewise, the Tier 2 issuance in 2015 has a trigger level at which a conversion to equity is effectuated. Both instrument's trigger level is set at 7% CET1 ratio for both the Bank and the Group. Guidelines issued by the Danish FSA allow the Group to utilise any excess capital with a write-down or conversion trigger to cover the Pillar II add-on requirement. This allows the Group to free up some of the CET1 capital consequently increasing the excess CET1 capital.

Part of the Tier 2 capital instruments were issued under old regulations and are not CRR-compliant. At the end of 2016 the amount included in the capital was DKK 26 million. The capital inclusion is phased out over time and will be completely phased out during the third quarter of 2017.

Specifications of the capital instruments are disclosed in the Additional Pillar III disclosure.

### 5.1.3 Consolidation Methods

The Group's financial statement is consolidated in accordance with IFRS, while the prudential consolidation of the statement of capital is based on CRR. The Group's subsidiaries are fully owned and fully consolidated under CRR with exception of Saxo Privatbank and Saxo Payments.

Saxo Privatbank's external capital is consolidated according to CCR rules on capital consolidation. Saxo Payments' minority is not consolidated as it is not eligible according to CRR.

More information regarding the consolidation methods for accounting purposes can be found in the Group's Annual Report 2016 available at [www.home.saxo/about-us/investor-relations](http://www.home.saxo/about-us/investor-relations).

## 5.2 Capital Planning

The goal of the capital planning is to ensure that the Group always has enough capital to meet its capital requirements and support its risk profile and strategic aims. For this, it takes into consideration both short-term and long-term effects of changes to the risk profile. As such, the Group's capital plan includes expectations to regulations, strategic initiatives and any other potential major changes to the risk profile, and thereby the future solvency needs.

The capital plan is revisited on quarterly basis, or upon need, to ensure that the Group's projected capital adequacy is up-to-date.

## 5.3 Minimum Capital Requirement

The CRR regulation's Pillar I minimum capital requirement is set as 8% of the Risk Exposure Amounts (REA), calculated in accordance with the standard methods. The Group's applied methodologies to calculate REA concerning Market Risk, Credit Risk and Operational Risk are found in section 6 to 10.

Table 4: Risk Exposure Amounts

Risk Exposure Amounts, end-of-year (DKK millions)	2016
Credit Risk	6,476
Market Risk	3,837
Operational Risk	5,137
Total Risk Exposure Amounts	15,450

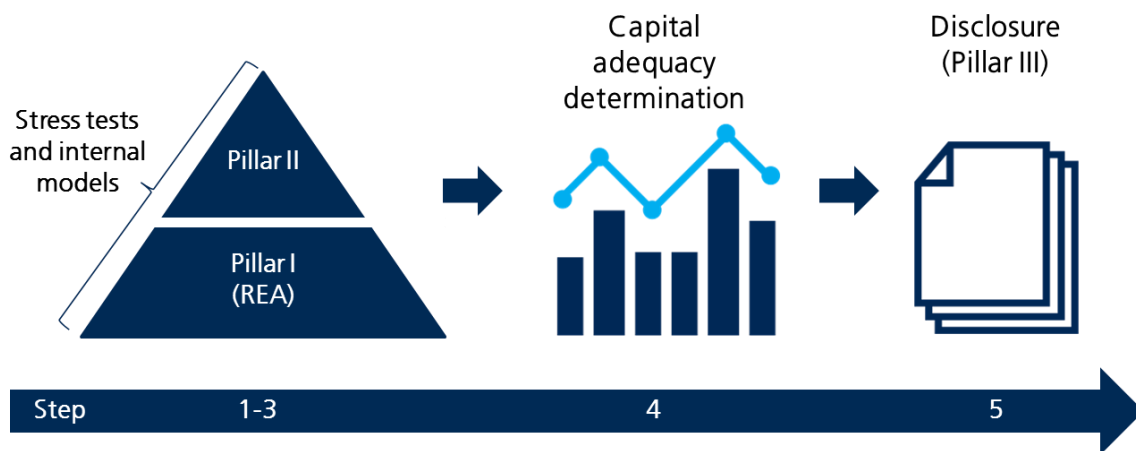
## 5.4 ICAAP

The calculation of the ICAAP is based on an internal process in which the Board of Management, supported by Group Risk & Capital Management (GRCM), assesses the Group's risks. A full ICAAP is performed when required, but at least once a year. Capital adequacy levels are assessed and approved by the Board of Directors on a quarterly basis. The Capital adequacy levels are reported to the Danish FSA on a quarterly basis.

Group Risk & Capital Management is responsible for the preparation of the ICAAP Report, by collecting, simulating and aggregating relevant information from stakeholders and experts across all business units in the Group. The ICAAP follows the following five steps:

- Step 1. Minimum capital requirement (Pillar I)
- Step 2. Internal assessment of whether additional capital requirements are needed above and over Pillar I using quantitative approaches and/or management judgement (Pillar II)
- Step 3. Capital requirement adequacy testing through internal models, stress testing and scenario analysis; if steps 1-2 are found underestimating risks then step 2 is revisited (Pillar II)
- Step 4. Capital adequacy determination based on the three previous steps (Pillar II)
- Step 5. Disclosure (Pillar III)

**Figure 2: Assessments and Disclosure Elements In The ICAAP**



Part of the ICAAP is identifying the risks associated with the activities of the Group. The primary business activity of the Group is facilitating online trading in financial instruments. In addition, the Group has retail banking activities in Denmark. The activities are further described below.

- Online trading, investment and other investment services within capital markets to private, corporate institutional clients including white label clients. These activities are driven through Saxo Bank A/S and a number of subsidiaries in 18 countries.

- Retail banking services in Denmark are offered to retail and small and medium sized corporates through the subsidiary Saxo Privatbank A/S. Saxo Privatbank A/S activities also include professional portfolio management to the same client segments.

The above mentioned activities involve different types of risk and concern different risk categories as shown below.

**Table 5: Overview of activities and risk relation**

Activities/Risk categories	Credit Risk	Market Risk	Operational Risk	Business Risk	Liquidity Risk	Leverage Risk
Trading activities	√	√	√	√	√	√
Retail Banking activities	√	√	√	√	√	√

According to Danish legislation, a number of risk types must be assessed by the Group. The risk types are shown below and distributed across relevant risk categories.

**Table 6: Decomposition of Risk Types into Risk Categories**

Risk Types/Risk categories	Credit Risk	Market Risk	Operational Risk	Business Risk	Liquidity Risk	Leverage Risk
General	√	√	√	√	√	√
Earnings				√		
Growth				√		
Credit risk	√					
Market risk		√				
Concentration risk	√	√		√		
Group risks	√	√	√	√	√	√
Liquidity risk					√	
Leverage risk						√
Operational risk			√			
Control risk			√			
Business size				√		
Settlement risk	√		√			
Strategic risk				√		
Reputational risk			√	√		
Non-trading interest rate risk		√				
External risk	√		√	√	√	√
Other conditions	√			√		
Stress testing	√	√	√	√	√	

#### 5.4.1 Internal Assessed Capital Requirement

The internal set level of capital needed reflects the Group's assessment of its capital requirement. The purpose of the internal assessment is to identify and incorporate risks not covered by Pillar I or found to not being conservative enough.

Assessment is initiated by identifying the relevant risk-areas and exposures in the Group not covered by the minimum capital requirement. The risks are categorised into the ICAAP categories as shown in Table 7. For each identified risk, it is assessed by the Group whether the risk is covered by Pillar I and, if so, whether it is sufficiently conservative. It is based on internal, quantitative approaches and, if relevant, internal expert input and management judgements.

**Table 7: Overview of Pillar II and capital requirement adequacy testing methods**

	Risk category	Internal assessment method	Capital requirement adequacy testing
Pillar I and internal assessment	• Market	• Internal model • Standard approach for interest rate risk on the banking book	• Stress testing
	• Credit	• Internal models • Standard approach	• Stress testing
	• Operational	• Internal expert input	• Internal model • Stress testing
Internal assessment	• Liquidity	• Standard approach	
	• Leverage	• Standard approach	
	• Business	• Internal model	• Stress testing

#### 5.4.2 Scenario Based Capital Requirement Adequacy Testing

The ICAAP stress testing ensures that the assessed adequate capital level for the Group is sufficient to withstand unlikely, but not impossible, stress scenarios. Furthermore, internal models test whether the capital requirement is conservative enough.

A number of stress scenarios have been outlined in the various single risk areas. Furthermore, a stress scenario has been implemented to create a very severe and highly unlikely stress-scenario. Where it is applicable, mitigating measures, like contingency plans and insurance coverage, are applied. The Group also conducts an income sensitivity analysis to ensure that business risks are covered adequately in the budgeted income.

As of 31 December 2016 the test results and internal models did not result in an additional capital requirement.

#### 5.5 Additional Capital Buffer Requirements

According to CRD IV the Group is required to hold capital for buffers in addition to the Pillar I and Pillar II requirement. The two relevant buffers form the combined buffer for the Group and consist of a capital conservation buffer and a countercyclical capital buffer, commonly referred to as the Combined Buffers. The capital conservation is designed to absorb losses and conserve capital outside a period of stress. The countercyclical capital buffer is designed to ensure that financial institutions in times of high economic growth will accumulate sufficient capital to enable it to continue being a stable source of credit in a subsequent downturn. If the Group does not meet the buffer-criteria, restrictions will be placed on the Group's ability to pay out dividends until the buffers are rebuilt.



The countercyclical capital buffer rate is calculated as the weighted average of the countercyclical buffer rates set by jurisdictions of where the relevant credit exposures are located. The weight for each jurisdiction's set capital buffer is given by the credit exposure (including trading book) to the jurisdiction divided by the total credit exposure across jurisdictions. As of 31 December 2016, the countercyclical buffer requirement for the Group is immaterial to the Group. The level of the countercyclical buffer is disclosed in the Additional Pillar III disclosure.

The capital conservation buffer phased-in started in 2016 with the first annual 0.625% of REA increment and will reach 2.5% in 2019. The Group meets the fully phased in requirement of 2.5% (applicable from 2019) with the Group's current capital-level.

## 6 Credit Risk

The Board of Directors has defined the Group Credit Risk Policy, and articulated the Group's credit risk appetite and approved specific limits for the Group's largest clients and counterparties as well as industry sector limits. The Group Credit Policy, Risk Appetite Statements and the limits are reviewed when necessary and at least once a year.

The Board of Directors at Saxo Bank A/S has issued a credit granting authority to the Board of Management at Saxo Bank A/S. Based on a water fall principle the Board of Management has reallocated this authority to the Head of Group Credit and specific subsidiaries within the Saxo Bank Group.

### 6.1 Credit Policy

An integral part of the Group Credit Policy is the credit culture. To support a strong credit culture the Group has established:

- An integrated credit risk management framework
- A credit authority framework with clear delegation of approval authority
- Clear separation of the credit function from the business function and other monitoring functions
- A diversified approach to avoid concentration risk

Collateral requirements act as the primary credit loss buffer. The requirements have been calibrated in such a way that the Group should not incur losses under normal and also more volatile conditions. The investment activity will be terminated before the client's loss exceeds the current cash/collateral posted by the client.

Credit risk is assumed when clients are granted credit lines reflecting deviations from standard terms and conditions. In order to extend a credit, it is a requirement that the Group is able to conduct a thorough financial assessment and evaluation of the client. Clients who are not able or willing to provide this kind of information are outside the group credit policy.

The Group offers a number of different types of lines:

- Trading line: Line to cover deviations from standard margin requirements. The line acts as a replacement or supplement to collateral
- Credit Line: Line to cover for net realised and unrealised losses from client's trading activities
- Settlement line: Line to cover the potential loss the Group may incur if clients default during the settlement period of securities and foreign exchange transactions

- Line granted to financial counterparts: Line to cover credit risk towards brokers and in the Group's trading book.

Due to the nature of the financial products offered and the leverage possibility on the Group's online trading platform, collateral is requested by the Group to allow clients to engage in margin trading. Cash, bonds and equities are the main sources of collateral pledged. It is a requirement that the types of collateral can be valued and haircuts are applied when assessing the collateral value.

## **6.2 Credit Exposure Management**

Clients are monitored and managed on the basis of the total credit exposure to a client and mutually connected clients adding up all utilized and unutilized credit risk exposure. Lines are granted on the basis of a credit application and subsequent credit risk assessment.

Clients are evaluated on a number of factors ending with an assessed probability of default rated on a scale from 1 – 9 where a rating of 7 is considered a weak client requiring special attention. Clients with a rating of 8 are considered distressed clients and clients with a rating of 9 are in default or potentially in default. Clients rated 8 or 9 are subject to specific and comprehensive attention requiring an action plan to either recover the client or wind down the business relationship.

Clients are monitored on an ongoing basis and lines are subject to a minimum yearly risk reassessment. In order to avoid risk concentration the Group does not just comply with CRR requirements but have implemented internal risk appetite limits towards types of clients as well as overall portfolio limits.

## **6.3 Impairments**

If objective evidence of impairment of a loan, an advance or amount receivable exists the Group determines the impairment charge individually. Loans, advances and amounts due covering weak clients are tested individually for impairment at the end of each reporting period.

The impairment charge equals the difference between the carrying amount and the present value of the expected future cash flows from the loan including realization value of any collateral. The impairment charge is adjusted if the present value of the expected future cash flows is changed subsequently.

Clients incurring potential losses related to trading activities are impaired automatically based on client specific key figures. The impairments are calculated at the end of each reporting period.

Loans and advances (Traditional retail banking services) without objective evidence of impairment are included in an assessment of collective impairment on a portfolio basis. Collective impairment is calculated for portfolios of loans and advances with similar credit characteristics.

## 6.4 Credit Risk Mitigation

The Group uses the Financial Collateral Comprehensive Method, art. 198 in CRR, to calculate the effects of credit risk mitigation. Under the Financial Collateral Comprehensive Method collateral values are adjusted for currency and volatility mismatch with haircuts set out in CRR.

## 6.5 External Credit Rating Agencies (ECAI)

The Group has nominated Fitch Ratings Ltd. as an ECAI for the exposure class institutions. The Group is not rated by a Credit Rating Agency.

Table 8: ECAI mapping for institutions

Credit Quality Step	Fitch Rating	Risk Weight
1	AAA to AA-	20%
2	A+ to A-	50%
3	BBB+ to BBB-	50%
4	BB+ to BB-	100%
5	B+ to B-	100%
6	CCC+ and below	150%

## 6.6 Counterparty Credit Risk

Counterparty credit risk (CCR) is the risk that the counterparty to a derivative transaction defaults before the final settlement of the transaction (i.e. pre-settlement risk), and that the counterparty will not be able to repay amounts outstanding and interest owed to the Group.

CCR against the Bank's brokers is handled via the exchange of Variation Margin (VM) which is posted bilaterally on a daily basis using cash transfer via Credit Support Annex (CSA)-accounts. Initial Margin (IM) is also posted with the brokers when e.g. opening positions with them. The posting of Initial Margin is handled via a tri-party setup at a custodian by pledging securities (government or Danish mortgage bonds) as collateral instead of an outright transfer.

In the regulatory calculation of Counterparty Credit Risk the Group applies the Mark-to-Market Method (MtM method) in art. 274 in CRR. The Group will shift to the new Standardised Approach for Measuring Counterparty Credit Risk following the implementation of the revised CRR.

## **6.6.1 Market Price Gaps**

Counterparty Credit Risk for clients particularly occur when negative market values on derivatives positions exceed that of the pledged collateral from the client to the Bank. During so-called market price gaps where liquidity is withdrawn from the market and positions can't be closed, the Bank may particularly experience losses as a result of clients' negative market value positions. The Bank has directed considerable effort to contain the risks associated with market price gap.

The Board of Directors has set both attention levels as well as limits for uncollateralised client credit exposures at market price gaps scenarios. Furthermore, the Group has several measures for mitigating risks associated with margin trading including (but not limited to) monitoring clients positions and setting collateral hair-cuts.

Despite large macro events such as Brexit and the US Presidential Election, the Bank has not experienced any significant losses from market price gaps during 2016, even considering several major gaps such as US Presidential Election, Brexit and the October 7 Sterling flash crash.

## **6.6.2 Counterparty Credit Risk: Mitigating Effect**

In order to mitigate CCR the Group enters into contractual netting agreements. For smaller counterparties the general business terms act as the primary contractual mitigation allowing the Group to perform contractual close out netting and collateral risk mitigation in the event of a counterparty default.

For larger corporate and financial clients more detailed and customised corporate- or institutional trading agreements are agreed upon. In many cases these include ISDA master agreements with CSA agreements.

## **6.7 Other Credit Risks**

### **6.7.1 Wrong-way Risk**

General wrong-way risk is defined as a positive correlation between the probability of default of a counterparty and general market risk factors. General wrong-way risk is mitigated by monitoring and disallowing too high correlation between counterparty collateral and exposure. For instance, counterparties cannot pledge collateral and trade in the same underlying risk factor.

Special wrong-way risk is defined as positive correlation between the probability of default of a counterparty and the future exposure of the counterparty. The Group does not have any appetite for specific wrong-way risk and does not accept collateral issued by the posting company.

## 6.7.2 Settlement Risk

Settlement risk giving rise to credit risk is the risk of a counterparty failing to deliver money or securities according to contractual terms at the time of settlement. Settlement risk occurs if money or securities are transferred before the corresponding asset has been received.

To reduce settlement risk in foreign exchange transactions, the Group has entered into settlement agreements with the Group's prime brokers. In securities trading, the settlement risk is mitigated by delivery versus payment settlement and contractual settlement agreements.

## 6.7.3 Equity Risk Outside the Trading Book

Equities outside the Trading Book are valued at fair value, with a value adjustment in the Total Capital. These equity exposures are primarily related to stocks in the Danish banking-infrastructure. Investment securities are measured according to the equity method.

It is not a part of the Group's strategy to increase investment in this type of assets. The balance sheet value is risk weighted with 100%-150% in the Risk Exposure Amounts for credit risk.

**Table 9: Exposures to equities included in the Banking Book**

DKK thousands	Balance sheet value
<i>Unlisted equities:</i>	
Investment securities	36,890
Total	36,890

## 6.7.4 Credit Risk From Traditional Banking Services in Saxo Privatbank

Traditional banking services cover loans, overdraft facilities, business credits, construction and housing credits, guarantees etc. These services are provided through the subsidiary Saxo Privatbank A/S. The granting of a credit is based on the Credit Policy described above.

For further info on Credit Risk concerning Saxo Privatbank see the Risk Report 2016 for Saxo Privatbank.

# 7 Market Risk

The Group's market risks can be grouped into the following three main categories:

1. Trading market risk exposures relating to the Market Making of Saxo Markets supporting the Group's online trading and investment services.
2. Investments/liquidity buffer related market risk exposures in Group Treasury.
3. Structural market risk exposures in the Group's balance sheet.

## 7.1 Market Risk Policy

The Board of Directors has defined the overall Group Market Risk Policy, articulated the Group's market risk appetite and set limits for the different types of market risk. Based on this, market risk limits are delegated to the organisation, i.e. Saxo Markets and Group Treasury. Market risk exposures are monitored by the Group Risk & Capital Management-department, and the limit utilisation is reported to all governing levels of the Group, including the Board of Directors on a regular basis.

The overall Board policies and limits are supplemented by sub policies, business procedures, work instructions and more detailed risk limits.

The Group Market Risk Policy, the Market Risk Appetite Statements and the limits are reviewed as often as needed and as a minimum once a year.

## 7.2 Market Risk Exposure Methods

In order to calculate the minimum capital requirements, Pillar I, the Bank and the Group apply the following methodology in accordance with CRR to calculate the Risk Exposure Amounts for market risk.

### Market Risk: Standard Methods<sup>3</sup>,

- Equity Price Risk: The Standardised Approach<sup>4</sup>
- Currency Risk: The Standardised Approach<sup>5</sup>
- Interest Rate Risk: The Standardised Approach<sup>6</sup>,
- Option Risk, non-delta (gamma, vega): The Scenario Approach<sup>7</sup>
- Commodity Risk: The Maturity Ladder Method<sup>8</sup>

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3 Title IV in CRR

4 Title IV, section 3 in CRR (art. 341-344)

5 Title IV, chapter 3 in CRR (art.351-356)

6 Title IV, section 2 in CRR, hereof duration-based calculation of general risk according to article 340 in CRR (art. 334-339, 340)

7 COMMISSION DELEGATED REGULATION (EU) No 528/2014 of 12 March 2014 supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards for non-delta risk of options in the standardised market risk approach and the following issued corrigendum. (art. 329)

The Risk Exposure Amounts related to market risk consist of:

- Interest rate risk regarding positions in the Trading Book
- Equity price risk regarding positions in the Trading Book
- Commodity risk regarding all commodity positions excluding gold positions
- Foreign-exchange risk regarding all foreign-exchange positions including gold positions

The Group's interest rate risk and equity price risk in the Banking Book is disclosed in section 9.4.

### 7.3 Market Risk Exposure Amounts

Exposures to various types of market risk for the Bank and the Group end of 2016 are disclosed below as well as the minimum capital requirements corresponding to 8% of the Risk Exposure Amounts.

According to regulatory requirements the Market Risk Exposure Amounts for each risk category shall be aggregated to a total exposure amount. Hence any diversification effects between the risk categories are disregarded.

Table 8 presents the Risk Exposure Amounts and the minimum capital requirement corresponding to 8% of the Risk Exposure Amounts for market risk as per end of 2016.

**Table 10: Risk Exposure Amounts**

DKK thousands Risk Category	Saxo Bank Group	
	Risk Exposure Amount	Minimum Capital requirement
Foreign Exchange Risk	902,108	72,169
<i>hereof non-delta risk</i>	369,062	29,525
Interest Rate Risk	2,753,917	220,313
<i>hereof specific Interest Rate Risk</i>	815,141	65,211
Equity Risk	55,410	4,433
<i>hereof specific Equity Risk</i>	17,286	1,383
<i>hereof exposure in CIU's</i>	1,890	151
Commodity Risk	125,915	10,073
<i>hereof non-delta risk</i>	0	0

### 7.4 Interest Rate Risk



The Group's interest rate risk in the Trading and Banking book is determined by the standard interest rate risk measure modified duration, i.e. change of market value when the yield is changed by a certain percentage. The Group applies a +100 bps change of the yield curves. The Group uses duration computed by a model for the portfolio of convertible Danish Mortgage Backed Securities in order to take the probability of prepayments into account.

Any negative interest rate risk is netted with positive interest rate risk when calculating the net interest rate risk and amounts expressed in foreign currencies is converted into DKK.

In the figure shown below the development of Group's net interest rate risk divided into instrument type and currency is shown.

**Table 11: Net Interest Risk Distribution**

DKK thousands	Net Interest Risk
<b>By instrument type</b>	
Bonds	135,562
Financial Derivatives	13,503
Banking Book	-35,087
<b>Total</b>	<b>113,978</b>
<b>By currency</b>	
DKK	62,241
USD	35,683
EUR	15,275
GBP	2,139
Other currencies	-1,360
<b>Total</b>	<b>113,978</b>

The Group is primarily exposed towards DKK, EUR and USD denominated bonds. A breakdown of the Group's bond portfolio shows that 46% of the Groups exposure is derived by Government bonds, 52% from Danish MBS and 2% from Corporate bonds.

**Table 12: Bond portfolio composition**

	DKK millions			Percentage		
	Government Bonds	Danish MBS	Corporate Bonds	Government Bonds	Danish MBS	Corporate Bonds
AAA	1,186	6,215	0	5%	25%	0%
AA+	5,887	6,845	0	23%	27%	0%
AA	1,952	0	0	8%	0%	0%
A	0	0	218	0%	0%	1%
A-	0	0	353	0%	0%	1%
BBB+	1,489	0	0	6%	0%	0%
BBB-	968	0	0	4%	0%	0%
<b>Total</b>	<b>11,481</b>	<b>13,060</b>	<b>571</b>	<b>46%</b>	<b>52%</b>	<b>2%</b>

## 7.5 Interest Rate Risk in the Banking Book

On Group level the interest rate risk in the Banking Book comes from: The subsidiary Saxo Privatbank, a loan which is financing the headquarters' domicile and an interest rate swap used to fix the interest on this loan, and issued subordinated debt.

The total interest rate position in the Banking Book is a net short position in both the Bank and the Group.

**Table 13: Exposures in interest rate risk included in the Banking Book**

DKK thousands	Saxo Bank Group
<b>Exposures in the Banking Book</b>	<b>1,536,446</b>
EUR	530,587
DKK	1,005,859
<b>Interest rate risk</b>	<b>35,087</b>
EUR	10,232
DKK	24,855

## 7.6 Credit Valuation Adjustment (CVA)

The Group applies the standardised method for calculating the portfolio own funds requirements of CVA risk. As of 31 December 2016 the CVA risk in the Group amounted to DKK 464 million in Risk Exposure Amounts and DKK 37 million in minimum capital requirement.

## 8 Operational Risk

Operational risk is defined as the risk of direct or indirect financial losses or damaged reputation due to failure attributable to technology, employees, procedures or external events. The definition includes legal, compliance risk, and model risk, but excludes strategic risk.

Operational risk is inherent in all activities within the organisation, in outsourced activities and in all interactions with external parties.

The Board of Directors has defined the Group Operational Risk Policy, covering also Information Security Risk, Business Continuity, and the Group's Insurance policies and articulated the Group's operational risk appetite. The Policy and Risk Appetite Statements are reviewed as often as needed and as a minimum once a year.

The overall objective of the operational risk management framework is to define standards, tools and processes to support the organisation in proactively identifying, assessing, monitoring and managing/mitigating operational risks. Operational risks are not desired risks and we seek to proactively and reactively mitigate such risks in adherence with the Group's risk appetite and risk management efforts are aligned with the Group's risk culture objectives.

To support the desired risk culture, the Group emphasises having a clear governance structure assigning precise roles and responsibilities for the conduct of business and employees including management of risks in the Group, adherence to applicable company policies and business procedures, and risk training, risk awareness, and incentives programmes.

Operational risks are identified and assessed through regular self-assessment processes, at least annually, to assess the quality of internal controls, ensure that all material operational risks inherent in the Group's products, activities, processes and systems are captured and reassessed in a systematic and timely manner and identify areas for improvements. Moreover, all material changes in the Group's products, activities, processes and systems are subject to a formal, internal risk assessment and approval processes. Particular focus is placed on the understanding of the Group's resilience to operational risk exposures with a low likelihood of occurrence yet can have a severe impact on the business.

The Group strives to obtain maximum learning from materialized operational events and observed near misses. Operational events and near misses that are equal to or higher than DKK 15 thousand, arising from operational risk incidents are collected and registered in the Group's error register. Risk assessments and root cause analysis are performed to effectively address and provide future mitigants to material operational risk events.

## 8.1 Capital Requirement Concerning Operational Risk (Pillar I and II)

The Group uses the Basic Indicator Approach, cf. CRR art. 315, to calculate the Risk Exposure Amounts for operational risks (Pillar I). Under the Basic Indicator Approach, the Risk Exposure Amounts for operational risk is calculated as 1.875% of the average over three years of the sum of following accounting related items:

- Net interest, fees and commissions
- Price and exchange rate adjustments
- Other income

The three-year average is calculated on the basis of the figures from the last three annual reports. The calculation of the basic indicator throughout 2016 consists of accounts from the financial statement 2013-2015.

The Bank expects the forthcoming capital regulation to include changes in the above model used by the Bank.

**Table 14: REA concerning Operational Risk for Saxo Bank Group**

DKK millions	Saxo Bank Group Q4 2016
Risk Exposure Amount	5,137
Capital Requirements	411

Furthermore, the Group applies a self-assessment which includes a systematic evaluation of risk events in terms of likelihood and impact based on expected loss frequency and expected loss on average. Each risk event is evaluated in light of implemented mitigating measures/controls. Control failures, where applicable, are captured and evaluated. In addition, the Group determines the extreme loss (the highest loss that the actual event could have resulted in) for each event, given worst-case operating conditions.

To determine the Group's Pillar II capital requirements due to operational risk, the content of the risk register with insurance effect is used as input to the calculations. The calculation is based on Monte Carlo simulation which is used to generate random loss scenarios based on assessed probabilities and impact. The result is a loss distribution, which forms the basis for the determination of expected loss, Value-at-Risk and expected shortfall with a one year time horizon. Assumptions are made on confidence levels as well as on the correlation between the various events. Risk events are assessed and evaluated in cooperation with internal parties through workshops.

## 8.2 Management and Mitigation of Operational Risks

The Group uses mainly three methods to manage and mitigate risks:

**Controls:** Appropriate internal controls are designed and implemented to ensure that operational risks are mitigated to within risk appetite.

**Insurance coverage:** Insurance coverage is used for protection against unexpected and substantial unforeseeable losses to ensure that key risks related to conducting the business and the Group's key tangible assets and employees are covered and safeguarded effectively and sufficiently.

**Contingency plan:** The Group's contingency plan establishes the processes and procedures necessary to ensure that all business critical processes, services, and personnel remain operational at an acceptable level in the event of a severe disruptive event.

Furthermore the Group Operational Risk is governed through a number of committees and policies, as a part of the Risk and Management Governance and Framework of the Group. For more details see Section 4.

### **8.3 Reporting**

The Group's operational risk profile is monitored on a regular basis, and reported to the Board of Directors and the Management's Risk Committee at least quarterly and without delay whenever the situation dictates so. Moreover, operational risk events with a direct or indirect loss exceeding DKK 300 thousand must be reported to the Management's Risk & Compliance Committee and if exceeding DKK 10 million also reported to the Board of Directors.

## 9 Leverage Risk

The Group is required to report and monitor its leverage ratio (LR). The leverage ratio is a simple non-risk adjusted capital measure, defined as Tier 1 capital as a percentage of the total non-risk weighted exposures. The ratio is intended to prevent credit institutions from building up excessive leverage. It is expected that a 3% LR measure will be imposed with the revised CRR.

As of 31 December 2016 the leverage ratio based on using the fully phased-in definition of Tier 1 capital is 5.9% for the Group. The Leverage ratio has declined marginally during 2016 as a result of growth in assets however also balanced by higher Tier 1 capital.

The Group's monitoring of the leverage ratio is done as part of the ICAAP. The Group's buffer to the expected leverage ratio requirement, and the monitoring of the leverage ratio, ensures that excessive leverage in the Group is not build up.

More details on the Group's leverage ratio can be found in the Additional Pillar III disclosure.

# 10 Liquidity Risk

Liquidity Risk is defined as the risk of not having sufficient liquidity to fulfil payments and obligations when these fall due, the risk of the funding cost rising to disproportionate levels or the risk of breaching regulatory liquidity requirements.

## 10.1 Liquidity Risk Policy

The Board of Directors has defined the Group's Liquidity Policy and articulated the Group's liquidity risk appetite as well as set a number of specific liquidity risk limits. The Policy, the Risk Appetite statements and the limits are reviewed as often as needed and as a minimum once a year.

The Group has low appetite for liquidity risk, and the overall objective is to ensure that the Group at all times has a strong liquidity position with a prudent margin to the regulatory minimum requirements.

Liquidity risk limits are delegated to Group Treasury, which is responsible for managing the Group's liquidity globally.

The Management's Risk & Compliance Committee oversees the Group's liquidity risk on the basis of reporting and analysis performed by Group Risk and Capital Management.

## 10.2 Liquidity Risk Management

Managing liquidity in the Group's daily liquidity means receiving liquidity on OTC-products from multiple liquidity providers and liquidity for listed products through various exchanges. Market values (variation margin) are exchanged on a daily basis with prime brokers and initial margin, covering opening positions, is posted to prime brokers. Initial Margin-requirements are pledged with bonds held at a third party custodian. According to the Risk Appetite Statement liquidity must mainly be invested in securities that are defined as High Quality Liquid Assets in the Liquidity Coverage Ratio (LCR) regulation and that qualify as Eligible Credit Support under ISDA-agreements.

The Group has implemented stress testing of the Group's liquidity based on the LCR-requirement. The defined stress scenarios capture both liquidity impact from external market related events, as well as events related specifically to the Group. Furthermore, stress scenarios using a combination of both market related and bank-specific incidents are also performed. The liquidity buffer is stress tested on different time horizons, meaning both short term, medium term and long term effects are measured in the applied stress scenarios. The stress tests are performed at least on a monthly basis.

The Group has a Liquidity Contingency Plan in place which describes measures available to improve the liquidity under stressed conditions and ways to restore to normal state of business in the event of a crisis. The Liquidity Contingency Plan identifies events that may trigger a liquidity crisis and outlines scenarios in which the plan may be activated.

### 10.3 Regulatory Liquidity Risk Measures

CRR requires the Group to monitor and report a short term Liquidity Coverage Ratio (LCR). In Denmark the LCR is gradually phased in as a new minimum liquidity requirement. Initially, the requirement was set at 70% in 2016, 80% in 2017 and 100% in 2018. As of 31 December 2016, the Group reported an LCR ratio of 160% (2015: 105%), thereby comfortably fulfilling the current regulatory LCR requirement. During 2016 the Group has improved its structural LCR by growth in the depositor base and HQLA and by improving the LCR calculation via e.g. enhanced customer classification leading to a lower net outflow.

**Table 15: HQLA - Saxo Bank Group**

DKK thousands	2016
<b>HQLA</b>	16,873,230
Total Outflow	23,592,381
<i>Of which</i>	
Retail deposits	1,608,790
Non-operational deposits	14,322,681
Additional outflow	7,500,882
Other	160,028
Total Inflow	13,024,176
<b>LCR-ratio</b>	<b>160%</b>

The Group is required to hold liquidity at least equal to the current Internal Liquidity Adequacy Assessment Process (ILAAP) level as determined by the Board of Directors. The ILAAP is performed yearly based on guidelines issued by the Danish FSA. The Group operates with a liquidity buffer available at all times in the form of unencumbered, highly liquid securities and cash instruments to address the estimated potential cash needs during a liquidity crisis.

In the ILAAP per end of 2016, it is concluded, that the Group has a safe operational setup within the liquidity area and that the current level of liquidity is sufficient to uphold the operation and to meet a prudent requirement under the LCR regime.

In addition to the LCR requirement, the Group complies with the section 152 requirements of the Danish Financial Business Act as well as with the liquidity requirement of the Supervisory Diamond.



The fulfilment of current Danish liquidity requirement is published in the Supervisory Diamond 2016 report available at [www.home.saxo/about-us/investor-relations](http://www.home.saxo/about-us/investor-relations).

#### **10.4 Additional Liquidity Regulation**

CRR also requires the Group to monitor and report a long-term Net Stable Funding Ratio (NSFR).

The scope of the NSFR is to ensure that banks have an appropriate amount of stable funding to support their assets and activities on a longer term (i.e. a one-year period). NSFR is planned to be a 100% requirement from 2018, but the exact timing will be decided by the EU based on recommendations from EBA.

The Group's NSFR is relatively simple given the range of business activities is centered on derivatives- cash trading, as well as the limited amount of retail banking activities in SPB. The main components requiring stable funding (RSF) are trading assets, derivatives assets, intangible assets and a small residual category of "other assets". The main components supplying available stable funding (ASF) are own funds, corporate- and retail deposits (as short-term financial deposits are not considered stable funding). The strong ratio reflects that Saxo Bank does not use short-term funding to long-term obligations.

#### **10.5 Internal Assessment of the Capital Need Concerning Liquidity Risks**

In order to determine the capital requirement from liquidity risks, the Group conducts stress tests based on unlikely, but not impossible events, with an adverse effect on the Group's liquidity.

The capital requirement from the liquidity risk is determined as the funding cost to raise liquidity, in order to cover the potential liquidity gap identified, using the stress tests.

# 11 Asset Encumbrance

The Group's main business activity includes derivatives trading, which requires posting collateral to cover margin requirements. Accordingly, the Group's asset encumbrance originates mostly from bonds and cash placed as collateral to cover margin requirements from financial counterparts and brokers.

End of December 2016, 11.2% of the total balance sheet was encumbered. The level of encumbrance has fallen over the year due to a relatively higher rise in assets compared to the level of encumbrance.

A large portion of the Bank's balance sheet is unencumbered and is eligible for repurchase-transactions with e.g. the Danish Central Bank.

Additional information on Asset Encumbrance in the Group can be found in the Additional Pillar III Disclosure.