

HSBC HOLDINGS PLC  
Form 6-K  
March 26, 2014

FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Report of Foreign Private Issuer

Pursuant to Rule 13a - 16 or 15d - 16 of

the Securities Exchange Act of 1934

For the month of March  
HSBC Holdings plc

42nd Floor, 8 Canada Square, London E14 5HQ, England

(Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F).

Form 20-F  Form 40-F

(Indicate by check mark whether the registrant by furnishing the information contained in this Form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934).

Yes.....  No

(If "Yes" is marked, indicate below the file number assigned to the registrant in connection with Rule 12g3-2(b): 82-.....).

Appendix to Risk  
Risk policies and practices

This appendix describes the significant policies and practices employed by HSBC in managing our credit risk, liquidity and funding, market risk, operational risk (including compliance risk, legal risk and fiduciary risk), insurance

risk, reputational risk, pension risk and sustainability risk.

Risk governance  
(Unaudited)

Our strong risk governance reflects the importance placed by the Board and the Group Risk Committee ('GRC') on shaping the Group's risk strategy and managing risks effectively. It is supported by a clear policy framework of risk ownership, a risk appetite process through which the types and levels of risk that we are prepared to accept in executing our strategy are articulated and monitored, performance scorecards cascaded from the Group Management Board ('GMB') that align business and risk objectives, and the accountability of all staff for identifying, assessing and managing risks within the scope of their assigned responsibilities. This personal accountability, reinforced by the governance structure, experience and mandatory learning, helps to foster a disciplined and constructive culture of risk management and control throughout HSBC.

Credit risk

Credit risk management  
(Audited)

The role of an independent credit control unit is fulfilled by the Global Risk function. Credit approval authorities are delegated by the Board to certain executive officers of HSBC Holdings. Similar credit approval authorities are delegated by the boards of subsidiary companies to executive officers of the relevant subsidiaries. In each major subsidiary, a Chief Risk Officer reports to the local Chief Executive Officer on credit-related issues, while maintaining a direct functional reporting line to the Group Chief Risk Officer in Global Risk. Details of the roles and responsibilities of the credit risk management function and the policies and procedures for managing credit risk are set out below. Apart from the creation of a new Group Models Oversight Committee and supportive framework, there were no significant changes in 2013.

The high-level oversight and management of credit risk provided globally by the Credit Risk function in Global Risk

- to formulate Group credit policy. Compliance, subject to approved dispensations, is mandatory for all operating companies which must develop local credit policies consistent with Group policies;
- to guide operating companies on our appetite for credit risk exposure to specified market sectors, activities and banking products and controlling exposures to certain higher-risk sectors;
- to undertake an independent review and objective assessment of risk. Global Risk assesses all commercial non-bank credit facilities and exposures over designated limits, prior to the facilities being committed to customers or transactions being undertaken;
  - to monitor the performance and management of portfolios across the Group;
- to control exposure to sovereign entities, banks and other financial institutions, as well as debt securities which are not held solely for the purpose of trading;
- to set Group policy on large credit exposures, ensuring that concentrations of exposure by counterparty, sector or geography do not become excessive in relation to our capital base, and remain within internal and regulatory limits;

- to control our cross-border exposures (see page 274);
  - to maintain and develop our risk rating framework and systems, the governance of which is under the general oversight of the Group Model Oversight Committee ('MOC'). The Group MOC meets bi-monthly and reports to the Risk Management Meeting. It is chaired by the risk function and its membership is drawn from Global Risk and global businesses;
  - to report to the Risk Management Meeting, the GRC and the Board on high risk portfolios, risk concentrations, country limits and cross-border exposures, large impaired accounts, impairment allowances, stress testing results and recommendations and retail portfolio performance; and
  - to act on behalf of HSBC Holdings as the primary interface, for credit-related issues, with the Bank of England, the PRA, local regulators, rating agencies, analysts and counterparts in major banks and non-bank financial institutions.
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#### Principal objectives of our credit risk management

- to maintain across HSBC a strong culture of responsible lending and a robust risk policy and control framework;
- to both partner and challenge our businesses in defining, implementing and continually re-evaluating our risk appetite under actual and scenario conditions; and
- to ensure there is independent, expert scrutiny of credit risks, their costs and their mitigation.

#### Credit quality of financial instruments

(Audited)

Our credit risk rating systems and processes differentiate exposures in order to highlight those with greater risk factors and higher potential severity of loss. In the case of individually significant accounts that are predominantly within our wholesale businesses, risk ratings are reviewed regularly and any amendments are implemented promptly. Within our retail businesses, risk is assessed and managed using a wide range of risk and pricing models to generate portfolio data.

Our risk rating system facilitates the internal ratings-based ('IRB') approach under Basel II adopted by the Group to support calculation of our minimum credit regulatory capital requirement. Our credit quality classifications are defined below.

Special attention is paid to problem exposures in order to accelerate remedial action. When appropriate, our operating companies use specialist units to provide customers with support to help them avoid default wherever possible.

Group and regional Credit Review and Risk Identification teams regularly review exposures and processes in order to provide an independent, rigorous assessment of credit risk across the Group, reinforce secondary risk management controls and share best practice. Internal audit, as a tertiary control function, focuses on risks with a global perspective and on the design and effectiveness of primary and secondary controls, carrying out oversight audits via the sampling of global/regional control frameworks, themed audits of key or emerging risks and project audits to assess major change initiatives.

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The five credit quality classifications defined below each encompass a range of granular internal credit rating grades assigned to wholesale and retail lending businesses and the external ratings attributed by external agencies to debt securities. There is no direct correlation between the internal and external ratings at granular level, except to the extent each falls within a single quality classification.

### Credit quality classification (Unaudited)

Quality classification	Debt securities and other bills		Wholesale lending and derivatives		Retail lending	
	External credit rating	Internal credit rating	12 month probability of default %	Internal credit rating <sup>1</sup>	Expected loss %	
Strong		CRR21 to			0 - 0.999	
.....	A- and above	CRR2	0 - 0.169	EL31 to EL2		
Good	BBB+ to	CRR3	0.170 - 0.740	EL3	1.000 - 4.999	
.....	BBB-					
Satisfactory	BB+ to B+	CRR4 to			5.000 -	
.....	and unrated	CRR5	0.741 - 4.914	EL4 to EL5	19.999	
Sub-standard		CRR6 to	4.915 -		20.000 -	
.....	B to C	CRR8	99.999	EL6 to EL8	99.999	
Impaired		CRR9 to			100+ or	
.....	Default	CRR10	100	EL9 to EL10	defaulted <sup>4</sup>	

1 We observe the disclosure convention that, in addition to those classified as EL9 to EL10, retail accounts classified EL1 to EL8 that are delinquent by 90 days or more are considered impaired, unless individually they have been assessed as not impaired (see page 172, 'Past due but not impaired gross financial instruments').

2 Customer risk rating.

3 Expected loss.

4 The EL percentage is derived through a combination of PD and LGD, and may exceed 100% in circumstances where the LGD is above 100% reflecting the cost of recoveries.

### Quality classification definitions

· 'Strong' exposures demonstrate a strong capacity to meet financial commitments, with negligible or low probability of default and/or low levels of expected loss. Retail accounts operate within product parameters and only exceptionally show any period of delinquency.

· 'Good' exposures require closer monitoring and demonstrate a good capacity to meet financial commitments, with low default risk. Retail accounts typically show only short periods of delinquency, with any losses expected to be minimal following the adoption of recovery processes.

- 'Satisfactory' exposures require closer monitoring and demonstrate an average to fair capacity to meet financial commitments, with moderate default risk. Retail accounts typically show only short periods of delinquency, with any losses expected to be minor following the adoption of recovery processes.
- 'Sub-standard' exposures require varying degrees of special attention and default risk is of greater concern. Retail portfolio segments show longer delinquency periods of generally up to 90 days past due and/or expected losses are higher due to a reduced ability to mitigate these through security realisation or other recovery processes.
- 'Impaired' exposures have been assessed as impaired. Wholesale exposures where the bank considers that either the customer is unlikely to pay its credit obligations in full, without recourse by the bank to the actions such as realising security if held, or the customer is past due more than 90 days on any material credit obligation. Retail loans and advances greater than 90 days past due unless individually they have been assessed as not impaired. Renegotiated loans that have met the requirements to be disclosed as impaired and have not yet met the criteria to be returned to the unimpaired portfolio (see below).

The customer risk rating ('CRR') 10-grade scale summarises a more granular underlying 23-grade scale of obligor probability of default ('PD'). All HSBC customers are rated using the 10 or 23-grade scale, depending on the degree of sophistication of the Basel II approach adopted for the exposure.

The expected loss ('EL') 10-grade scale for retail business summarises a more granular underlying EL scale for this customer segment; this combines obligor and facility/product risk factors in a composite measure.

For debt securities and certain other financial instruments, external ratings have been aligned to the five quality classifications. The ratings of S&P are cited, with those of other agencies being treated equivalently. Debt securities with short-term issue ratings are reported against the long-term rating of the issuer of those securities. If major rating agencies have different ratings for the same debt securities, a prudent rating selection is made in line with regulatory requirements.

#### Renegotiated loans and forbearance (Audited)

A range of forbearance strategies is employed in order to improve the management of customer relationships, maximise collection opportunities and, if possible, avoid default, foreclosure or repossession. They include extended payment terms, a reduction in interest or principal repayments, approved external debt management plans, debt consolidations, the deferral of foreclosures and other forms of loan modifications and re-ageing.

Our policies and practices are based on criteria which enable local management to judge whether repayment is likely to continue. These typically provide a customer with terms and conditions that are more favourable than those provided initially. Loan forbearance is only granted in situations where the customer has showed a willingness to repay their loan and is expected to be able to meet the revised obligations.

For retail lending our credit risk management policy sets out restrictions on the number and frequency of renegotiations, the minimum period an account must have been opened before any renegotiation can be considered and the number of qualifying payments that must be received. The application of this policy varies according to the nature of the market, the product and the management of customer relationships through the occurrence of exceptional events.

#### Identifying renegotiated loans

The contractual terms of a loan may be modified for a number of reasons including changing market conditions, customer retention and other factors not related to the current or potential credit deterioration of a customer. When the contractual payment terms of a loan are modified because we have significant concerns about the borrower's ability to meet contractual payments when due, these loans are classified as 'renegotiated loans'.

For retail lending, when considering whether there is significant concern regarding a customer's ability to meet contractual loan repayments when due, we assess the customer's delinquency status, account behaviour, repayment history, current financial situation and continued ability to repay. If the customer is not meeting contractual repayments or it is evident that they will be unable to do so without the renegotiation, there will be a significant concern regarding their ability to meet contractual payments, and the loan will be disclosed as impaired, unless the concession granted is insignificant as discussed below.

For loan restructurings in wholesale lending, indicators of significant concerns regarding a borrower's ability to pay include:

- the debtor is currently in default on any of its debt;
- the debtor has declared or is in the process of declaring bankruptcy or entering into a similar process;
- there is significant doubt as to whether the debtor will continue to be a going concern;
- currently, the debtor has securities that have been delisted, are in the process of being delisted, or are under threat of being delisted from an exchange as a result of trading or financial difficulties;
- based on estimates and projections that only encompass current business capabilities, the bank forecasts that the debtor's entity-specific cash flows will be insufficient to service the debt (both interest and principal) in accordance with the contractual terms of the existing agreement through maturity. In this instance, actual payment default may not yet have occurred; and
- absent the modification, the debtor cannot obtain funds from sources other than its existing creditors at an effective interest rate equal to the current market interest rate for similar debt for a non-distressed debtor.

Where the modification of a loan's contractual payment terms represents a concession for economic or legal reasons relating to the borrower's financial difficulty, and is a concession that we would not otherwise consider, then the renegotiated loan is disclosed as impaired in accordance with our impaired loan disclosure convention described in more detail on page 185, unless the concession is insignificant and there are no other indicators of impairment. Insignificant concessions are primarily restricted to our CML portfolio in HSBC Finance, where loans which are in the early stages of delinquency (less than 60 days delinquent) and typically have the equivalent of two payments deferred for the first time are excluded from our impaired loan classification, as the contractual payment deferrals are deemed to be insignificant compared with payments due on the loan as a whole. For details of HSBC Finance's loan renegotiated programmes and portfolios, see pages 176 to 178.

#### Credit quality classification of renegotiated loans (Audited)

Under IFRSs, an entity is required to assess whether there is objective evidence that financial assets are impaired at the end of each reporting period. A loan is impaired and an impairment allowance is recognised when there is objective evidence of a loss event that has an effect on the cash flows of the loan which can be reliably estimated. Granting a concession to a customer that we would not otherwise consider, as a result of their financial difficulty, is objective evidence of impairment and impairment losses are measured accordingly.

A renegotiated loan is presented as impaired when:

- there has been a change in contractual cash flows as a result of a concession which the lender would otherwise not consider, and

- it is probable that without the concession, the borrower would be unable to meet contractual payment obligations in full.

This presentation applies unless the concession is insignificant and there are no other indicators of impairment.

The renegotiated loan will continue to be disclosed as impaired until there is sufficient evidence to demonstrate a significant reduction in the risk of non-payment of future cash flows, and there are no other indicators of impairment. For loans that are assessed for impairment on a collective basis, the evidence typically comprises a history of payment performance against the original or revised terms, as appropriate to the circumstances. For loans that are assessed for impairment on an individual basis, all available evidence is assessed on a case-by-case basis.

For retail lending the minimum period of payment performance required depends on the nature of loans in the portfolio, but is typically not less than six months. Where portfolios have more significant levels of forbearance activity, such as that undertaken by HSBC Finance, the minimum repayment performance period required may be substantially more (for further details on HSBC Finance see page 176). Payment performance periods are monitored to ensure they remain appropriate to the levels of recidivism observed within the portfolio. These performance periods are in addition to a minimum of two payments which must be received within a 60-day period for the customer to initially qualify for the renegotiation (in the case of HSBC Finance, in certain circumstances, for example where debt has been restructured in bankruptcy proceedings, fewer or no qualifying payments may be required). The qualifying payments are required in order to demonstrate that the renegotiated terms are sustainable for the borrower. For corporate and commercial loans, which are individually assessed for impairment and where non-monthly payments are more commonly agreed, the history of payment performance will depend on the underlying structure of payments agreed as part of the restructuring.

Renegotiated loans are classified as unimpaired where the renegotiation has resulted from significant concern about a borrower's ability to meet their contractual payment terms but the renegotiated terms are based on current market rates and contractual cash flows are expected to be collected in full following the renegotiation. Unimpaired renegotiated loans also include previously impaired renegotiated loans that have demonstrated satisfactory performance over a period of time or have been assessed based on all available evidence as having no remaining indicators of impairment.

Loans that have been identified as renegotiated retain this designation until maturity or derecognition. When a loan is restructured as part of a forbearance strategy and the restructuring results in derecognition of the existing loan, such as in some debt consolidations, the new loan is disclosed as renegotiated.

When determining whether a loan that is restructured should be derecognised and a new loan recognised, we consider the extent to which the changes to the original contractual terms result in the renegotiated loan, considered as a whole, being a substantially different financial instrument. The following are examples of circumstances that are likely to result in this test being met and derecognition accounting being applied:

- an uncollateralised loan becomes fully collateralised;
- the addition or removal of cross-collateralisation provisions;
- multiple facilities are consolidated into a single new facility;
- removal or addition of conversion features attached to the loan agreement;
- a change in the currency in which the principal or interest is denominated;
- a change in the liquidation preference or ranking of the instrument; or
- the contract is altered in any other manner so that the terms under the new or modified contract are substantially different from those under the original contract.

The following are examples of factors that we consider may indicate that the revised loan is a substantially different financial instrument, but are unlikely to be conclusive in themselves:

- changes in guarantees or loan covenants provided;
- less significant changes to collateral arrangements; or
- the addition of repayment provisions or prepayment premium clauses.

#### Renegotiated loans and recognition of impairment allowances (Audited)

For retail lending, renegotiated loans are segregated from other parts of the loan portfolio for collective impairment assessment to reflect the higher rates of losses often encountered in these segments. When empirical evidence indicates an increased propensity to default and higher losses on such accounts, such as for re-aged loans in the US, the use of roll-rate methodology ensures these factors are taken into account when calculating impairment allowances by applying roll rates specifically calculated on the pool of loans subject to forbearance. When the portfolio size is small or when information is insufficient or not reliable enough to adopt a roll-rate methodology, a basic formulaic approach based on historical loss rate experience is used. As a result of our roll-rate methodology, we recognise collective impairment allowances on homogeneous groups of loans, including renegotiated loans, where there is historical evidence that there is a likelihood that loans in these groups will progress through the various stages of delinquency, and ultimately prove irrecoverable as a result of events occurring before the balance sheet date. This treatment applies irrespective of whether or not those loans are presented as impaired in accordance with our impaired loans disclosure convention. When we consider that there are additional risk factors inherent in the portfolios that may not be fully reflected in the statistical roll rates or historical experience, these risk factors are taken into account by adjusting the impairment allowances derived solely from statistical or historical experience. For further details of the risk factor adjustments see 'Critical accounting policies' on page 72.

In the corporate and commercial sectors, renegotiated loans are typically assessed individually. Credit risk ratings are intrinsic to the impairment assessment. A distressed restructuring is classified as an impaired loan. The individual impairment assessment takes into account the higher risk of the non-payment of future cash flows inherent in renegotiated loans.

#### Corporate and commercial forbearance (Unaudited)

In the corporate and commercial sectors, forbearance activity is undertaken selectively where it has been identified that repayment difficulties against the original terms already have, or are very likely to, materialise. These cases are treated as impaired loans where:

- the customer is experiencing, or is very likely to experience, difficulty in meeting a payment obligation to the Group (i.e. due to current credit distress); and
- the Group is offering to the customer revised payment arrangements which constitute a concession (i.e. it is offering terms it would not normally be prepared to offer).

These cases are described as distressed restructurings. The agreement of a restructuring which meets the criteria above requires all loans, advances and counterparty exposures to the customer to be treated as impaired. Against the background of this requirement, as a customer approaches the point at which it becomes clear that there is an increasing risk that a restructuring of this kind might be necessary, the exposures will typically be regarded as sub-standard to reflect the deteriorating credit risk profile and will be graded as impaired when the restructure is proposed for approval, or sooner if there is sufficient concern regarding the customer's likeliness to pay.

For the purposes of determining whether changes to a customer's agreement should be treated as a distressed restructuring the following types of modification are regarded as concessionary:

- transfers from the customer of receivables from third parties, real estate, or other assets to satisfy fully or partially a debt;
- issuance or other granting of an equity interest to satisfy fully or partially a debt unless the equity interest is granted pursuant to existing terms for converting the debt into an equity interest; and
- modification of the terms of a debt, such as one or more of the following:
  - reduction (absolute or contingent) of the stated interest rate for the remaining original life of the debt;
  - extension of the maturity date or dates at a stated interest rate lower than the current market rate for new debt with similar risk;
  - reduction (absolute or contingent) of the face amount or maturity amount of the debt; and
  - reduction (absolute or contingent) of accrued interest.

Modifications that are unrelated to payment arrangements, such as the restructuring of collateral or security arrangements or the waiver of rights under covenants within documentation, are not regarded by themselves to be evidence of credit distress affecting payment capacity. Typically, covenants are in place to give the Group rights of repricing or acceleration, but they are frequently set at levels where payment capacity has yet to be affected providing rights of action at earlier stages of credit deterioration. Such concessions do not directly affect the customer's ability to service the original contractual debt and are not reported as renegotiated loans. However, where a customer requests a non-payment related covenant waiver, the significance of the underlying breach of covenant will be considered together with any other indicators of impairment, and where there is a degree of severity of credit distress evidencing uncertainty of payment, all available evidence will be considered in determining whether a loss event has occurred. The waiver will not, however, trigger classification as a renegotiated loan as payment terms have not been modified.

When both payment-related and non-payment related modifications are made together as a result of significant concerns regarding the payment of contractual cash flows, the loan is treated as a distressed restructuring and disclosed as a renegotiated loan.

Within corporate and commercial business segments, modifications of several kinds are frequently agreed for a customer contemporaneously. Transfer to an interest-only arrangement is the most common type of modification granted in the UK, whether in isolation or in combination with other concessions. Throughout the rest of the world term extensions occur more frequently with other types of concession such as interest rate changes occurring less often across all jurisdictions.

In assessing whether payment-related forbearance is a satisfactory and sustainable strategy, the customer's entire exposure and facilities will be reviewed and the customer's ability to meet the terms of both the revised obligation and other credit facilities not amended in the renegotiation is assessed. Should this assessment identify that a renegotiation will not deal with a customer's payment capacity issues satisfactorily, other special management options may be applied. This process may identify the need to provide assistance to a customer specifically to restructure their business operations and activities so as to restore satisfactory payment capacity. When considering

acceptable restructuring terms we consider the ability of the customer to be able to service the revised interest payments as a necessity. When principal payment modifications are considered, again we require the customer to be able to comply with the revised terms as a necessary pre-condition for the restructuring to proceed. When principal payments are modified resulting in permanent forgiveness, or when it is otherwise considered that there is no longer a realistic prospect of recovery of outstanding principal, the affected balances are written off. When principal repayments are postponed, it is expected that the customer will be capable of paying in line with the renegotiated terms, including instances when the postponed principal repayment is expected from refinancing. In all cases, a loan renegotiation is only granted when the customer is expected to be able to meet the revised terms.

Modifications may be made on a temporary basis when time is needed for the customer to make arrangements for payment, when deterioration in payment capacity is expected to be acute but short lived, or when more time is needed to accommodate discussions regarding a more permanent accommodation with other bankers, for example in syndicated facilities where multilateral negotiation commonly features.

If a restructuring proceeds and the customer demonstrates satisfactory performance over a period of time, the case may be returned to a non-impaired grade (CRR1-8) provided no other indicators of impairment remain. Such a case cannot be returned to a non-impaired grade when a specific impairment allowance remains against any of the customer's credit facilities. The period of performance will vary depending on the frequency of payments to be made by the customer under the amended agreement and the extent to which the customer's financial position is considered to have improved.

#### Refinance risk (Unaudited)

Many types of lending require the repayment of a significant proportion of the principal at maturity. Typically, the mechanism of repayment for the customer is through the acquisition of a new loan to settle the existing debt. Refinance risk arises where a customer is unable to repay such term debt on maturity, or to refinance debt at commercial rates. When there is evidence that this risk may apply to a specific contract, HSBC may need to refinance the loan on concessionary terms that it would not otherwise have considered, in order to recoup the maximum possible cash flows from the contract and potentially avoid the customer defaulting on the repayment of principal. When there is sufficient evidence that borrowers, based on their current financial capabilities, may fail at maturity to repay or refinance their loans, these loans are disclosed as impaired with recognition of a corresponding impairment allowance where appropriate.

#### Impairment assessment (Audited)

It is our policy that each operating company in HSBC creates impairment allowances for impaired loans promptly and appropriately.

For details of our impairment policies on loans and advances and financial investments, see Notes 2g and 2j on the Financial Statements.

#### Impairment and credit risk mitigation

The existence of collateral has an effect when calculating impairment on individually assessed impaired loans. When we no longer expect to recover the principal and interest due on a loan in full or in accordance with the original terms and conditions, it is assessed for impairment. If exposures are secured, the current net realisable value of the collateral will be taken into account when assessing the need for an impairment allowance. No impairment allowance is recognised in cases where all amounts due are expected to be settled in full on realisation of the security.

Personal lending portfolios are generally assessed for impairment on a collective basis as the portfolios typically consist of large groups of homogeneous loans. Two methods are used to calculate allowances on a collective basis: a roll-rate methodology or a more basic formulaic approach based on historical losses. In 2013, we reviewed the impairment allowance methodology used for retail banking and small business portfolios across the Group to ensure that the assumptions used in our collective assessment models continued to appropriately reflect the period of time between a loss event occurring and the account proceeding to delinquency and eventual write-off.

- The historical loss methodology is typically used to calculate collective impairment allowances for secured or low default portfolios such as mortgages until the point at which they are individually identified and assessed as impaired. For loans which are collectively assessed using historical loss methodology, the historical loss rate is derived from the average contractual write-off net of recoveries over a defined period. The net contractual write-off rate is the actual amount of loss experienced after the realisation of collateral and receipt of recoveries.
- A roll-rate methodology is more commonly adopted for unsecured portfolios when there are sufficient volumes of empirical data to develop robust statistical models. In certain circumstances mortgage portfolios have a statistically significant number of defaults and losses available, enabling reliable roll rates to be generated. In these cases a roll-rate methodology is applied until the point at which the loans are individually identified and assessed as impaired, and the average loss rate for each delinquency bucket is adjusted to reflect the average loss expected following realisation of security and receipt of recoveries. The average loss expected is derived from average historical collateral realisation values.

The nature of the collective allowance assessment prevents individual collateral values or LTV ratios from being included within the calculation. However, the loss rates used in the collective assessment are adjusted for the collateral realisation experiences which will vary depending on the LTV composition of the portfolio. For example mortgage portfolios under a historical loss rate methodology with lower LTV ratios will typically experience lower loss history and consequently a lower net contractual write-off rate.

For wholesale collectively assessed loans, historical loss methodologies are applied to measure loss event impairments which have been incurred but not reported. Loss rates are derived from the observed contractual write-off net of recoveries over a defined period, typically no lower than 60 months. The net contractual write-off rate is the actual or expected amount of loss experienced after realisation of collateral and receipt of recoveries. These historical loss rates are adjusted by an economic factor which adjusts the historical averages to better represent current economic conditions affecting the portfolio. In order to reflect the likelihood of a loss event not being identified and assessed an emergence period assumption is applied which reflects the period between a loss occurring and its identification. The emergence period is estimated by local management for each identified portfolio. The factors that may influence this estimation include economic and market conditions, customer behaviour, portfolio management information, credit management techniques and collection and recovery experiences in the market. A fixed range for the period between a loss occurring and its identification is not defined across the Group and as it is assessed empirically on a periodic basis it may vary over time as these factors change. Given that credit management policies require all customers to be reviewed at least annually, we expect this estimated period would be at most 12 months in duration

#### Write-off of loans and advances

For details of our policy on the write-off of loans and advances, see Note 2g on the Financial Statements.

In HSBC Finance, the carrying amounts of residential mortgage and second lien loans in excess of net realisable value are written off at or before the time foreclosure is completed or settlement is reached with the borrower. If there is no reasonable expectation of recovery, and foreclosure is pursued, the loan is normally written off no later than the end of the month in which the loan becomes 180 days contractually past due. We regularly obtain new appraisals for loans (every 180 days) and adjust carrying value to the most recent appraisal whether it has increased or decreased as the best estimate of the cash flows that will be received on the disposal of the collateral for these collateral dependent loans.

Unsecured personal facilities, including credit cards, are generally written off at between 150 and 210 days past due, the standard period being the end of the month in which the account becomes 180 days contractually delinquent. Write-off periods may be extended, generally to no more than 360 days past due but, in very exceptional circumstances, to longer than that figure in a few countries where local regulation or legislation constrain earlier write-off or where the realisation of collateral for secured real estate lending takes this time.

In retail lending, final write-off should occur within 60 months of the default at the latest.

In the event of bankruptcy or analogous proceedings, write-off may occur earlier than at the periods stated above. Collections procedures may continue after write-off.

#### Concentration of exposure (Audited)

Concentrations of credit risk arise when a number of counterparties or exposures have comparable economic characteristics or such counterparties are engaged in similar activities or operate in the same geographical areas or industry sectors so that their collective ability to meet contractual obligations is uniformly affected by changes in economic, political or other conditions. We use a number of controls and measures to minimise undue concentration of exposure in our portfolios across industry, country and global business. These include portfolio and counterparty limits, approval and review controls, and stress testing.

Wrong-way risk occurs when a counterparty's exposures are adversely correlated with its credit quality. There are two types of wrong-way risk:

- general wrong-way risk occurs when the probability of counterparty default is positively correlated with general risk factors such as, for example, where the counterparty is resident and/or incorporated in a higher-risk country and seeks to sell a non-domestic currency in exchange for its home currency; and
- specific wrong-way risk occurs when the exposure to a particular counterparty is positively correlated with the probability of counterparty default such as a reverse repo on the counterparty's own bonds. It is HSBC policy that specific wrong-way transactions are approved on a case-by-case basis.

We use a range of tools to monitor and control wrong-way risk, including requiring the business to obtain prior approval before undertaking wrong-way risk transactions outside pre-agreed guidelines.

#### Cross-border exposures

We assess the vulnerability of countries to foreign currency payment restrictions, including economic and political factors, when considering impairment allowances on cross-border exposures. Impairment allowances are assessed in respect of all qualifying exposures within vulnerable countries unless these exposures and the inherent risks are:

- performing, trade-related and of less than one year's maturity;
- mitigated by acceptable security cover which is, other than in exceptional cases, held outside the country concerned;
- in the form of securities held for trading purposes for which a liquid and active market exists, and which are measured at fair value daily; and
- performing facilities with a principal (excluding security) of US\$1m or below and/or with maturity dates shorter than three months.

#### Nature of HSBC's securitisation and other structured exposures (Audited)

Mortgage-backed securities ('MBS's) are securities that represent interests in groups of mortgages and provide investors with the right to receive cash from future mortgage payments (interest and/or principal). An MBS which references mortgages with different risk profiles is classified according to the highest risk class.

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Collateralised debt obligations ('CDO's) are securities backed by a pool of bonds, loans or other assets such as asset-backed securities ('ABS's). CDOs may include exposure to sub-prime or Alt-A mortgage assets where these are part of the underlying assets or reference assets. As there is often uncertainty surrounding the precise nature of the underlying collateral supporting CDOs, all CDOs supported by residential mortgage-related assets are classified as sub-prime. Our holdings of ABSs and CDOs and direct lending positions, and the categories of mortgage collateral and lending activity, are described overleaf.

Our exposure to non-residential mortgage-related ABSs and direct lending includes securities with collateral relating to commercial property mortgages, leveraged finance loans, student loans, and other assets such as securities with other receivable-related collateral.

### Definitions and classifications of ABSs and CDOs

#### Categories of

#### ABSs and CDOs

Definition	Classification
<p><b>Sub-prime</b></p> <p>Loans to customers who have limited credit histories, modest incomes or high debt-to-income ratios or have experienced credit problems caused by occasional delinquencies, prior charge-offs, bankruptcy or other credit-related actions.</p>	<p>For US mortgages, a FICO score of 620 or less has primarily been used to determine whether a loan is sub-prime. For non-US mortgages, management judgement is used.</p>
<p><b>US Home Equity Lines of Credit (HELoC's)</b></p> <p>A form of revolving credit facility provided to customers, which is supported in the majority of circumstances by a second lien or lower ranking charge over residential property.</p>	<p>Holdings of HELoCs are classified as sub-prime.</p>
<p><b>US Alt-A</b></p> <p>Lower risk loans than sub-prime, but they share higher risk characteristics than lending under fully conforming standard criteria.</p>	<p>US credit scores and the completeness of documentation held (such as proof of income), are considered when determining whether an Alt-A classification is appropriate. Non sub-prime mortgages in the US are classified as Alt-A if they are not eligible for sale to the major US Government mortgage agencies or sponsored entities.</p>
<p><b>US Government agency and</b></p> <p>Securities that are guaranteed by US Government agencies such as</p>	<p>Holdings of US Government agency and US Government</p>

sponsored enterprises mortgage-related assets	the Government National Mortgage Association ('Ginnie Mae'), or by US Government sponsored entities including the Federal National Mortgage Association ('Fannie Mae') and the Federal Home Loan Mortgage Corporation ('Freddie Mac').	sponsored enterprises' mortgage-related assets are classified as prime exposures.
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UK non-conforming mortgages	UK mortgages that do not meet normal lending criteria. Examples include mortgages where the expected level of documentation is not provided (such as income with self-certification), or where poor credit history increases risk and results in pricing at a higher than normal lending rate.	UK non-conforming mortgages are treated as sub-prime exposures.
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Other mortgages	Residential mortgages, including prime mortgages, that do not meet any of the classifications described above.	Prime residential mortgage-related assets are included in this category.
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Impairment methodologies  
(Audited)

To identify objective evidence of impairment for available-for-sale ABSs, an industry standard valuation model is normally applied which uses data with reference to the underlying asset pools and models their projected future cash flows. The estimated future cash flows of the securities are assessed at the specific financial asset level to determine whether any of them are unlikely to be recovered as a result of loss events occurring on or before the reporting date.

The principal assumptions and inputs to the models are typically the delinquency status of the underlying loans, the probability of delinquent loans progressing to default, the prepayment profiles of the underlying assets and the loss severity in the event of default. However, the models utilise other variables relevant to specific classes of collateral to forecast future defaults and recovery rates. Management uses externally available data and applies judgement when determining the appropriate assumptions in respect of these factors. We use a modelling approach which incorporates historically observed progression rates to default to determine if the decline in aggregate projected cash flows from the underlying collateral will lead to a shortfall in contractual cash flows. In such cases, the security is considered to be impaired.

In respect of CDOs, expected future cash flows for the underlying collateral are assessed to determine whether there is likely to be a shortfall in the contractual cash flows of the CDO.

When a security benefits from a contract provided by a monoline insurer that insures payments of principal and interest, the expected recovery on the contract is assessed in determining the total expected credit support available to the ABS.

Liquidity and funding  
(Audited)

The management of liquidity and funding is primarily undertaken locally (by country) in our operating entities in compliance with the Group's liquidity and funding risk management framework (the 'LFRF'), and with practices and limits set by the GMB through the Risk Management Meeting and approved by the Board. These limits vary according to the depth and the liquidity of the markets in which the entities operate. Our general policy is that each defined operating entity should be self-sufficient in funding its own activities. Where transactions exist between operating entities, they are reflected symmetrically in both entities.

As part of our Asset, Liability and Capital Management ('ALCM') structure, we have established ALCOs at Group level, in the regions and in operating entities. The terms of reference of all ALCOs include the monitoring and control of liquidity and funding.

The primary responsibility for managing liquidity and funding within the Group's framework and risk appetite resides with the local operating entities' ALCOs. Our most significant operating entities are overseen by regional ALCOs, Group ALCO and the Risk Management Meeting. The remaining smaller operating entities are overseen by regional ALCOs, with appropriate escalation of significant issues to Group ALCO and the Risk Management Meeting.

Operating entities are predominately defined on a country basis to reflect our local management of liquidity and funding. Typically, an operating entity will be defined as a single legal entity. However, to take account of the situation where operations in a country are booked across multiple subsidiaries or branches:

- an operating entity may be defined as a wider sub-consolidated group of legal entities if they are incorporated in the same country, liquidity and funding are freely fungible between the entities and permitted by local regulation, and the definition reflects how liquidity and funding are managed locally; or
- an operating entity may be defined more narrowly as a principal office (branch) of a wider legal entity operating in multiple countries, reflecting the local country management of liquidity and funding.

The Risk Management Meeting reviews and agrees annually the list of entities it directly oversees and the composition of these entities.

Primary sources of funding  
(Audited)

Customer deposits in the form of current accounts and savings deposits payable on demand or at short notice form a significant part of our funding, and we place considerable importance on maintaining their stability. For deposits, stability depends upon maintaining depositor confidence in our capital strength and liquidity, and on competitive and transparent pricing.

We also access wholesale funding markets by issuing senior secured and unsecured debt securities (publically and privately) and borrowing from the secured repo markets against high quality collateral, in order to obtain funding for non-banking subsidiaries that do not accept deposits, to align asset and liability maturities and currencies and to maintain a presence in local wholesale markets.

The management of funding and liquidity risk  
(Audited)

### Inherent liquidity risk categorisation

We place our operating entities into one of three categories (low, medium and high) to reflect our assessment of their inherent liquidity risk considering political, economic and regulatory factors within the host country and factors specific to the operating entities themselves, such as their local market, market share and balance sheet strength. The categorisation involves management judgement and is based on the perceived liquidity risk of an operating entity relative to other entities in the Group. The categorisation is intended to reflect the possible impact of a liquidity event, not the probability of an event, and forms part of our risk appetite. It is used to determine the prescribed stress scenario that we require our operating entities to be able to withstand and manage to.

### Core deposits

A key element of our internal framework is the classification of customer deposits into core and non-core based on our expectation of their behaviour during periods of liquidity stress. This characterisation takes into account the inherent liquidity risk categorisation of the operating entity originating the deposit, the nature of the customer and the size and pricing of the deposit. No deposit is considered to be core in its entirety unless it is contractually collateralising a loan. The core deposit base in each operating entity is considered to be a long-term source of funding and therefore is assumed not to be withdrawn in the liquidity stress scenario that we use to calculate our principal liquidity risk metrics.

The three filters considered in assessing whether a deposit in any operating entity is core are:

- price: any deposit priced significantly above market or benchmark rates is generally treated as entirely non-core;
- size: depositors with total funds above certain monetary thresholds are excluded. Thresholds are established by considering the business line and inherent liquidity risk categorisation; and
- line of business: the element of any deposit remaining after the application of the price and size filters is assessed on the basis of the line of business with which the deposit is associated. The proportion of any customer deposit that can be considered core under this filter is between 35% and 90%.

Repo transactions and bank deposits cannot be classified as core deposits.

### Advances to core funding ratio

Core customer deposits are an important source of funding to finance lending to customers, and militate against reliance on short-term wholesale funding. Limits are placed on operating entities to restrict their ability to increase loans and advances to customers without corresponding growth in core customer deposits or long-term debt funding with a residual maturity beyond one year; this measure is referred to as the 'advances to core funding' ratio.

Advances to core funding ratio limits are set by the Risk Management Meeting for the most significant operating entities, and by regional ALCOs for smaller operating entities, and are monitored by ALCM teams. The ratio describes current loans and advances to customers as a percentage of the total of core customer deposits and term funding with a remaining term to maturity in excess of one year. In general, customer loans are assumed to be renewed and are included in the numerator of the ratio, irrespective of the contractual maturity date. Reverse repo arrangements are excluded from the advances to core funding ratio.

### Stressed coverage ratios

Stressed coverage ratios are derived from stressed cash flow scenario analyses and express stressed cash inflows as a percentage of stressed cash outflows over one-month and three-month time horizons.

The stressed cash inflows include:

- inflows (net of assumed haircuts) expected to be generated from the realisation of liquid assets; and
- contractual cash inflows from maturing assets that are not already reflected as a utilisation of liquid assets.

In line with the approach adopted for the advances to core funding ratio, customer loans are generally assumed not to generate any cash inflows under stress scenarios and are therefore excluded from the numerator of the stressed coverage ratio, irrespective of the contractual maturity date.

A stressed coverage ratio of 100% or higher reflects a positive cumulative cash flow under the stress scenario being monitored. Group operating entities are required to maintain a ratio of 100% or greater out to three months under the combined market-wide and HSBC-specific stress scenario defined by the inherent liquidity risk categorisation of the operating entity concerned.

Compliance with operating entity limits is monitored by ALCM teams and reported monthly to the Risk Management Meeting for the main operating entities and to regional ALCOs for the smaller operating entities.

#### Stressed scenario analysis (Unaudited)

We use a number of standard Group stress scenarios designed to model:

- combined market-wide and HSBC-specific liquidity crisis scenarios; and
- market-wide liquidity crisis scenarios.

These scenarios are modelled by all operating entities. The appropriateness of the assumptions for each scenario is reviewed by ALCM regularly and formally approved by the Risk Management Meeting and the Board annually as part of the liquidity and funding risk appetite approval process.

Stressed cash outflows are determined by applying a standard set of prescribed stress assumptions to the Group's cash flow model. Our framework prescribes the use of two market-wide scenarios and three further combined market-wide and HSBC-specific stress scenarios of increasing severity. In addition to our standard stress scenarios, individual operating entities are required to design their own scenarios to reflect specific local market conditions, products and funding bases.

The three combined market-wide and HSBC-specific scenarios model a more severe scenario than the two market-wide scenarios. The relevant combined market-wide and HSBC-specific stress scenario that an operating entity manages to is based upon its inherent liquidity risk categorisation. The key assumptions factored into the three combined market-wide and HSBC-specific stress scenarios are summarised as follows:

- all non-core deposits are deemed to be withdrawn within three months (80% within one month), with the level of non-core deposits dependent on the operating entity's inherent liquidity risk categorisation;
- the ability to access interbank funding and unsecured term debt markets ceases for the duration of the scenario;
- the ability to generate funds from illiquid asset portfolios (securitisation and secured borrowing) is restricted to 25-75% of the lower of issues in the last six months or expected issues in the next six months. The restriction is based on current market conditions and is dependent on the operating entity's inherent liquidity risk categorisation;
- the ability to access repo funding ceases for any asset not classified as liquid under our liquid asset policy for the duration of the scenario;
- drawdowns on committed lending facilities must be consistent with the severity of the market stress being modelled and dependent on the inherent liquidity risk categorisation of the operating entity;
- outflows are triggered by a defined downgrade in long-term ratings. We maintain an ongoing assessment of the appropriate number of notches to reflect;

- customer loans are assumed to be renewed at contractual maturity;
- interbank loans and reverse repos are assumed to run off contractually; and
- assets defined as liquid assets are assumed to be realised in cash ahead of their contractual maturity, after applying a defined stressed haircut of up to 20%.

Liquid assets of HSBC's principal operating entities  
(Audited)

Stressed scenario analysis and the numerator of the coverage ratio include the assumed cash inflows that would be generated from the realisation of liquid assets, after applying the appropriate stressed haircut. These assumptions are made on the basis of management's expectation of when an asset is deemed to be realisable.

Liquid assets are unencumbered assets that meet the Group's definition of liquid assets and are either held outright or as a consequence of a reverse repo transaction with a residual contractual maturity beyond the time horizon of the stressed coverage ratio being monitored. Any unencumbered asset held as a result of reverse repo transactions with a contractual maturity within the time horizon of the stressed coverage ratio being monitored is excluded from the stock of liquid assets and is instead reflected as a contractual cash inflow.

Our framework defines the asset classes that can be assessed locally as high quality and realisable within one month and between one month and three months. Each local ALCO has to be satisfied that any asset which may be treated as liquid in accordance with the Group's liquid asset policy will remain liquid under the stress scenario being managed to.

Inflows from the utilisation of liquid assets within one month can generally only be based on confirmed withdrawable central bank deposits, gold or the sale or repo of government and quasi-government exposures generally restricted to those denominated in the sovereign's domestic currency. High quality ABSs (predominantly US MBSs) and covered bonds are also included but inflows assumed for these assets are capped.

Inflows after one month are also reflected for high quality non-financial and non-structured corporate bonds and equities within the most liquid indices.

Internal categorisation	Cash inflow recognised	Asset classes
Level 1	Within one month	Central government Central bank (including confirmed withdrawable reserves) Suprationals Multilateral development banks Coins and banknotes
Level 2	Within one month but capped	Local and regional government Public sector entities Secured covered bonds and pass-through ABSs Gold
Level 3	From one to three months	Unsecured non-financial entity securities Equities listed on recognised exchanges and within liquid indices

Any entity owned and controlled by central or local/regional government but not explicitly guaranteed is treated as a public sector entity.

Any exposure explicitly guaranteed is reflected as an exposure to the ultimate guarantor.

In terms of the criteria used to ensure liquid assets are of a high quality, the Group's liquid asset policy sets out the following additional criteria:

1. Central bank and central government exposures denominated in the domestic currency of the related sovereign and held onshore in the domestic banking system qualify as level 1 liquid assets.
2. Central bank and central government exposures denominated in the domestic currency of the related sovereign and held offshore must be risk weighted 20% or lower under the Basel standardised risk weighting methodology to qualify as level 1 liquid assets.
3. Central bank and central government exposures denominated in a currency other than the currency of the related sovereign (i.e. foreign currency) must be risk weighted 20% or lower under the Basel standardised risk weighting methodology and issued in a limited number of major currencies to qualify as level 1 liquid assets.

The treatment of eurozone countries using the euro as their domestic currency depends on whether the exposures are held onshore in the domestic banking system or offshore. Central bank and central government exposures held onshore in the domestic banking system qualify as level 1 liquid assets under criteria 1, but central bank and central government exposures held offshore are considered to be denominated in a foreign currency under criteria 3.

4. Local/regional government exposures held onshore and considered by the local regulator to be the same risk as central government exposures can be considered central government exposures.
5. Supranationals and multilateral development banks must be 0% risk weighted under the Basel standardised risk-weighting methodology to qualify as level 1 liquid assets.
6. To qualify as a level 2 liquid asset, the exposure must be risk weighted 20% or lower under the Basel standardised risk-weighting methodology.
7. To qualify as a level 3 liquid asset, an unsecured non-financial corporate debt exposure must satisfy a minimum internal rating requirement.

On a case-by-case basis operating entities are permitted to treat other assets as liquid if these assets are realistically assessed to be liquid under stress. These liquid assets are reported as 'Other' separately from level 1, level 2 and level 3 liquid assets.

Wholesale debt monitoring  
(Unaudited)

Where wholesale debt term markets are accessed to raise funding, ALCO is required to establish cumulative rolling three-month and 12-month debt maturity limits to ensure no concentration of maturities within these timeframes.

Liquidity behaviouralisation  
(Unaudited)

Liquidity behaviouralisation is applied to reflect our assessment of the expected period for which we are confident that we will have access to our liabilities, even under a severe liquidity stress scenario, and the expected period for which we must assume that we will need to fund our assets. Behaviouralisation is applied when the contractual terms do not reflect the expected behaviour. Liquidity behaviouralisation is reviewed and approved by local ALCO in compliance with policies set by the Risk Management Meeting. Our approach to liquidity risk management will often mean different approaches are applied to assets and liabilities. For example, management may assume a shorter life for liabilities and a longer-term funding requirement for assets. All core deposits are assumed under the Group's core/non-core and advances to core funding frameworks to have a liquidity behaviouralised life beyond one year and to represent a homogeneous source of core funding. The behaviouralisation of assets is far more granular and seeks to differentiate the period for which we must assume that we will need to fund the asset.

#### Contingent liquidity risk

(Unaudited)

Operating entities provide customers with committed facilities and committed backstop lines to the conduit vehicles we sponsor. These commitments increase our funding requirements when customers draw down. The liquidity risk associated with the potential drawdown on non-cancellable commitments is factored into our stressed scenarios and limits are set for these facilities.

#### Management of cross-currency liquidity and funding risk

(Unaudited)

Our liquidity and funding risk framework also considers the ability of each entity to continue to access foreign exchange markets under stress when a surplus in one currency is used to meet a deficit in another currency, for example, by the use of the foreign currency swap markets. Where appropriate, operating entities are required to monitor stressed coverage ratios and advances to core funding ratios for non-local currencies.

#### Funds transfer pricing

(Unaudited)

Our funds transfer pricing policies give rise to a two-stage funds transfer pricing approach, reflecting the fact that we separately manage interest rate risk and liquidity and funding risk under different assumptions. They have been developed to be consistent with our risk management frameworks. Each operating entity is required to apply the Group's transfer pricing policy framework to determine for each material currency the most appropriate interest rate risk transfer pricing curve, a liquidity premium curve (which is the spread over the interest rate risk transfer pricing curve) and a liquidity recharge assessment (which is the spread under or over the interest rate risk transfer pricing curve).

The interest rate risk transfer pricing policy seeks to ensure that all market interest rate risk arising structurally from non-trading (banking book) assets and liabilities, which is capable of being neutralised externally in the market or neutralised internally by off-setting transfers, is transferred to BSM to be managed centrally as non-traded market risk. For each material currency each operating entity employs a single interest rate risk transfer pricing curve. The transfer price curve used for this purpose reflects how BSM in each operating entity is best able to neutralise the interest rate risk in the market at the point of transfer. Where basis risk can be identified between the re-pricing basis of an external asset or external liability and the re-pricing basis of the interest rate risk transfer pricing curve, this basis risk may be transferred to BSM provided it can neutralise the basis risk in the market.

Liquidity and funding risk is transfer priced independently from interest rate risk because the liquidity and funding risk of an operating entity is transferred to ALCO to be managed centrally. ALCO monitors and manages the advances to core funding ratio and delegates the management of the liquid asset portfolio and execution of the wholesale term debt funding plan to BSM, requiring BSM to ensure the Group's stressed coverage ratios remain above 100% out to

three months.

The liquidity and funding risk transfer price consists of two components:

- Liquidity recharge: the cost of holding the benchmark liquid asset (the yield under the transfer price) to meet stressed cash outflows. The benchmark liquid asset is decided by ALCO and based on the weighted average duration that can be achieved by investing in level 1 liquid assets, with a residual duration of up to one year.
- Liquidity premium: the assessed cost/value of term funding (the yield over the transfer price) to pay for term debt and core deposits.

The assessed cost of holding liquid assets is allocated to the outflows modelled by the Group's internal stressed coverage ratio framework.

Liquidity premium is charged to any asset that affects our three-month stressed coverage ratios based on the assessed behaviouralised liquidity life of the asset, with any asset affecting the Group's advances to core funding metric required to have a minimum behaviouralised life of at least one year, and the prevailing liquidity premium curve rate set by ALCO and calibrated in line with Group's calibration principles. Core deposits therefore share equally in the liquidity premiums charged to the assets they support, after deducting the cost of any term funding.

#### HSBC Holdings (Audited)

HSBC Holdings' primary sources of cash are dividends received from subsidiaries, interest on and repayment of intra-group loans and interest earned on its own liquid funds. HSBC Holdings also raises ancillary funds in the debt capital markets through subordinated and senior debt issuance. Cash is primarily used for the provision of capital to subsidiaries, interest payments to debt holders and dividend payments to shareholders.

HSBC Holdings is also subject to contingent liquidity risk by virtue of loan and other credit-related commitments and guarantees and similar contracts issued. Such commitments and guarantees are only issued after due consideration of HSBC Holdings' ability to finance the commitments and guarantees and the likelihood of the need arising.

HSBC Holdings actively manages the cash flows from its subsidiaries to optimise the amount of cash held at the holding company level. The ability of subsidiaries to pay dividends or advance monies to HSBC Holdings depends on, among other things, their respective regulatory capital requirements, statutory reserves, and financial and operating performance. The wide range of our activities means that HSBC Holdings is not dependent on a single source of profits to fund its dividend payments to shareholders.

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#### Market risk

Overview of market risk in global businesses

The diagram below illustrates the main business areas where trading and non-trading market risks reside.

#### Monitoring and limiting market risk exposures (Audited)

We employ a range of tools to monitor and limit market risk exposures. These include sensitivity analysis, value at risk ('VaR'), stressed VaR and stress testing. While VaR provides the GMB with a measure of the market risk in the

Group, sensitivity analysis and VaR are more commonly utilised for the management of the business units. Stress testing and stressed VaR complement these measures with estimates of potential losses arising from market turmoil.

Market risk is managed and controlled through limits approved by the GMB for HSBC Holdings and our various global businesses. These limits are allocated across business lines and to the Group's legal entities.

The management of market risk is principally undertaken in Markets, where 85% of the total value at risk of HSBC Holdings (excluding insurance) and almost all trading VaR resides, using risk limits approved by the GMB. Limits are set for portfolios, products and risk types, with market liquidity being a primary factor in determining the level of limits set. Group Risk, an independent unit within Group Head Office, is responsible for our market risk management policies and measurement techniques. Each major operating entity has an independent market risk management and control function which is responsible for measuring market risk exposures in accordance with the policies defined by Group Risk, and monitoring and reporting these exposures against the prescribed limits on a daily basis. The risk appetite is governed according to the framework illustrated to the left.

Each operating entity is required to assess the market risks arising on each product in its business and to transfer them to either its local Markets unit for management, or to separate books managed under the supervision of the local ALCO. Our aim is to ensure that all market risks are consolidated within operations that have the necessary skills, tools, management and governance to manage them

professionally. In certain cases where the market risks cannot be fully transferred, we identify the impact of varying scenarios on valuations or on net interest income resulting from any residual risk positions. Further details on the control and management process for residual risks are provided on page 284.

Model risk is governed through Model Oversight Committees ('MOC's) at the regional and global Wholesale Credit and Market Risk ('WCMR') levels. They have direct oversight and approval responsibility for all traded risk models utilised for risk measurement and management and stress testing. The Committees prioritise the development of

models, methodologies and practices used for traded risk management within the Group and ensure that they remain within our risk appetite and business plans. The Global WCMR MOC reports into the Group MOC, which oversees all risk types at Group level. Group MOC informs the Group Risk Management Meeting ('RMM') about material issues at least on a bi-annual basis. The RMM is the Group's 'Designated Committee' according to the regulatory rules and it has delegated day-to-day governance of all traded risk models to the Global WCMR MOC.

#### Sensitivity analysis

(Unaudited)

We use sensitivity measures to monitor the market risk positions within each risk type, for example, the present value of a basis point movement in interest rates for interest rate risk. Sensitivity limits are set for portfolios, products and risk types, with the depth of the market being one of the principal factors in determining the level of limits set.

#### Value at risk and stressed value at risk

(Audited)

VaR is a technique that estimates the potential losses on risk positions as a result of movements in market rates and prices over a specified time horizon and to a given level of confidence. Stressed VaR is primarily used for regulatory capital purposes but is integrated into the risk management process to facilitate efficient capital management and to highlight possible high-risk positions based on previous market volatility.

Both the VaR and stressed VaR models we use are based predominantly on historical simulation. These models derive plausible future scenarios from past series of recorded market rates and prices, taking into account inter-relationships between different markets and rates such as interest rates and foreign exchange rates. The models also incorporate the effect of option features on the underlying exposures.

The historical simulation models used incorporate the following features:

- historical market rates and prices are calculated with reference to foreign exchange rates and commodity prices, interest rates, equity prices and the associated volatilities;
- potential market movements utilised for VaR are calculated with reference to data from the past two years,
- potential market movements employed for stressed VaR calculations are based on a continuous one-year period of stress for the trading portfolio; the choice of period (March 2008 to February 2009) is based on the assessment at the Group level of the most volatile period in recent history; and
  - VaR measures are calculated to a 99% confidence level and use a one-day holding period scaled to 10 days, whereas stressed VaR uses a 10-day holding period.

The nature of the VaR models means that an increase in observed market volatility will lead to an increase in VaR without any changes in the underlying positions.

We routinely validate the accuracy of our VaR models by back-testing the actual daily profit and loss results, adjusted to remove non-modelled items such as fees and commissions, against the corresponding VaR numbers. We expect on average to see losses in excess of VaR 1% of the time over a one-year period.

Although a valuable guide to risk, VaR should always be viewed in the context of its limitations. For example:

- the use of historical data as a proxy for estimating future events may not encompass all potential events, particularly those which are extreme in nature;
- the use of a holding period assumes that all positions can be liquidated or the risks offset during that period. This may not fully reflect the market risk arising at times of severe illiquidity, when the holding period may be insufficient to liquidate or hedge all positions fully;

- the use of a 99% confidence level by definition does not take into account losses that might occur beyond this level of confidence;
- VaR is calculated on the basis of exposures outstanding at the close of business and therefore does not necessarily reflect intra-day exposures; and
- VaR is unlikely to reflect loss potential on exposures that only arise under conditions of significant market movement.

Our VaR model is designed to capture significant basis risks such as CDS versus bond, asset swap spreads and cross-currency basis. Other basis risks which are not completely covered in VaR, such as the Libor tenor basis, are complemented by our risk-not-in-VaR ('RNIV') (unaudited) calculations and are integrated into our capital framework. Stress testing is also used as one of the market risk tools for managing basis risks.

The RNIV framework aims to capture and capitalise material market risks that are not adequately covered in the VaR model. Risks covered by RNIV represent 14% of market risk RWAs for models with regulatory approval and include those resulting from underlying risk factors which are not observable on a daily basis across asset classes and products, such as dividend risk and correlation risks. Risk factors are reviewed on a regular basis and either incorporated directly in the VaR models, where possible, or quantified through the VaR-based RNIV approach or a stress test approach within the RNIV framework. The severity of the scenarios is calibrated to be in line with the capital adequacy requirements. The outcome of the VaR-based RNIV is included in the VaR calculation and back-testing; a stressed VaR RNIV is also computed for the risk factors considered in the VaR-based RNIV approach.

The fair value of Level 3 assets in trading portfolios, comprising trading securities and derivatives, is immaterial. Market risk arising from Level 3 assets is managed by various market risk techniques such as stress testing and notional limits to limit our exposure. We generally do not hold Level 3 assets within our trading portfolios. The table on page 489 shows the movement in Level 3 financial instruments.

#### Stress testing (Audited)

In recognition of the limitations of VaR, we augment it with stress testing as an integrated risk management tool to evaluate the potential impact on portfolio values of more extreme, although plausible, events or movements in a set of financial variables.

Stress testing is implemented at the legal entity, regional and overall Group levels. A standard set of scenarios is utilised consistently across all regions within the Group. Scenarios are tailored in order to capture the relevant events or market movements at each level. The risk appetite around potential stress losses for the Group is set and monitored against referral limits.

The process is governed by the Stress Testing Review Group forum which, in conjunction with regional risk management, determines the scenarios to be applied at portfolio and consolidated levels, as follows:

- single risk factor stress scenarios that are unlikely to be captured within the VaR models, such as the break of a currency peg;
- technical scenarios consider the largest move in each risk factor without consideration of any underlying market correlation;
- hypothetical scenarios consider potential macroeconomic events, for example, the slowdown in mainland China and the potential effects of a sovereign debt default, including its wider contagion effects; and
- historical scenarios incorporate historical observations of market movements during previous periods of stress which would not be captured within VaR.

Representative scenarios utilised for stress testing at the regional and global levels include the following:

- **China hard landing:** This scenario is designed to capture the effect of an economic slowdown in mainland China and in other emerging markets. The objective of this scenario is to quantify the impact of market reactions to an economic deterioration in Asia followed by Latin America. Under such an event, investors' risk aversion and drops in commodity prices are assumed to affect a range of market factors. Credit spreads and yield curves would rise while stock prices would fall, particularly in the regions of focus. Emerging currencies would mostly depreciate against the US dollar.
- **US selective default:** This scenario assumes that the US debt ceiling cannot be raised any higher and the US government defaults on a specific set of treasury bonds. This type of event is considered in two stages. A direct impact is assessed from missing coupons and bond principals. A secondary impact captures wider market reactions such as a sharp rise of short-term US interest rates, a widening of credit spreads, a flight to alternative safe havens to the US debt and the US dollar and a general risk aversion in emerging markets.
- **Currency de-peg:** The managed peg of the Hong Kong dollar, renminbi and Middle Eastern currencies to the US dollar is assumed to break down. Wide and sudden exchange rate shocks for each currency pair are designed to capture the impact on our exposures.

Stress testing results are submitted to the GMB and Risk Management Committee ('RMC') meetings in order to provide senior management with an assessment of the financial effect such events would have. Risk management either provides recommendations to maintain exposures which are deemed to be acceptable or proposes mitigating actions that bring risk within our appetite.

In addition, reverse stress tests are undertaken, based upon the premise that there is a fixed loss. The stress test process identifies which scenarios lead to this loss. The rationale behind the reverse stress test is to understand scenarios which are beyond normal business settings that could have contagion and systemic implications.

Stressed VaR and stress testing, together with reverse stress testing and the management of gap risk, provide management with insights regarding the 'tail risk' beyond VaR. HSBC appetite for tail risk is limited.

#### Trading portfolios (Audited)

Our control of market risk in the trading portfolios is based on a policy of restricting individual operations to trading within a list of permissible instruments authorised for each site by Group Risk, of enforcing new product approval procedures, and of restricting trading in the more complex derivative products only to offices with appropriate levels of product expertise and robust control systems.

#### Gap risk

Certain transactions are structured to render the risk to HSBC negligible under a wide range of market conditions or events. However, there exists a remote possibility that a gap event could lead to loss. A gap event could arise from a significant change in market price with no accompanying trading opportunity, with the result that the threshold is breached beyond which the risk profile changes from no risk to full exposure to the underlying structure. Such movements may occur, for example, when, in reaction to an adverse event or unexpected news announcement, the market for a specific investment becomes illiquid, making hedging impossible.

Given their characteristics, these transactions make little or no contribution to VaR or to traditional market risk sensitivity measures. We capture their risks within our stress testing scenarios and monitor gap risk on an ongoing basis. We regularly consider the probability of gap loss, and fair value adjustments are booked against this risk where significant.

Gap risk derived from certain transactions in legacy portfolios remained immaterial and limits continued to be managed down during 2013. We did not incur any material gap loss in 2013.

#### ABS/MBS exposures

The ABS/MBS exposures within the trading portfolios are managed within sensitivity and VaR limits as described on page 232, and are included within the stress testing scenarios described above.

#### Non-trading portfolios (Audited)

The principal objective of market risk management of non-trading portfolios is to optimise net interest income.

Interest rate risk in non-trading portfolios arises principally from mismatches between the future yield on assets and their funding cost, as a result of interest rate changes. Analysis of this risk is complicated by having to make assumptions on embedded optionality within certain product areas such as the incidence of mortgage prepayments, and from behavioural assumptions regarding the economic duration of liabilities which are contractually repayable on demand such as current accounts, and the re-pricing behaviour of managed rate products.

Our control of market risk in the non-trading portfolios is based on transferring the assessed market risk of non-trading assets and liabilities created outside BSM or Markets, to the books managed by BSM, provided the market risk can be neutralised. The net exposure is typically managed by BSM through the use of fixed rate government bonds (liquid assets held in available-for-sale books) and interest rate swaps. The interest rate risk arising from fixed rate government bonds held within available-for-sale portfolios is reflected within the Group's non-traded VaR. Interest rate swaps used by BSM are typically classified as either a fair value hedge or a cash flow hedge and are included within the Group's non-traded VaR. Any market risk that cannot be neutralised in the market is managed by local ALCO in segregated ALCO books.

Our funds transfer pricing policies give rise to a two stage funds transfer pricing approach. For details see page 280.

#### Credit spread risk for available-for-sale debt instruments

The risk associated with movements in credit spreads is primarily managed through sensitivity limits, stress testing and VaR. The VaR shows the effect on income from a one-day movement in credit spreads over a two-year period, calculated to a 99% confidence interval.

#### Available-for-sale equity securities

Potential new commitments are subject to risk appraisal to ensure that industry and geographical concentrations remain within acceptable levels for the portfolio. Regular reviews are performed to substantiate the valuation of the investments within the portfolio and investments held to facilitate ongoing business, such as holdings in government-sponsored enterprises and local stock exchanges.

#### Structural foreign exchange exposures (Unaudited)

Structural foreign exchange exposures represent net investments in subsidiaries, branches and associates, the functional currencies of which are currencies other than the US dollar. An entity's functional currency is that of the primary economic environment in which the entity operates.

Exchange differences on structural exposures are recognised in 'Other comprehensive income'. We use the US dollar as our presentation currency in our consolidated financial statements because the US dollar and currencies linked to it form the major currency bloc in which we transact and fund our business. Our consolidated balance sheet is, therefore, affected by exchange differences between the US dollar and all the non-US dollar functional currencies of underlying subsidiaries.

We hedge structural foreign exchange exposures only in limited circumstances. Our structural foreign exchange exposures are managed with the primary objective of ensuring, where practical, that our consolidated capital ratios and the capital ratios of individual banking subsidiaries are largely protected from the effect of changes in exchange rates. This is usually achieved by ensuring that, for each subsidiary bank, the ratio of structural exposures in a given currency to risk-weighted assets denominated in that currency is broadly equal to the capital ratio of the subsidiary in question.

We may also transact hedges where a currency in which we have structural exposures is considered likely to revalue adversely, and it is possible in practice to transact a hedge. Any hedging is undertaken using forward foreign exchange contracts which are accounted for under IFRSs as hedges of a net investment in a foreign operation, or by financing with borrowings in the same currencies as the functional currencies involved.

#### Sensitivity of net interest income (Unaudited)

A principal part of our management of market risk in non-trading portfolios is to monitor the sensitivity of projected net interest income under varying interest rate scenarios (simulation modelling). We aim, through our management of market risk in non-trading portfolios, to mitigate the effect of prospective interest rate movements which could reduce future net interest income, while balancing the cost of such hedging activities on the current net revenue stream.

Entities apply a combination of scenarios and assumptions relevant to their local businesses, and standard scenarios which are required throughout HSBC. The latter are consolidated to illustrate the combined pro forma effect on our consolidated net interest income.

Projected net interest income sensitivity figures represent the effect of the pro forma movements in net interest income based on the projected yield curve scenarios and the Group's current interest rate risk profile. This effect, however, does not incorporate actions which would probably be taken by BSM or in the business units to mitigate the effect of interest rate risk. In reality, BSM seeks proactively to change the interest rate risk profile to minimise losses and optimise net revenues. The net interest income sensitivity calculations assume that interest rates of all maturities move by the same amount in the 'up-shock' scenario. Rates are not assumed to become negative in the 'down-shock' scenario which may, in certain currencies, effectively result in non-parallel shock. In addition, the net interest income sensitivity calculations take account of the effect on net interest income of anticipated differences in changes between interbank interest rates and interest rates over which the entity has discretion in terms of the timing and extent of rate changes.

#### Defined benefit pension schemes (Audited)

Market risk arises within our defined benefit pension schemes to the extent that the obligations of the schemes are not fully matched by assets with determinable cash flows. Pension scheme obligations fluctuate with changes in long-term interest rates, inflation, salary levels and the longevity of scheme members. Pension scheme assets include equities and debt securities, the cash flows of which change as equity prices and interest rates (and credit risk) vary. There is a risk that market movements in equity prices and interest rates could result in asset values which, taken together with regular ongoing contributions, are insufficient over time to cover the level of projected obligations and these, in turn, could increase with a rise in inflation and members living longer. Management, and in certain instances trustees (who

act on behalf of the pension schemes' beneficiaries), assess these risks using reports prepared by independent external consultants, take action and, where appropriate, adjust investment strategies and contribution levels accordingly.

**HSBC Holdings**  
(Audited)

As a financial services holding company, HSBC Holdings has limited market risk activity. Its activities predominantly involve maintaining sufficient capital resources to support the Group's diverse activities; allocating these capital resources across our businesses; earning dividend and interest income on its investments in our businesses; providing dividend payments to HSBC Holdings' equity shareholders and interest payments to providers of debt capital; and maintaining a supply of short-term capital resources for deployment under extraordinary circumstances. It does not take proprietary trading positions.

The main market risks to which HSBC Holdings is exposed are interest rate risk and foreign currency risk. Exposure to these risks arises from short-term cash balances, funding positions held, loans to subsidiaries, investments in long-term financial assets and financial liabilities including debt capital issued. The objective of HSBC Holdings' market risk management strategy is to reduce exposure to these risks and minimise volatility in capital resources, cash flows and distributable reserves. Market risk for HSBC Holdings is monitored by HSBC Holdings ALCO in accordance with its risk appetite statement.

HSBC Holdings uses interest rate swaps and cross currency interest rate swaps to manage the interest rate risk and foreign currency risk arising from its long-term debt issues.

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**Operational risk**  
(Unaudited)

The objective of our operational risk management is to manage and control operational risk in a cost effective manner within targeted levels of operational risk consistent with our risk appetite, as defined by the GMB.

Operational risk is organised as a specific risk discipline within Global Risk, and a formal governance structure provides oversight over its management. The Global Operational Risk function reports to the Group Chief Risk Officer and supports the Global Operational Risk and Control Committee. It is responsible for establishing and maintaining the operational risk management framework ('ORMF'), monitoring the level of operational losses and the effectiveness of the control environment. It is also responsible for operational risk reporting at Group level, including the preparation of reports for consideration by the Risk Management Meeting and Group Risk Committee. The Global Operational Risk and Control Committee meets at least quarterly to discuss key risk issues and review the effective implementation of the ORMF.

The ORMF defines minimum standards and processes and the governance structure for the management of operational risk and internal control in our geographical regions, global businesses and global functions. The ORMF has been codified in a high level standards manual supplemented with detailed policies which describe our approach to identifying, assessing, monitoring and controlling operational risk and give guidance on mitigating action to be taken when weaknesses are identified.

Business managers throughout the Group are responsible for maintaining an acceptable level of internal control commensurate with the scale and nature of operations, and for identifying and assessing risks, designing controls and monitoring the effectiveness of these controls. The ORMF helps managers to fulfil these responsibilities by defining a standard risk assessment methodology and providing a tool for the systematic reporting of operational loss data.

A centralised database is used to record the results of the operational risk management process. Operational risk and control self-assessments are input and maintained by business units. Business and functional management and Business Risk and Control Managers monitor the progress of documented action plans to address shortcomings. To ensure that operational risk losses are consistently reported and monitored at Group level, all Group companies are required to report individual losses when the net loss is expected to exceed US\$10,000, and to aggregate all other operational risk losses under US\$10,000. Losses are entered into the operational risk system and are reported to the Group Operational Risk function quarterly.

For further details, see the Pillar 3 Disclosures 2013 report, page 84.

Compliance risk  
(Unaudited)

Compliance risk falls within the definition of operational risk. All Group companies are required to observe the letter and spirit of all relevant laws, codes, rules, regulations and standards of good market practice. These rules, regulations, standards and Group policies include those relating to anti-money laundering, anti-bribery and corruption, counter-terrorist and proliferation financing, sanctions compliance, conduct of business, market conduct and other financial regulations.

In 2013, HSBC transformed its existing Global Compliance team into two distinct sub-functions: Financial Crime Compliance ('FCC') and Regulatory Compliance ('RC'), jointly supported by Compliance Shared Services. These are control functions working as part of our Global Risk function. They are responsible for functional resourcing decisions, performance reviews, objectives, strategy, budget and accountability. They are empowered to set standards and have the authority to ensure those standards are met. The Global Head of Financial Crime Compliance and the Global Head of Regulatory Compliance both report to the Group Chief Risk Officer.

There are compliance teams in each of the countries where we operate and in all global businesses. These compliance teams are principally overseen by Heads of Financial Crime Compliance and Regulatory Compliance located in Europe, the US, Canada, Latin America, Asia-Pacific and the Middle East and North Africa. There is an Assurance team within Compliance Shared Services that reviews the effectiveness of the Regional and Global Business Compliance teams.

Global policies and procedures require the prompt identification and escalation to Global Regulatory or Financial Crime Compliance of all actual or suspected breaches of any law, rule, regulation, policy or other relevant requirement. These escalation procedures are supplemented by a requirement for the submission of compliance certificates at the half-year and year-end by all Group companies and functions detailing any known breaches as above. The contents of these escalation and certification processes are used for reporting to the Risk Management Meeting, the Group Risk Committee and the Board. They are disclosed in the Annual Report and Accounts and Interim Report, as appropriate.

Legal risk  
(Unaudited)

Each operating company is required to have processes and procedures in place to manage legal risk that conform to Group standards.

Legal risk falls within the definition of operational risk and includes:

- contractual risk, which is the risk that the rights and/or obligations of an HSBC company within a contractual relationship are defective;

- dispute risk, which is made up of the risks that an HSBC company is subject to when it is involved in or managing a potential or actual dispute;
- legislative risk, which is the risk that an HSBC company fails to adhere to the laws of the jurisdictions in which it operates; and
- non-contractual rights risk, which is the risk that an HSBC company's assets are not properly owned or are infringed by others, or an HSBC company infringes another party's rights.

Our Global Legal function assists management in controlling legal risk. There are legal departments in 51 of the countries in which we operate. In addition to the Group Legal function, there are regional legal functions in each of Europe, North America, Latin America, the Middle East and North Africa and Asia-Pacific headed by Regional General Counsels as well as a global General Counsel responsible for each of the global businesses.

#### Global security and fraud risk (Unaudited)

Security and fraud risk issues are managed at Group level by Global Security and Fraud Risk. This unit, which has responsibility for physical risk, fraud, information and contingency risk, and geopolitical risk and business intelligence is fully integrated within Global Risk. This enables management to identify and mitigate the permutations of these and other non-financial risks to its business lines across the jurisdictions in which we operate.

The Fraud Risk function is responsible for ensuring that effective protection measures are in place against all forms of fraudulent activity, whether initiated internally or externally, and is available to support any part of the business. To achieve that and to attain the level of integration needed to face the threat, the management of all types of fraud (e.g. card fraud, non-card fraud and internal fraud, including investigations), is established within one management structure and is part of the Global Risk function.

We use technology extensively to prevent and detect fraud. For example, customers' credit and debit card spending is monitored continuously and suspicious transactions are highlighted for verification, internet banking sessions are reviewed and transactions monitored in a similar way and all new account applications are screened for fraud. We have a fraud systems strategy which is designed to provide minimum standards and allow easier sharing of best practices to detect fraud and minimise false alerts.

We have developed a holistic and effective anti-fraud strategy comprising fraud prevention policies and practices, the implementation of strong internal controls, an investigations response team and liaison with law enforcement where appropriate.

The Business Continuity Planning function is responsible for ensuring that the group's critical systems, processes and functions have the resilience to maintain continuity in the face of major disruptive events. Within this wider risk, Business Continuity Management covers the pre-planning for recovery, seeking to minimise the adverse effects of major business disruption, either globally, regionally or within country, against a range of actual or emerging risks. The pre-planning concentrates on the protection of customer services, our staff, revenue generation and the integrity of data and documents.

Each business and function has its own recovery plans, which are developed following the completion of a Business Impact Analysis. This determines how much time the business or function could sustain an outage before the level of losses becomes unacceptable, i.e. its criticality. These plans are reviewed and tested every year. The planning is undertaken against Group policy and standards and each business confirms in an annual compliance certificate that all have been met. Should there be exceptions, these are raised and their short-term resolution is overseen by Group and

regional business continuity teams.

It is important that plans are dynamic and meet all risks, particularly those of an emerging nature such as possible pandemics and the eurozone crisis. The ORMF is used to measure our resilience to these risks, and is confirmed to Group and regional risk committees.

Resilience is managed through various risk mitigation measures. These include agreeing with IT acceptable recovery times of systems, ensuring our critical buildings have the correct infrastructure to enable ongoing operations, requiring critical vendors to have their own recovery plans and arranging with Group insurance appropriate cover for business interruption costs.

#### Systems risk (Unaudited)

Systems risk is the risk of failure or other deficiency in the automated platforms that support the Group's daily execution (application systems) and the systems infrastructure on which they reside (data centres, networks and distributed computers).

The management of systems risk is overseen globally by the HTS organisation. Oversight is provided through monthly risk management committee meetings that provide a comprehensive overview of existing top and emerging risks.

HTS line management manages the control environment over systems risks using risk and control assessments and top risk analysis. Key risk indicators are used to assure a consistent basis of risk evaluation across geographic and line of business boundaries.

Business critical services have been identified through a central, global oversight body. Quantitative scorecards called Risk Appetite Statements have been established for each of these services.

Service Resilience and Systems Continuity Planning functions are in place to ensure systems meet agreed target service levels and in the event of major disruptive events, can be recovered within recovery time objectives agreed with the business.

#### Vendor risk management (Unaudited)

Our vendor risk management ('VRM') programme is a global framework for managing risk with third party vendors, especially where we are reliant on outsourced agreements to provide critical services to our customers. VRM contains a rigorous process to identify material contracts and their key risks and ensure controls are in place to manage and mitigate these risks.

#### Fiduciary risk (Unaudited)

Business activities in which fiduciary risk is inherent should only be undertaken within designated lines of business. Fiduciary risk is managed within the designated businesses via a comprehensive policy framework and monitoring of key indicators. The Group's principal fiduciary businesses ('designated businesses') are:

- HSBC Securities Services, where it is exposed to fiduciary risk via its Funds Services and Corporate Trust and loan agency activities;
  - HSBC Global Asset Management, which is exposed to fiduciary risks via its investment management activities on behalf of clients;
- 
- HSBC Global Private Banking, which is exposed to fiduciary risks via its Private Wealth Services division and discretionary investment management;
  - HSBC Insurance, which is exposed to fiduciary risks via the investment management activities it undertakes when providing insurance products and services; and
  - RBWM Trust Investment Wrappers, required by regulation for the provision of normal RBWM Wealth Management products and services.

The Group's requirements for the management of fiduciary risk are laid down in the Fiduciary section of the Global Risk Functional Instruction Manual, which is owned by Global Operational Risk. No business other than the designated businesses may undertake fiduciary activities without notifying Global Operational Risk and receiving specific dispensations from the relevant Fiduciary policy requirements.

Other policies around the provision of advice, including investment advice and corporate advisory, and the management of potential conflicts of interest, also mitigate our fiduciary risks.

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## Risk management of insurance operations

### Overview of insurance products (Audited)

HSBC manufactures the following main classes of life insurance contracts:

- life insurance contracts with discretionary participation features ('DPF');
  - credit life insurance business;
    - annuities;
  - term assurance and critical illness policies;
    - linked life insurance;
    - investment contracts with DPF;
    - unit-linked investment contracts; and
- other investment contracts (including pension contracts written in Hong Kong).

We additionally write a small amount of non-life insurance business primarily covering personal and commercial property.

### Nature and extent of risks (Audited)

The majority of the risks in our Insurance business derive from manufacturing activities and can be categorised between financial risks and insurance risk; financial risks include market risk, credit risk and liquidity risk.

Operational and sustainability risks are also present and are covered by the Group's respective overall risk management processes.

The following sections describe how financial risks and insurance risk are managed. The assets of insurance manufacturing subsidiaries are included within the consolidated risk disclosures on pages 134 to 265, although separate disclosures in respect of insurance manufacturing subsidiaries are provided in the 'Risk management of insurance operations' section on pages 249 to 259.

Insurance manufacturers establish control procedures complying with the guidelines and requirements issued by Group Insurance and local regulatory requirements. Country level oversight is exercised by local risk management committees. Country Chief Risk Officers have direct reporting lines into local Insurance Chief Executive Officers and functional reporting lines into the Group Insurance Chief Risk Officer, who has overall accountability for risk management in insurance operations globally. The Group Insurance Executive Committee oversees the control framework globally and is accountable to the RBWM Risk Management Committee on risk matters.

In addition, local ALCOs monitor and review the duration and cash flow matching of insurance assets and liabilities.

All insurance products, whether manufactured internally or by a third party, are subjected to a product approval process prior to introduction.

#### Financial risks (Audited)

Our insurance businesses are exposed to a range of financial risks, including market risk, credit risk and liquidity risk. Market risk includes interest rate, equity and foreign exchange risks. The nature and management of these risks is described below.

Manufacturing subsidiaries are exposed to financial risks when, for example, the proceeds from financial assets are not sufficient to fund the obligations arising from insurance and investment contracts. In many jurisdictions, local regulatory requirements prescribe the type, quality and concentration of assets that these subsidiaries must maintain to meet insurance liabilities. These requirements complement Group-wide policies.

#### Market risk (Audited)

##### Description of market risk

The main features of products manufactured by our insurance manufacturing subsidiaries which generate market risk, and the market risk to which these features expose the subsidiaries, are discussed below.

Interest rate risk arises to the extent that yields on the assets are lower than the investment returns implied by the guarantees payable to policyholders by insurance manufacturing subsidiaries. When the asset yields are below guaranteed yields, products may be discontinued, repriced or restructured. A list of the different types of guarantees within our insurance contracts is outlined below.

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#### Categories of guaranteed benefits

- annuities in payment;

- deferred/immediate annuities: these consist of two phases - the savings and investing phase and the retirement income phase;
  - annual return: the annual return is guaranteed to be no lower than a specified rate. This may be the return credited to the policyholder every year, or the average annual return credited to the policyholder over the life of the policy, which may occur on the maturity date or the surrender date of the contract; and
  - capital: policyholders are guaranteed to receive no less than the premiums paid plus declared bonuses less expenses.
- 

The proceeds from insurance and investment products with DPF are primarily invested in bonds with a proportion allocated to other asset classes in order to provide customers with the potential for enhanced returns. Subsidiaries with portfolios of such products are exposed to the risk of falls in market prices which cannot be fully reflected in the discretionary bonuses. An increase in market volatility could also result in an increase in the value of the guarantee to the policyholder.

Long-term insurance and investment products typically permit the policyholder to surrender the policy or let it lapse at any time. When the surrender value is not linked to the value realised from the sale of the associated supporting assets, the subsidiary is exposed to market risk. In particular, when customers seek to surrender their policies when asset values are falling, assets may have to be sold at a loss to fund redemptions.

A subsidiary holding a portfolio of long-term insurance and investment products, especially with DPF, may attempt to reduce exposure to its local market by investing in assets in countries other than that in which it is based. These assets may be denominated in currencies other than the subsidiary's local currency. Where the foreign exchange exposure associated with these assets is not hedged, for example because it is not cost effective to do so, this exposes the subsidiary to the risk of its local currency strengthening against the currency of the related assets.

For unit-linked contracts, market risk is substantially borne by the policyholder, but market risk exposure typically remains as fees earned for management are related to the market value of the linked assets.

#### Asset and liability matching

It is not always possible to match asset and liability durations, partly because there is uncertainty over policyholder behaviour which introduces uncertainty over the receipt of all future premiums and the timing of claims, and partly because the forecast payment dates of liabilities may exceed the duration of the longest dated investments available.

We use models to assess the effect of a range of future scenarios on the values of financial assets and associated liabilities, and ALCOs employ the outcomes in determining how to best structure asset holdings to support liabilities. The scenarios include stresses applied to factors which affect insurance risk such as mortality and lapse rates. Of particular importance is assessing the expected pattern of cash inflows against the benefits payable on the underlying contracts, which can extend for many years.

Our current portfolio of assets includes debt securities issued at a time when yields were higher than those observed in the current market. As a result, yields on extant holdings of debt securities exceed those available on current issues. We reduced short-term bonus rates paid to policyholders on certain participating contracts to manage the immediate strain on the business. Should interest rates and yield curves remain low further reductions may be necessary.

#### How market risk is managed

All our insurance manufacturing subsidiaries have market risk mandates which specify the investment instruments in which they are permitted to invest and the maximum quantum of market risk which they may retain. They manage

market risk by using some or all of the techniques listed below, depending on the nature of the contracts they write.

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#### Techniques for managing market risk

- for products with DPF, adjusting bonus rates to manage the liabilities to policyholders. The effect is that a significant portion of the market risk is borne by the policyholder;
    - structuring asset portfolios to support projected liability cash flows;
  - using derivatives, to a limited extent, to protect against adverse market movements or better match liability cash flows;
  - for new products with investment guarantees, considering the cost when determining the level of premiums or the price structure;
  - periodically reviewing products identified as higher risk, which contain investment guarantees and embedded optionality features linked to savings and investment products;
  - including features designed to mitigate market risk in new products, such as charging surrender penalties to recoup losses incurred when policyholders surrender their policies;
    - exiting, to the extent possible, investment portfolios whose risk is considered unacceptable; and
      - repricing of premiums charged to policyholders.
- 

In the product approval process, the risks embedded in new products are identified and assessed. When, for example, options and guarantees are embedded in new products, the due diligence process ensures that complete and appropriate risk management procedures are in place. For all but the simplest of guaranteed benefits the assessment is undertaken by Group Insurance. Management reviews certain exposures more frequently when markets are more volatile to ensure that any matters arising are dealt with in a timely fashion.

#### How the exposure to market risk is measured

Our insurance manufacturing subsidiaries monitor exposures against mandated limits regularly and report them to Group Insurance. Exposures are aggregated and reported on a quarterly basis to senior risk management forums in Group Insurance.

In addition, large insurance manufacturing subsidiaries perform a high-level monthly assessment of market risk exposure against risk appetite. This is submitted to Group Insurance and a global assessment presented to the RBWM Risk Management Committee.

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#### Standard measures for quantifying market risks

- for interest rate risk, the sensitivities of the net present values of asset and expected liability cash flows, in total and by currency, to a one basis point parallel shift in the discount curves used to calculate the net present values;

- for equity price risk, the total market value of equity holdings and the market value of equity holdings by region and country; and
  - for foreign exchange risk, the total net short foreign exchange position and the net foreign exchange positions by currency.
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The standard measures are relatively straightforward to calculate and aggregate, but they have limitations. The most significant one is that a parallel shift in yield curves of one basis point does not capture the non-linear relationships between the values of certain assets and liabilities and interest rates. Non-linearity arises, for example, from investment guarantees and product features which enable policyholders to surrender their policies. We bear the shortfall if the yields on investments held to support contracts with guaranteed benefits are less than the investment returns implied by the guaranteed benefits.

We recognise these limitations and augment our standard measures with stress tests which examine the effect of a range of market rate scenarios on the aggregate annual profits and total equity of our insurance manufacturing subsidiaries, after taking into consideration tax and accounting treatments where material and relevant. The results of these tests are reported to Group Insurance and risk committees every quarter.

The table, 'Sensitivity of HSBC's insurance manufacturing subsidiaries to market risk factors' on page 255), indicates the sensitivity of insurance manufacturers profit and total equity to market risk factors.

#### Credit risk (Audited)

##### Description of credit risk

Credit risk arises in two main areas for our insurance manufacturers:

- (i) risk of default by debt security counterparties after investing premiums to generate a return for policyholders and shareholders; and
- (ii) risk of default by reinsurance counterparties and non-reimbursement for claims made after ceding insurance risk.

##### How credit risk is managed

Our insurance manufacturing subsidiaries are responsible for the credit risk, quality and performance of their investment portfolios. Our assessment of the creditworthiness of issuers and counterparties is based primarily upon internationally recognised credit ratings and other publicly available information.

Investment credit exposures are monitored against limits by our local insurance manufacturing subsidiaries, and are aggregated and reported to Group Insurance Credit Risk and Group Credit Risk. Stress testing is performed by Group Insurance on the investment credit exposures using credit spread sensitivities and default probabilities.

We use a number of tools to manage and monitor credit risk. These include a Credit Watch Report which contains a watch-list of investments with current credit concerns and is circulated fortnightly to senior management in Group Insurance and the individual Country Chief Risk Officers to identify investments which may be at risk of future impairment.

#### Liquidity risk (Audited)

### Description of liquidity risk

It is an inherent characteristic of almost all insurance contracts that there is uncertainty over the amount of claims liabilities that may arise and the timing of their settlement, and this creates liquidity risk.

There are three aspects to liquidity risk. The first arises in normal market conditions and is referred to as funding liquidity risk; specifically, the capacity to raise sufficient cash when needed to meet payment obligations. Secondly, market liquidity risk arises when the size of a particular holding may be so large that a sale cannot be completed around the market price. Finally, standby liquidity risk refers to the capacity to meet payment terms in abnormal conditions.

### How liquidity risk is managed

Our insurance manufacturing subsidiaries primarily fund cash outflows arising from claim liabilities from the following sources of cash inflows:

- premiums from new business, policy renewals and recurring premium products;
- interest and dividends on investments and principal repayments of maturing debt investments;
  - cash resources; and
  - the sale of investments.

They manage liquidity risk by utilising some or all of the following techniques:

- matching cash inflows with expected cash outflows using specific cash flow projections or more general asset and liability matching techniques such as duration matching;
  - maintaining sufficient cash resources;
- investing in good credit-quality investments with deep and liquid markets to the degree to which they exist;
- monitoring investment concentrations and restricting them where appropriate, for example, by debt issues or issuers; and
  - establishing committed contingency borrowing facilities.

Each of these techniques contributes to mitigating the three types of liquidity risk described above.

Every quarter, our insurance manufacturing subsidiaries are required to complete and submit liquidity risk reports to Group Insurance for collation and review. Liquidity risk is assessed in these reports by measuring changes in expected cumulative net cash flows under a series of stress scenarios designed to determine the effect of reducing expected available liquidity and accelerating cash outflows. This is achieved, for example, by assuming new business or renewals are lower, and surrenders or lapses are greater, than expected.

### Insurance risk (Audited)

Insurance risk is the risk, other than financial risk, of loss transferred from the holder of the insurance contract to the issuer (HSBC). The principal risk we face in manufacturing insurance contracts is that, over time, the cost of acquiring and administering a contract, claims and benefits may exceed the aggregate amount of premiums received and investment income.

The cost of claims and benefits can be influenced by many factors, including mortality and morbidity experience, lapse and surrender rates and, if the policy has a savings element, the performance of the assets held to support the liabilities.

Insurance risks are controlled by high-level policies and procedures set both centrally and locally, taking into account where appropriate local market conditions and regulatory requirements. Formal underwriting, reinsurance and claims-handling procedures designed to ensure compliance with regulations are applied, supplemented with stress testing.

As well as exercising underwriting controls, we use reinsurance as a means of mitigating exposure to insurance risk. Where we manage our exposure to insurance risk through the use of third-party reinsurers, the associated revenue and manufacturing profit is ceded to the reinsurers. Although reinsurance provides a means of managing insurance risk, such contracts expose us to credit risk, the risk of default by the reinsurer.

The principal drivers of our insurance risk are described below. The liabilities for long-term contracts are set by reference to a range of assumptions around these drivers. These typically reflect the issuers' own experiences. The type and quantum of insurance risk arising from life insurance depends on the type of business, and varies considerably.

- mortality and morbidity: the main contracts which generate exposure to these risks are term assurance, whole life products, critical illness and income protection contracts and annuities. The risks are monitored on a regular basis, and are primarily mitigated by underwriting controls and reinsurance and by retaining the ability in certain cases to amend premiums in the light of experience;
- lapses and surrenders: the risks associated with this are generally mitigated by product design, the application of surrender charges and management actions, for example, managing the level of bonus payments to policyholders. A detailed persistency analysis at a product level is carried out at least on an annual basis; and
- expense risk is mitigated by pricing, for example, retaining the ability in certain cases to amend premiums and/or policyholder charges based on experience, and cost management discipline.

Liabilities are affected by changes in assumptions (see 'Sensitivity analysis' on page 259).

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#### Reputational risk (Unaudited)

We regularly review our policies and procedures for safeguarding against reputational risk. This is an evolutionary process which takes account of relevant developments, industry guidance, best practice and societal expectations.

We have always aspired to the highest standards of conduct and, as a matter of routine, take account of reputational risks to our business. Reputational risks can arise from a wide variety of causes. As a banking group, our good reputation depends not only upon the way in which we conduct our business, but also by the way in which clients, to whom we provide financial services, conduct themselves.

Group functions with responsibility for activities that attract reputational risk are represented at the Group Reputational Risk Policy Committee ('GRRPC'), which is chaired by the Group Chairman. The primary role of the GRRPC is to consider areas and activities presenting significant reputational risk and, where appropriate, to make recommendations to the Global Standards Steering Meeting for policy or procedural changes to mitigate such risk. Each of the Group's geographical regions is required to ensure that reputational risks are also considered at a regional level, either through a special section of their respective Regional Risk Management Committee or a regional

Reputational Risk Policy Committee. Minutes from the regional meetings are tabled at GRRPC.

Each of the global businesses is required to have a procedure to assess and address reputational risks potentially arising from proposed business transactions and client activity. These are supported by a central team which ensures that issues are directed to the appropriate forum, that decisions taken are implemented and that management information is collated and actions reported to senior management.

Standards on all major aspects of business are set for HSBC and for individual subsidiaries, businesses and functions. Reputational risks, including environmental, social and governance matters, are considered and assessed by the Board, the GMB, the Risk Management Meeting, the Global Standards Steering Meeting, subsidiary company boards, Board committees and senior management during the formulation of policy and the establishment of our

standards. These policies, which form an integral part of the internal control system (see page 364), are communicated through manuals and statements of policy and are promulgated through internal communications and training.

The policies set out our risk appetite and operational procedures in all areas of reputational risk, including money laundering deterrence, counter-terrorist financing, environmental impact, anti-bribery and corruption measures and employee relations. The policy manuals address risk issues in detail and co-operation between Group departments and businesses is required to ensure a strong adherence to our risk management system and our sustainability practices.

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Pension risk  
(Audited)

We operate a number of pension plans throughout the world, as described in Note 7 on the Financial Statements, the Pension risk section on page 260 and below. Some of them are defined benefit plans, of which the largest is the HSBC Bank (UK) Pension Scheme ('the principal plan').

In order to fund the benefits associated with these plans, sponsoring Group companies (and, in some instances, employees) make regular contributions in accordance with advice from actuaries and in consultation with the scheme's trustees (where relevant). The defined benefit plans invest these contributions in a range of investments designed to meet their long-term liabilities.

The level of these contributions has a direct impact on HSBC's cash flow and would normally be set to ensure that there are sufficient funds to meet the cost of the accruing benefits for the future service of active members. However, higher contributions will be required when plan assets are considered insufficient to cover the existing pension liabilities. Contribution rates are typically revised annually or triennially, depending on the plan. The agreed contributions to the principal plan are revised triennially.

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A deficit in a defined benefit plan may arise from a number of factors, including:

- investments delivering a return below that required to provide the projected plan benefits. This could arise, for example, when there is a fall in the market value of equities, or when increases in long-term interest rates cause a fall in the value of fixed income securities held;
- the prevailing economic environment leading to corporate failures, thus triggering write-downs in asset values (both equity and debt);

- a change in either interest rates or inflation which causes an increase in the value of the scheme liabilities; and
    - scheme members living longer than expected (known as longevity risk).
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A plan's investment strategy is determined after taking into consideration the market risk inherent in the investments and its consequential impact on potential future contributions. The long-term investment objectives of both HSBC and, where relevant and appropriate, the trustees are:

- to limit the risk of the assets failing to meet the liabilities of the plans over the long-term; and
- to maximise returns consistent with an acceptable level of risk so as to control the long-term costs of the defined benefit plans.

In pursuit of these long-term objectives, a benchmark is established for the allocation of the defined benefit plan assets between asset classes. In addition, each permitted asset class has its own benchmarks, such as stock market or property valuation indices and, where relevant, desired levels of out-performance. The benchmarks are reviewed at least triennially within 18 months of the date at which an actuarial valuation is made, or more frequently if required by local legislation or circumstances. The process generally involves an extensive asset and liability review.

Ultimate responsibility for investment strategy rests with either the trustees or, in certain circumstances, a management committee. The degree of independence of the trustees from HSBC varies in different jurisdictions.

#### Pension plans in the UK

HSBC's largest plan exists in the UK, where the HSBC Bank (UK) Pension Scheme ('the Scheme') covers employees of HSBC Bank plc and certain other employees of HSBC. This comprises a funded final salary defined benefit plan ('the principal plan'), which is closed to new entrants, and a defined contribution plan which was established in July 1996 for new employees.

The principal plan, which accounts for approximately 71% of the obligations of our defined benefit pension plans, is overseen by a corporate trustee who has a fiduciary responsibility for the operation of the pension scheme. The trustee is responsible for monitoring and managing the investment strategy and administration of scheme benefits.

The principal plan holds a diversified portfolio of investments to meet future cash flow liabilities arising from accrued benefits as they fall due to be paid. The trustee of the principal plan is required to produce a written Statement of Investment Principles which governs decision-making about how investments are made and the need for adequate diversification is taken into account in the choice of asset allocation and manager structure in the defined benefit section.

Longevity risk in the principal plan is assessed as part of the measurement of the pension liability and managed through the funding process of the scheme.

#### Pension plans in Hong Kong

In Hong Kong, the HSBC Group Hong Kong Local Staff Retirement Benefit Scheme covers employees of The Hongkong and Shanghai Banking Corporation and certain other employees of HSBC. The scheme comprises a funded defined benefit scheme and a defined contribution scheme. The defined benefit section of the scheme is a final salary lump sum scheme and therefore its exposure to longevity and interest rate risk is limited; it was closed to new members from 1999.

The trustee assumes the overall responsibility for the scheme but a management committee and a number of sub-committees have also been established. These committees have been established to broaden the governance and manage the concomitant issues. The finance and investment sub-committee review and make recommendations on the various issues in relation to both assets and liabilities of the scheme, to the management committee.

#### Pension plans in North America

The HSBC North America (US) Retirement Income Plan covers all employees of HSBC Bank USA, HSBC Finance and other HSBC entities in the US who have reached the age of 21 and met the one year of service participation requirement. The Retirement Income Plan is a funded defined benefit plan which provides final average pay benefits to legacy participants and cash balance benefits to all other participants. Prior to 1 January 2013, all new employees participated in the cash balance section of the plan. With effect from 1 January 2013, it was agreed to cease all future contributions under the cash balance formula and freeze the plan. Whilst participants with existing balances will no longer accrue benefits, they will continue to receive interest credits. In November 2009, the Board of Directors of HSBC North America Holdings, Inc. ('HNAH') approved actions to cease all future benefit accruals for legacy participants under the final average pay formula components of the HSBC North America Retirement Income Plan with effect from 1 January 2011.

The Plan is governed by the Employee Retirement Security Act of 1974 ('ERISA'), which regulations serve as guidance for the management of plan assets. In this regard, an investment committee (the 'committee') for the Plan has been established and its members have been appointed by the Chief Executive Officer as authorised by the Board of Directors of HNAH. The committee is responsible for establishing the funding policy and investment objectives supporting the Plan including allocating the assets of the Plan, monitoring the diversification of the Plan's investments and investment performance, assuring the Plan does not violate any provisions of ERISA and the appointment, removal and monitoring of investment advisers and the trustee.

A key factor shaping the committee's attitude towards risk is the generally long-term nature of the underlying benefit obligations. The asset allocation decision reflects this long-term horizon as well as the ability and willingness to accept some short-term variability in the performance of the portfolio in exchange for the expectation of competitive long-term investment results for its participants.

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#### Sustainability risk (Unaudited)

Sustainability risks arise from the provision of financial services to companies or projects which run counter to the needs of sustainable development; in effect this risk arises when the environmental and social effects outweigh economic benefits. Within Group Head Office, a separate function, Global Corporate Sustainability, is mandated to manage these risks globally working through local offices as appropriate. Sustainability Risk Managers have regional or national responsibilities for advising on and managing environmental and social risks.

Global Corporate Sustainability's risk management responsibilities include:

- formulating sustainability risk policies. This includes overseeing our sustainability risk standards, our implementation of the Equator Principles for project finance lending, and our sector-based sustainability policies covering those sectors with high environmental or social impacts (forestry, freshwater infrastructure, chemicals, energy, mining and metals, and defence-related lending); undertaking an independent review of transactions where sustainability risks are assessed to be high; and supporting our operating companies to assess similar risks of a lower magnitude;

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- building and implementing systems-based processes to ensure consistent application of policies, reduce the costs of sustainability risk reviews and capture management information to measure and report on the effect of our lending and investment activities on sustainable development; and
- providing training and capacity building within our operating companies to ensure sustainability risks are identified and mitigated consistently to either our own standards, international standards or local regulations, whichever is higher.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

HSBC Holdings plc

By:

Name: Ben J S Mathews

Title: Group Company Secretary

Date: 25 March 2014