

# LONDON ONE HUNDRED WHITE PAPER

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## The currency effect



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# Tumultuous times



While insurers have dedicated considerable time and resources in preparation for

Solvency II implementation, the financial markets have continued to remind treasurers of the impact of market risks on both profits and balance sheets.

This year has continued to witness bouts of heightened market volatility, with currencies, in particular, fugacious to stability for prolonged periods, against the backdrop of persistently ultra-low interest rates and stubborn inflation eroding asset returns.

Finance and investment managers are more focused than ever on their risk management treasury policies and deployment of capital, implementing additional protective hedge programmes to match their risk tolerance profiles.

Looking forward, major reforms to the regulatory and reporting landscape for insurance companies, banks and across the wider financial markets will effect a permanent structural shift in both how financial risk is measured and evaluated, and how treasury products used to mitigate market risks are applied and executed.

Although many of these proposals are yet to be finalised, it is clear they will directly impact on how insurers in Europe, and jurisdictions that adopt an equivalent approach to Solvency II, manage market risk. This paper considers the potential

impact of these proposals, with a particular focus on one of the most volatile market risks to have affected insurers in recent times – foreign exchange (FX).

## Impact of FX on currency profits and claims

Although Solvency II will focus insurers on wider market risks to their businesses, the core function of short-term transactional FX (repatriating currency profits or paying currency claims) still retains a position of prime influence on profitability.

While sterling and Euro currency weakness has generally benefited UK and Europe based names in recent years (that write US denominated business) the FX markets in 2011 have reminded treasurers of the importance of implementing hedging strategies once a currency payment profile is estimated.

(Re)insurers have been widely subject to a double impact of funding both unusually high catastrophe claims in “non-core” currency liabilities (Australia, New Zealand and Japan) from “core” currency assets (typically denominated in US dollars or sterling) – at the same time that these payment currencies appreciated to all-time/long-term historical highs in FX markets.

The graph on page 4 highlights the rise in strength of the New Zealand dollar, the Australian dollar and Japanese yen versus the US dollar since 2008, and shows the movements over the timeline of recent

catastrophes (the US\$/Yen rate is inverted for comparison). FX rates following each event led to unhedged insurers paying up to 12 percent extra in currency claims, as shown in the table below.

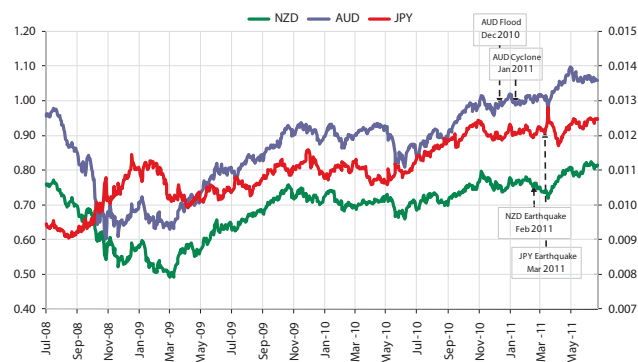
While the example incorporates subsequent highs in FX rates, it does illustrate that insurers may wish to consider adopting pre-defined FX hedging policies to implement at short notice once a probable currency claim profile is known. Looking ahead towards Solvency II, the flexibility for insurers to apply appropriate derivative hedging may be partly reliant on having a “targeted overall risk management policy” in place.

Participants in the Lloyd’s (of London) currency conversion scheme have less direct control over hedging FX risk, although solutions are available to work around this.

### Impact of FX volatility on balance sheets and capital

Beyond the traditional currency consideration of funding claims and converting profits, heightened FX volatility

## Currencies on rise against the US dollar



Source: Lloyds Bank Corporate Markets

in the past four years has shined a light on additional exposures, with insurers taking action to address market risk. Some examples are provided in the following:

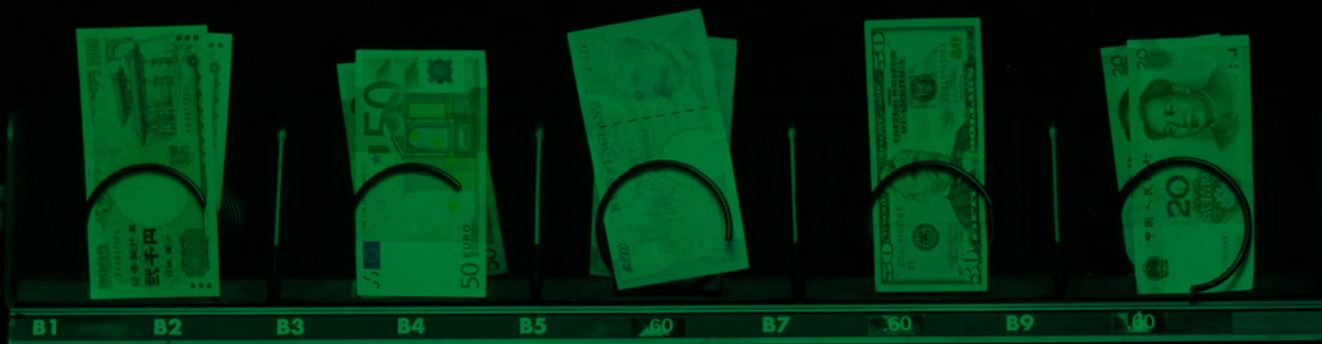
### Net currency asset mismatches:

- Insurers who maintain unhedged currency asset liability mismatches have reported greater swings on net asset values arising from the extended period of high FX volatility

## Costs for unhedged insurers

Catastrophe event	Date	Country	Estimated insurance claims	FX rate at time of event	Max FX rate	Days after catastrophe event	Difference due to FX rate
Queensland flood	Dec 2010	Aus	A\$30bn	A\$ 0.99	A\$ 1.1012 (2 May 2011)	125	12%
Cyclone Yasi	Jan 2011	Aus	A\$3bn	A\$ 1.00	A\$ 1.1012 (2 May 2011)	90	12%
Christchurch earthquake	22 Feb 2011	NZ	NZ\$15-16bn	NZ\$ 0.74	NZ\$ 0.8262 (9 June 2011)	90	12%
Tohoku earthquake and tsunami	11 March 2011	Japan	US\$300bn+	¥83.00	¥76.25 (17 March 2011)	6	8%

Source: Lloyds Bank Corporate Markets



- While many insurers retain currency funds as a partial solvency hedge or to cover a large catastrophe event, many in the London market are required to maintain currency assets in order to comply with overseas regulations
- Lloyd's participants operating in certain overseas markets such as Canada may be required to maintain a Trust Fund (e.g. in Canadian dollars to comply with the Branch Adequacy of Assets Test to demonstrate solvency)
- FX hedge overlays can be designed and implemented to offset all or part of the associated FX risk. Under Solvency II, mismatches in net currency assets will also attract a capital charge (see Focus)

#### Translation risk:

- The net asset value of overseas subsidiaries operating in a different functional currency can be subject to large revaluations arising from FX volatility when consolidated back into their parent accounts
- Many currency hedge strategies qualify as a Net Investment Hedge (NIH) under both IFRS and US GAAP which are effective in managing associated volatility

#### Funds at Lloyd's capital mismatch:

- During periods of heightened market distress, FX markets have reacted historically by selling off sterling as investors sought refuge into "safe haven" US dollar denominated assets
- Insurers with a capital mismatch in their Funds at Lloyd's (FAL) holding were subject to a capital call in 2008

when Lloyd's amended the reference FX rate on which the syndicate ICAs and valuations of funds were based

- Insurers that maintain a currency mismatch exposure may be subject to future margin calls during a period of similar market distress – at a time when it may be especially challenging and expensive to raise capital
- The FX risk can be mitigated by matching assets and liabilities more closely, or by applying simple FX hedge overlays as a long-term rolling protective strategy

### Changes to the regulatory and reporting landscape

#### Solvency II – Increased usage of protective derivatives

While regulators continue to negotiate when the full impact of Solvency II on capital will take effect, it is clear that major reforms are coming and insurers will need to be prepared for significant changes in their risk measurement and management approach.

Economically, insurers will be further motivated to closely match assets and liabilities, with greater use of derivatives to reduce mismatches and offset changes in the marked-to-market value of assets and liabilities. The liability benchmark under Solvency II will be the swaps curve plus the appropriate liquidity premium. One potential impact of the new regulatory regime is the likely shortening of the maturity of the physical asset portfolio due to the capital required to back spread charges, with duration matching of liabilities increasingly provided by interest

rate swaps.

While most attention to date has focused on implementing interest rate swaps and equity hedges to manage duration and protect portfolio values, consideration will also need to be given to the impact of currency charges on the Solvency Capital Requirement (SCR) when applied to mismatched currency assets and liabilities.

The increase in insurers' use of protective derivatives under Solvency II will come at around the same time as major reforms are implemented on how financial risk management products are physically transacted – moving from the existing OTC bilateral market to clearing on exchanges via Central Counterparties (see section below).

In addition, the way hedge programmes are reported in the future may change due to proposed amendments under IFRS.

### **IFRS 4 “Insurance Contracts” Phase II and IFRS 9 “Financial Instruments”**

While Solvency II aims to guide insurers to achieve maximum economic returns, accounting can be inconsistent (from a presentation and measurement perspective) with optimal ALM strategies. Management teams will not only need to further understand the benefits and risks of derivatives, but also dedicate scarce resources to operational compliance with the likes of hedge accounting, as well as explaining their risk management approach in the financial reporting.

The planned introduction of IFRS 4 “Insurance Contracts” Phase II (IFRS 4) by

the IASB and FASB would further complicate this. The Exposure Draft (ED) was issued in July 2010, although the issuance of the final IFRS has been delayed as the debate over some of the fundamental aspects of insurance accounting continues.

The ED stated that insurance contracts which result in cash flows denominated in foreign currencies will be treated as monetary items in their entirety (including all of their elements such as acquisition costs, residual margin etc). These would therefore be revalued to the closing spot FX rate on each reporting date along with all other foreign currency monetary items.

Some parts (deferrals) of FX insurance contracts are currently treated as non-monetary and may not be revalued for the effects of changes in FX rates in accordance with current IFRS. This makes accounting for hedges of such balances difficult because it leads to FX gains or losses on hedges in the income statement. This has been highlighted by many insurers (including in their annual reports) as a specific IFRS-driven issue.

Although the new standard is based on applying similar market consistent principles using “building blocks”, there may still be discrepancies and inconsistencies when assimilating figures under Solvency II.

The application date for the new standard, when it is issued, is now unlikely to be earlier than 2015 (also pending EU adoption). In the meantime, analysts and shareholders will need to be mindful that the marked-to-market principles applied under Solvency II may produce discordant results compared to current IFRS reporting.

The hedge accounting provisions of IFRS 9 that are due to replace IAS 39 (also from



2015) are likely to more closely align financial reporting with economic hedging strategies.

### **Derivatives clearing on exchanges**

The G20 meeting in 2009 and subsequent legislation have mandated centralised clearing and “exchange” trading of OTC derivatives as a compulsory requirement for most financial institutions. The new regulations are the most significant change to the OTC derivative markets since their inception in the 1980s, and are likely to lead to a significant structural shift as to how trades are executed.

Instead of the current bilateral set-up, many derivatives will need to be cleared via Central Counterparties (CCPs) to reduce systemic risk by substantially reducing counterparty credit risk. This is likely to lead to greater standardisation of contracts and market transparency. Financial institutions in Europe are likely to come under the auspices of European Market Infrastructure Regulations (EMIR), while US-based institutions may be affected by detailed requirements set by the SEC and the CFTC.

In addition to executing more derivative hedges under Solvency II, insurers with an “in house” asset management function may be required to post collateral as a margin requirement and execute some transactions via an executing broker. Insurers that outsource most of their asset management function may face similar claims to fund collateral with their service providers.

While the reforms should encourage

greater transparency and use of derivatives, implying a tightening of spreads, insurers may need to engage more closely with their relationship banks to identify which assets qualify as eligible collateral for margin lending, the cash flow (volatility) impact of servicing margins and how to efficiently manage and monitor posted collateral across asset classes.

If an insurer’s Solvency II (or equivalent) capital amount suggests it may be optimal to increase holdings of a particular set of assets, consideration may also need to be given as to whether these would qualify as eligible collateral against an initial margin and what the cost of collateral conversion may be.

For insurers strategically seeking to invest in emerging markets with currency restrictions, FX hedging costs may increase where non-deliverable forwards/options are being appraised, given that these will remain OTC contracts and attract a higher capital charge to hedge providers under Basel III.

However, insurers may receive a credit benefit from derivatives being cleared via a “Central Counterparty” (as defined by the EU) and the treatment of collateral assets under advice from the EC’s Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS).

### **Liquid asset demand under Basel III, Solvency II and CCPs**

Where Solvency II addresses technical provisions and capital requirements for European insurers, Basel III aims to address capital, liquidity, and leverage requirements for banks.

There are similarities in the structure and requirements of the Solvency II and Basel III regulations:

- Both use a 3-pillar structure
- Both give the option for companies to adopt a standardised approach or internal model
- Eligible elements of capital include Tier 1 and Tier 2 capital (Tier 3 was included in Basel II but will be eliminated under Basel III)

The regimes will also require insurers and banks to hold a larger proportion of liquid assets – resulting in a higher demand for sovereign debt and other highly rated bonds (due to the current definition of liquid assets). Concurrently, the demand for the same assets as eligible collateral will increase as a margin provision for clearing derivatives via CCPs.

Banks and insurers may need to consider implementing strategies that comply with liquidity rules that account for the quality of the assets held and other sources of market risk exposure they create.

Even if the definition of liquid assets differs somewhat across the regimes, the implementation of the new rules could potentially lead to a shortage in the supply of assets. This may be particularly felt in regions with large banking or insurance sectors relative to the amount of local government debt issued – e.g. Australia, Denmark, Hong Kong, Norway, and South Africa – which find themselves sourcing foreign assets and adding more currency risk to the system.

## Focus – Currency charges under Solvency II

The impact of FX volatility has been particularly felt by (re)insurers in 2011 as highlighted previously. Solvency proposals advise that mismatches in currency assets and liabilities will attract capital charges, although insurers can adopt proactive hedging strategies to mitigate these charges.

Finance and investment managers at insurers are likely to increase their focus on measuring and managing market risk – in particular reducing the volatility of the market risk component of their Solvency Capital Requirement (SCR) under Solvency II using protective derivative overlays. SCR is the capital required to ensure that the (re)insurance company has the capacity to fulfil its obligations over a one year period with a modelled probability of at least 99.5 percent.

Whilst interest rate risk along with equity and spread risks have been a primary focus to date for minimising SCR volatility, currency risk will also form a key component (especially for non-life insurers), against which protective FX hedges are available to minimise capital charges.

CEIOPS advice points out that insurers “may be exposed to currency risk arising from various sources, including their investment portfolios, assets, liabilities and investments in related undertakings” and that the design of the risk sub-module “is intended to take into account currency risk for an undertaking arising from all possible sources”.

The capital held to cover currency risk can be calculated using a delta-NAV approach – the change in the value of a net currency asset/liability when applying a 25 percent



upward/downward shock to the asset currency, benchmarked against the insurer's local currency. Mismatches in currency assets and liabilities will then show as a capital charge within the FX market risk component of the SCR under QIS 5.

The example on the right is based on a purely theoretical general non-life UK insurer reporting in sterling. We have included minor net liabilities based on recent cat events in "non-core" currency holdings to illustrate how the SCR might look when known future currency liabilities exist.

The FX exposure arising from the value of these individual NAVs are consolidated at the group level through the accounts. Any change in FX rates will affect the sterling equivalent value and so the capital charge is a result of FX translational risk.

The capital charge in this example is calculated by applying +/-25 percent FX shocks and taking the movement that results in a net reduction in NAV i.e. a loss – as seen in the table below. The breakdown can also be seen in the chart on the right.

As can be seen in the above calculation, this capital charge is itself directly related to the spot FX rates used at the time of the calculation – i.e. it is 25 percent of the sterling equivalent NAVs. In our example, if sterling depreciated by 10 percent over the next year then the capital charge would increase from £80mn to £88mn. This means that currency moves between each capital calculation date will affect both the accounting valuation of the business but also the amount of capital

## Example UK insurer: net asset value by currency

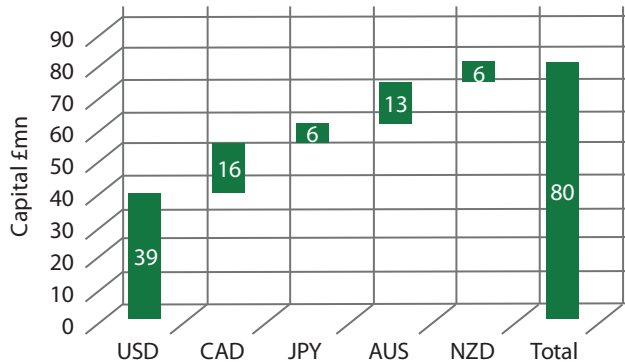
Currency	Net asset value (currency mn)	FX rate vs sterling	Equiv £mn
USD	+250	1.60	+156
CAD	+100	1.57	+64
JPY	-3214	128.57	-25
AUS	+76	1.53	+50
NZD	-49	1.97	-25
GBP	+100	1.00	+100

Source: Lloyds Bank Corporate Markets

## Applying FX shocks

Currency	NAV £m	FX -25%	FX +25%	NAV change -25%	NAV change +25%	Capital £mn
USD	156	2.13	1.28	-39	39	39
CAD	64	2.09	1.25	-16	16	16
JPY	-25	171.43	102.86	6	-6	6
AUS	+50	2.03	1.22	-13	13	13
NZD	-25	2.63	1.58	6	-6	6
GBP	+100	1.00	1.00	0	0	0
Total						£80mn

Source: Lloyds Bank Corporate Markets



Source: Lloyds Bank Corporate Markets

required to support the business.

In a situation where the entity has excess assets over liabilities in one currency, even though the capital charge will increase, the currency move will also have increased the sterling value of the positive foreign currency NAV and the solvency ratio will be maintained. For currencies in which there are net liabilities, the capital charge will increase. However, as there is no similar increase in the value of assets to cover the capital, the insurer may be required to inject more capital i.e. the solvency ratio will fall.

### **Hedging strategy considerations**

CEIOPS advice states that “the impact of hedging instruments shall be allowed for as part of the sub-module” and that the application of a scenario-based (i.e. percentage shock to NAV) approach “allows currency hedging programmes to be captured appropriately.” Therefore, insurers can implement FX hedge programmes to reduce their overall capital charge from currency.

QIS5 does not specifically mention currency hedges beyond the use of FX swaps/forwards and purchased put options to protect asset values. While hedging a large NAV for one year using an FX swap would act to largely offset any change in currency value, at each annual “roll” date either the insurer or hedge provider will make a net cash payment to offset the revaluation. These cash payments will be large during periods of augmented FX volatility.

Equally, purchasing put options in isolation requires a cash injection to fund premium payments (either at inception or maturity), especially if the strike rate is close to the

current FX rate to offset a decrease in NAV.

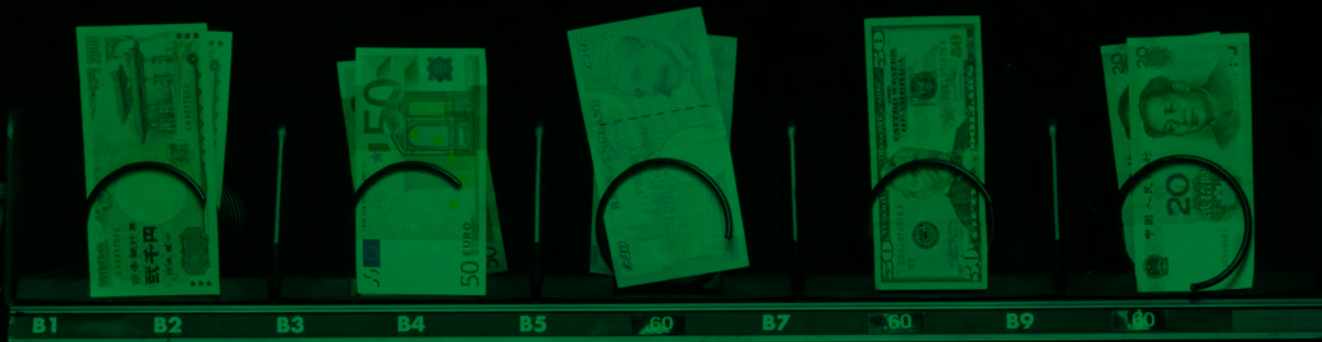
Given the one-year time horizon of SCR (cost of time value) and augmented volatility in FX markets, these cash outflows may also render purchased options suboptimal.

A simple combination of FX option-based instruments provide the necessary downside protection while reducing the risk of funding a large cash payment at the end of the SCR period. A simultaneous purchased put option and sold call option for equal amounts and maturities (referred to below as an FX cylinder) can eliminate upfront hedge costs and minimise cash payments at maturity – while still providing protection against an FX volatility range less than the prescribed 25 percent shock under QIS5 (applied to most currencies).

We have assumed that protective FX cylinders will be acceptable under final Solvency II implementation as part of a pre-defined risk management policy. QIS5 states that mitigation techniques may be permissible provided they “represent legally enforceable rights” and the insurers intend to use them to “mitigate its risk profile according to the targeted overall risk management policy”.

The impact of CCP discussed above, together with the widespread execution of ISDA documentation should satisfy consideration for the initial criteria, while insurers may need to amend risk management policies as part of qualitative measures for Solvency II.

FX cylinders are also being increasingly used by international institutions with overseas net assets to hedge translation risk, and can qualify under strict hedge accounting criteria under both IFRS and US GAAP.



## Using FX cylinders to mitigate volatility

The simplified example below works through the mechanics of an FX cylinder which limits the effect of FX volatility to a 10 percent change in NAV over a one year SCR (i.e. the strike levels for the purchased sterling put and sold sterling call option are 10 percent away from the current FX rate).

Under the capital calculation the cylinder will have intrinsic value (i.e. at the end of the SCR period) of +15 percent for an up shock of +25 percent and a value of -15 percent for a down shock of -25 percent.

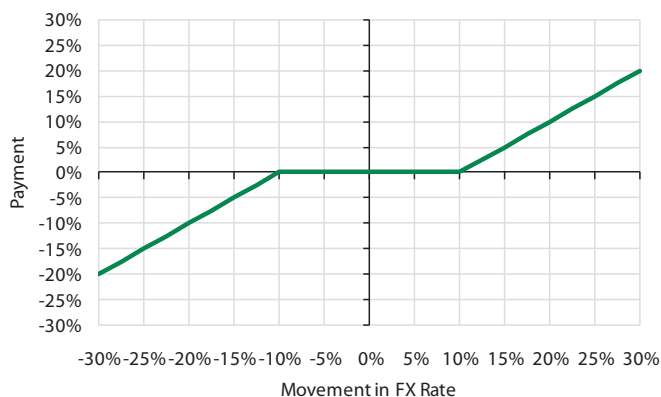
When taken off the shock values of the underlying NAV this should have the effect of limiting the capital charge to a change in NAV for shock of +/-10 percent. In our example this would reduce the capital charge to £32mn from £80mn. This can be seen in the following diagram on the right:

## Summary

While the final implementation dates of regulatory and reporting changes are still to be decided, it is clear that major reforms are on their way and finance and investment managers need to be prepared well in advance.

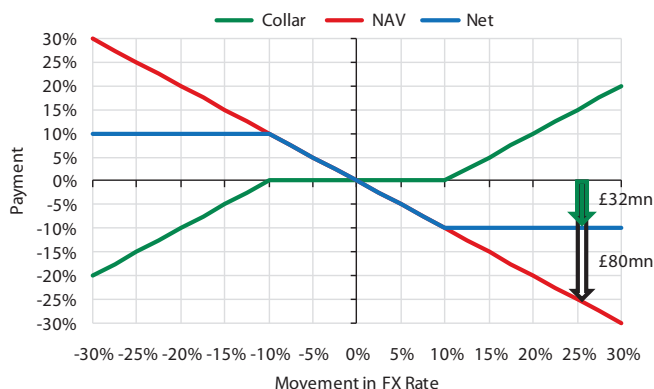
The partnership between insurers and their relationship banks in the future will take on an ever greater level of importance as both sectors look to successfully navigate the changes, against the backdrop of continued financial market distress and volatility.

## FX cylinder

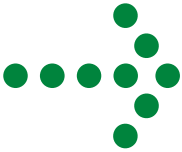


Source: Lloyds Bank Corporate Markets

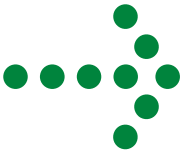
## Limiting the capital charge



Source: Lloyds Bank Corporate Markets



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**Bill Cooper**

Managing Director, Insurance  
Tel: +44 (0)20 7661 4687  
bill.cooper@lloydstsb.co.uk



**Mark Costello**

Director, FX Solutions  
Tel: +44 (0)20 3142 8556  
mark.costello@lloydsbanking.com



**Stephen Houghton**

Director, Risk Solutions  
Tel: +44 (0)20 7158 2013  
stephen.houghton@lloydsbanking.com