

# ISDA<sup>®</sup>

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## Size and Uses of the Non-Cleared Derivatives Market

An ISDA Study

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## **INTRODUCTION**

The derivatives industry has made huge progress in moving towards central clearing, particularly in the interest rate derivatives (IRD) space. By the end of 2013, approximately 65% of IRD notional outstanding had been cleared through central counterparties (CCPs), even before clearing mandates are in force in much of the world. This figure will increase as more countries develop the relevant infrastructure and mandates take effect.

However, a meaningful portion of the derivatives market will remain uncleared. These instruments are often vital cogs in the risk management strategies of corporates, insurance companies, pension funds, sovereigns, smaller financial institutions and others. Without them, these entities may experience greater earnings volatility due to an inability to qualify for hedge accounting, or be unable to offset the interest rate, inflation and longevity risks posed by long-dated pension or insurance liabilities.

This ISDA study focuses specifically on the interest rate derivatives market to analyse the size of the non-cleared segment and the instruments it encompasses. The report then describes some common uses for these products by derivatives end-users.

## THE NON-CLEARED INTEREST RATE DERIVATIVES MARKET: SIZE AND COMPONENTS

At year-end 2013, the non-cleared segment of the interest rate derivatives market measured approximately \$123 trillion-\$141 trillion. This comprises 21%-25% of IRD notional outstanding on a gross basis<sup>1</sup>, and 34%-40% of IRD notional outstanding if the double-counting of cleared IRD notional is eliminated.<sup>2</sup>

The non-cleared universe includes the following elements:

- \$80 trillion of interest rate derivatives, or 13%-14% of the total notional outstanding on a gross basis (and 22%-23% after eliminating the impact of double-counting) are not currently clearable. Swaptions comprise the largest slice of the non-clearable segment (\$30 trillion), with cross-currency swaps accounting for \$30 trillion, options comprising \$12 trillion and inflation swaps making up \$3 trillion (see figure 1).
- Approximately \$8 trillion of the IRD market comprises transactions in products that are available for clearing, but in currencies that can't be cleared. That includes currencies like the Brazilian real, Korean won and Mexican peso – together accounting for roughly \$5 trillion in notional outstanding.
- Non-financial corporates and governments, most of which would qualify for clearing exemptions (see appendix 1), account for \$36 trillion of outstanding interest rate derivatives. Some of this amount would encompass trades in non-clearable products, included in the total above.
- Approximately \$7 trillion-\$25 trillion of IRD notional outstanding comprises products that are clearable but not currently cleared. This includes transactions in jurisdictions where clearing mandates have not yet come into force.

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<sup>1</sup>At year-end 2013, the notional outstanding of interest rate derivatives at Depository Trust & Clearing Corporation's Global Trade Repository (DTCC GTR) was \$575 trillion. The year-end Bank for International Settlements (BIS) semiannual survey, which also reports notional outstanding, was not available at the time of this document's publication. The BIS survey has reported amounts outstanding that range from 1% to 3% higher than the DTCC GTR. For the purposes of this analysis, we use a range to describe IRD notional outstanding (the DTCC GTR figure of \$575 trillion and an estimated notional amount that is 3% higher).

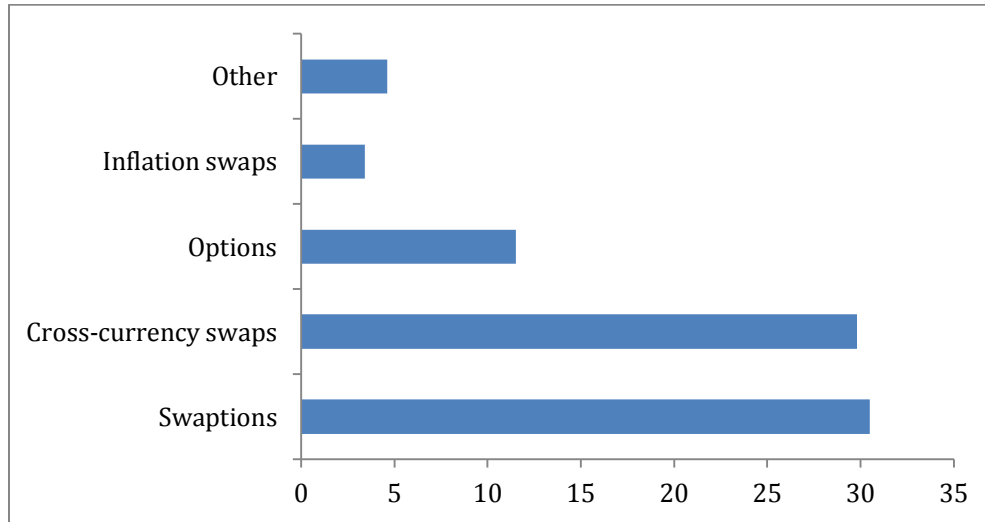
<sup>2</sup> Clearing doubles the notional outstanding of a trade, as one bilateral trade between two counterparties becomes two cleared trades between the counterparties and the CCP. Cleared IRD at year-end 2013 was approximately \$226 trillion on a single-count basis. After adjusting for the impact of clearing, IRD notional outstanding was \$349 trillion-\$367 trillion at year-end 2013.

## NON-CLEARABLE PRODUCT SEGMENTS

The chart below outlines the size of the major segments of the non-cleared interest rate derivatives market, based on 2013 year-end data. An in-depth discussion and examples of each segment follow.

**Figure 1**

### NON-CLEARABLE PRODUCTS (YEAR-END 2013, \$ TRILLION)



Source: DTCC

## SWAPTIONS

Swaptions are essentially an option to enter into an interest rate swap in the future, and so provide users with flexibility to protect themselves against an adverse move in rates while still being able to benefit from any upside.

- LDIs

This flexibility has meant swaptions have become an important tool for liability-driven investors (LDIs), which include pension funds, to manage the uncertain interest rate environment. An LDI strategy is one where asset allocation decisions are based on the ability to meet current and future liabilities. The main goal is usually to improve the funding level – the difference in the value of assets and liabilities – and minimise funding-level volatility.

Swaptions allow LDIs to protect funding ratios against a decline in interest rates, as well as provide a cost-effective means to lock into higher yields as interest rates rise.

LDIs typically need to buy long-duration fixed-income assets as interest rates rise in order to improve their funding status – encouraged by legislation in countries like the UK, which requires private-sector defined-benefit pension schemes to reduce funding

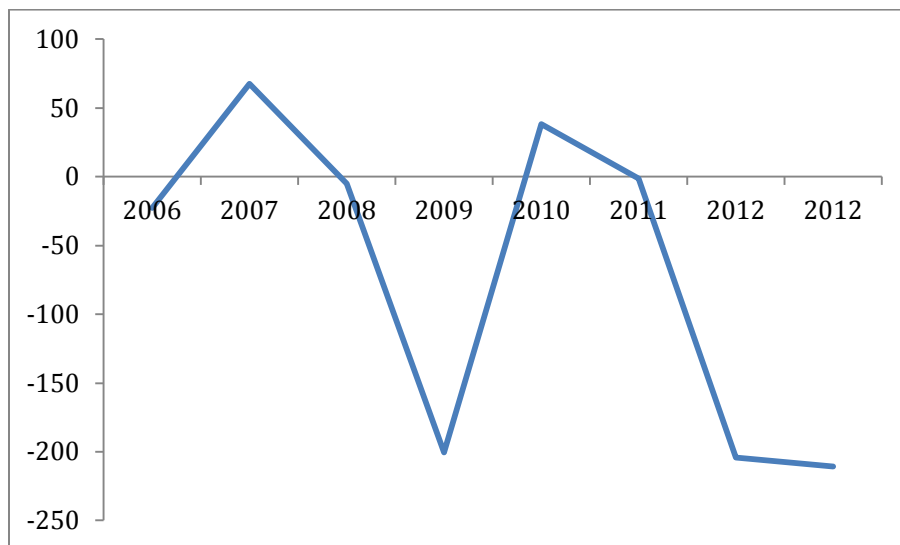
shortfalls over time. However, the low-rate environment in recent years has left company pension funds unwilling to execute at current levels, with many opting to hold fire until rates are at more attractive levels. The danger is that rates fall further, causing the present value of liabilities to climb and potentially creating a deficit large enough to put plans, and their corporate sponsors, at risk.

There have been numerous examples in recent years where pension deficits have posed a severe risk to corporate sponsors. For instance, attempts to privatise the Royal Mail in the UK were initially scuppered because of the size of its pension deficit, which reached £10 billion in 2009 – triple its market capitalisation at the point of privatisation last year. The privatisation was only able to occur after a transfer of pension assets and liabilities to the UK government in March 2012. In other cases, firms have been forced to make large, one-off contributions to plug a hole in their pension schemes – the UK’s BT Group, for instance, announced in March 2012 that it had implemented a new recovery plan to eliminate its £4.1 billion deficit that would see it paying an immediate £2 billion contribution followed by nine annual instalments of £325 million

According to annual analysis conducted by the UK Pension Protection Fund (PPF) and the Pensions Regulator<sup>3</sup>, the aggregate funding position of 6,150 defined-benefit pensions schemes was a deficit of £210.8 billion as of March 31, 2013, up from a £204.2 billion deficit the year before (see figure 2). That reflects a funding ratio of 84%, a 1 percentage-point increase from March 2012.

**Figure 2**

**AGGREGATE FUNDING POSITION FOR  
UK PENSION SCHEMES 2006-2013 (£ BILLION)**



Source: UK Pension Protection Fund, Pensions Regulator

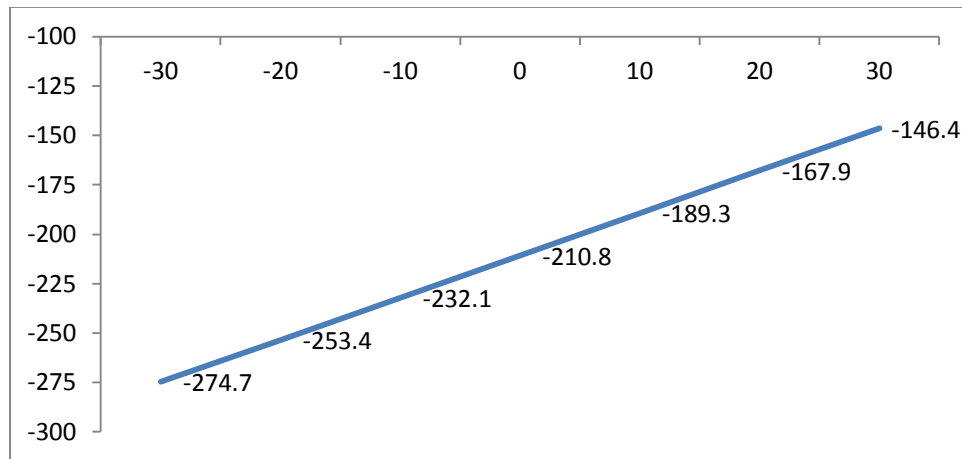
<sup>3</sup> <http://www.pensionprotectionfund.org.uk/Pages/ThePurpleBook.aspx>

The funding position of UK schemes has since improved dramatically – a monthly snapshot published by the PPF and Pensions Regulator shows an aggregate deficit of just £27.6 billion at the end of December 2013<sup>4</sup>, largely reflecting a drop in liabilities caused by a rise in gilt yields, and a steady rise in equity prices over the year, helping asset valuations.

But this funding position has been hugely volatile over the past few years – the highest surplus was £193 billion in June 2007 and the greatest deficit was £293 billion in May 2012, reflecting funding ratios of 130% and 78%, respectively. Based on the March 2013 data, the PPF and Pensions Regulator estimate that a 10-basis-point rise in gilt yields would reduce the aggregate deficit by £21.5 billion, while a 10-basis-point drop in gilt yields would lead to an increase of £21.3 billion (see figure 3).

**Figure 3**

**SENSITIVITY OF AGGREGATE UK PENSION SCHEME FUNDING  
(£ BILLIONS) TO CHANGES IN THE GILT YIELDS**



Source: UK Pension Protection Fund, Pensions Regulator

Many pension schemes have looked to swaptions and other derivatives to help manage this uncertainty. For instance, a fund might look to protect itself against falling rates by buying a low-strike receiver swaption<sup>5</sup> – the scheme would exercise the option if rates fall below the strike, and would receive a higher fixed rate than it would otherwise be able to obtain in the market. If rates rise, the fund wouldn't exercise the option and would buy bonds or interest rate swaps at market levels.

<sup>4</sup>[http://www.pensionprotectionfund.org.uk/DocumentLibrary/Documents/PPF\\_7800\\_January\\_14.pdf](http://www.pensionprotectionfund.org.uk/DocumentLibrary/Documents/PPF_7800_January_14.pdf)

<sup>5</sup> A receiver swaption gives the purchaser the right to receive fixed in an interest rate swap; a payer swaption gives the buyer the right to pay a fixed rate.

Alternatively, pension funds could use swaptions to progressively extend the duration of their portfolios, rather than buying bonds as rates increase. In other words, a pension plan might decide to sell a high-strike payer swaption, choosing a strike equal to its target rate for LDI purposes. If rates rise above the strike at maturity, the buyer would likely exercise the option, paying the fixed rate to the pension scheme. The fund would essentially be giving up the higher level it could get in the market, but would have achieved its target rate, as well as receiving premium from the buyer of the option at inception that could be used to reduce its deficit.

Alternatively, the premium could be used to buy a low-strike receiver swaption – a collar strategy<sup>6</sup> that would allow the fund to benefit from some upside, but protect it against a decline in rates.

This section has so far focused on the UK, but the same dynamics would be in place wherever pension schemes are required to discount liabilities using bond yields or swap rates, and where regulators encourage firms to reduce or eliminate any shortfall between assets and liabilities.

- Variable annuity providers

Swaptions are a popular hedging tool for other types of users too. Life insurance companies, for instance, will often use swaptions in conjunction with a variety of other exchange-traded and over-the-counter interest rate and equity derivatives to hedge the risks associated with their variable annuity offerings (see box).

These products have become popular as an alternative or complement to traditional pension plans in certain countries, enabling the variable-annuity buyer to obtain a regular, guaranteed income stream during retirement. Given rising life expectancy and concerns about the long-term viability of certain pension models (such as defined benefit), these products meet an important social need.

Variable annuities come in a variety of flavours, each offering different types of guarantee and varying degrees of flexibility to the buyer. One of the most popular is the guaranteed minimum withdrawal benefit variable annuity, which allows the customer to withdraw guaranteed amounts on a regular, pre-determined basis, regardless of the performance of the underlying assets – an instrument designed to provide retirement income protection. Other popular products include those with guaranteed minimum income benefits, which pay an income stream over a specified period, with the calculation based on the greater of the account value or some guaranteed base level at a certain point of time, and those with guaranteed minimum accumulation benefits, which promise to set the account value at the higher of the current account balance or a pre-specified guaranteed level after a certain period.

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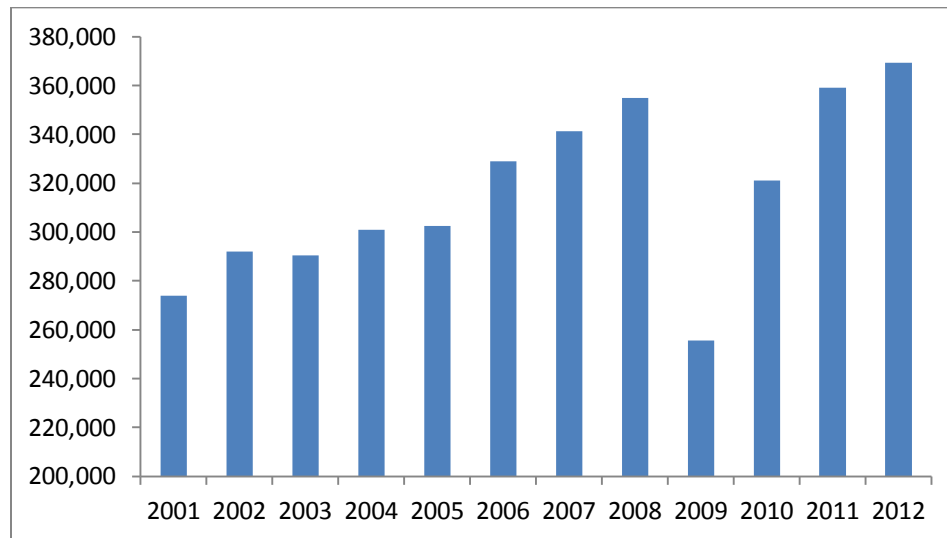
<sup>6</sup> A collar in this context involves the simultaneous purchase of a low-strike receiver swaption and the sale of a high-strike payer swaption. The purchase of the former can be financed in full or in part by the sale of the latter.



This flexibility and certainty in retirement planning has fuelled strong growth in the variable annuity market. According to a survey by the American Council of Life Insurers (ACLI), a Washington, DC-based trade association, payments into US annuities increased to \$369 billion in 2012, a 3% increase over the year before.<sup>7</sup> That follows a 12% rise between 2010 and 2011 (see figure 4). Meanwhile, annuity reserves held by US insurers rose 7% over 2012 to reach \$3 trillion.

**Figure 4**

**US LIFE INSURER ANNUITY CONSIDERATIONS (\$ MILLIONS)**



*Source: ACLI tabulations of National Association of Insurance Commissioners (NAIC) data, used by permission. Notes: NAIC does not endorse any analysis or conclusions based on use of its data. Data represent U.S. life insurers and, as of 2003, fraternal benefit societies.*

However, these products expose the insurer to a complex mix of risks: interest rate and equity, longevity and behavioural. The exact risks differ from product to product, depending on the optional guarantees chosen by the policyholder, and require a different combination hedging tools. But, in general terms, a sharp decline in interest rates would make the guaranteed levels promised by the insurer more attractive, encouraging customers not to surrender their policies and increasing the liability for the insurance company. However, it would be more difficult for the insurer to find assets that provide a high enough interest income to meet the guarantee, particularly if accompanied by falling equity markets. Conversely, a rapid rise in rates may lead to high lapse rates as policyholders take advantage of better investment opportunities elsewhere, depriving the insurance firm of anticipated fee revenue. The present value of the guarantee would have fallen, but the fixed-income assets backing the policy would also have declined in value.

<sup>7</sup>[www.acli.com/Tools/Industry%20Facts/Life%20Insurers%20Fact%20Book/Documents/FB13%20Chapter%2028\\_Anuities.pdf](http://www.acli.com/Tools/Industry%20Facts/Life%20Insurers%20Fact%20Book/Documents/FB13%20Chapter%2028_Anuities.pdf)

Swaptions have become a popular tool to manage this risk. Similar to the pension fund example, annuity providers are able to hedge against a change in rates by buying receiver swaptions. Alternatively, they could use a combination of bought and sold receiver and payer swaptions at different strikes to generate premium while protecting against interest rate risks.

- Other uses

Further uses include corporates wanting certainty over refinancing rates. For instance, if a company knows it has to rollover a current bond or loan in the future, it may want to use a payer swaption to protect itself against a rise in rates, while still giving it the flexibility to benefit from a falling rate environment.

Several clearing houses are working to develop a clearing service for swaptions, but they are not yet clearable (see appendix 2).

### **Swaptions within a variable annuity hedging programme**

New Jersey-headquartered Prudential Financial has a large variable annuity business with a total account value of \$150.4 billion on December 31, 2013, and it uses a variety of derivatives instruments to hedge the resulting capital markets risk exposure and reduce income statement volatility. The firm sets an internally defined hedge target for its variable annuity living benefits hedging programme, and uses both exchange-traded and cleared and uncleared over-the-counter interest rate and equity derivatives, including interest rate swaps, swaptions, caps and floors, equity options, total return swaps and equity futures.

According to its 2013 annual report, Prudential Financial doesn't break down the notional amounts of specific instruments for its variable annuity hedging programme, but does report notional outstanding in interest rate options – which would include swaptions – of \$23.9 billion as of December 31, 2013. The total notional amount outstanding of derivatives contracts across the firm was \$327 billion. This represents an increase of \$33 billion from the year before, which Prudential attributes to variable annuity hedges and its capital hedge programme.

## **CROSS-CURRENCY SWAPS**

Cross-currency swaps are widely used by financial and non-financial institutions alike to manage foreign currency exposures in order to achieve a number of risk management goals. By enabling users to transform the currency denomination of their assets and liabilities, cross-currency swaps allow firms to tap foreign capital markets for low-cost financing, reduce funding costs for foreign subsidiaries and support sales to foreign buyers.

More specifically, cross-currency swaps allow firms to tap into pockets of investor appetite outside their country – therefore diversifying their investor base, as well as benefiting from potentially favourable funding costs elsewhere – but without exposing them to mismatches in interest rates and currency. Cross-currency swaps allow issuers to exactly match the hedge to the terms of the bond, potentially enabling them to qualify for hedge accounting (see box).

The following example illustrates this point. A eurozone company with euro-denominated funding has most of its business operations in the US, meaning its cash flows are predominantly in US dollars. If the euro strengthens against the dollar, the firm will face financial-statement and cash-flow volatility. Crucially, it will need to allocate a larger amount of its dollar cash flow to service its euro-denominated debt. Instead, the firm could swap the loan into US dollars, allowing it to better match the currency in which revenues are received and interest expense is paid.

As another example, a US company is growing overseas but its foreign-based subsidiaries require funding in local currency to pay employees and vendors. Cross-currency swaps can be an effective tool to provide that funding in local currencies.

The product is particularly popular in markets where the size of domestic capital markets is relatively small – for instance, Australia and New Zealand. According to a study published by the Reserve Bank of Australia (RBA) last year<sup>8</sup>, foreign currency bonds account for approximately 60% of the outstanding debt issued by Australian non-government resident entities. A large part of that originates from the Australian banks, which raise a sizeable portion of their funding in overseas markets more able to absorb large-sized issuances. Much of this is hedged with cross-currency swaps – according to a survey of foreign currency exposures published by the Australian Bureau of Statistics in 2009, around 95% of Australian bank foreign currency liabilities were hedged.

Non-financial corporates also tap the overseas market for funding, but a smaller proportion is hedged – roughly 65%. The RBA attributes this to the fact that these companies tend to have foreign-currency assets and revenue streams, which match the denomination of the debt.

According to the latest figures from the BIS<sup>9</sup>, outstanding international debt securities reached \$22.5 trillion in September 2013, up from \$21 trillion at the end of 2011, suggesting cross-currency swaps fulfil a growing need. The BIS defines an international debt security as one issued outside the market where the borrower resides – although this would include domestic currency issuance in foreign markets, which wouldn't necessarily need a foreign exchange hedge.

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<sup>8</sup> <http://www.rba.gov.au/publications/bulletin/2013/jun/7.html#f>

<sup>9</sup> <https://www.bis.org/statistics/secstats.htm>

Asset managers also use cross-currency swaps to manage their portfolios and risk exposures. For example, a pension fund might wish to take on the exposure of a particular asset with a specified yield, maturity and credit risk profile. If there is not sufficient volume in the asset and it becomes difficult to acquire, the pension fund could enter into a cross-currency swap that replicates the risk profile and return of the asset.

Like swaptions, several CCPs are looking to clear cross-currency swaps. However, efforts have been stymied by concerns over the physical exchange and settlement of the currencies (see appendix 2).

## **OPTIONS**

Like swaptions, options provide users with greater flexibility in their hedging strategies, ensuring they are protected against downside risks, while still enabling them to benefit from favourable conditions.

Interest rate options have a huge variety of uses, and are adopted by multiple types of end-user – from corporate issuers wanting to cap floating-rate borrowing costs, to life insurance companies managing the lapse risk on their policies.

### **- Mortgage hedging**

The hedging of retail mortgages, for instance, would be much more difficult without the ability to use options at a reasonable cost. A big challenge for mortgage providers – or investors in mortgage-backed securities – derives from the early repayment of mortgages, known as prepayment risk. This is largely a function of interest rates: as rates fall, it becomes more likely the borrower will look to refinance or make additional payments to reduce the size of the loan, leading to a loss of interest income for the lender.

This has some significant implications. In simple terms, the mortgage lender/investor is short a call option, which becomes more costly for the lender as interest rates fall. The duration of the loan also gets shorter as rates drop, essentially because it is more likely the mortgage will be repaid early – a phenomenon known as negative convexity. The converse is also true: as rates rise, the duration of the loans will quickly increase, making them more sensitive to changes in the yield curve. To boil that down, the loans gain value less quickly than normal fixed-rate debt as yields decline (because of the embedded short call exposure) and rack up losses more quickly as rates move up.

This can be hedged by dynamically buying bonds or interest rate swaps as yields drop, and selling them as rates rise. But this can quickly become expensive in volatile markets – and can actually contribute to further volatility, with the hedging potentially amplifying and reinforcing the move in rates.

In practice, mortgage lenders often also employ interest rate options and swaptions to manage the negative convexity and reduce their reliance on dynamic hedging.

### **Making mortgages affordable**

San Francisco-headquartered Wells Fargo is currently the largest mortgage originator in the US, with \$351 billion in mortgage loan originations in 2013. Like many other US mortgage lenders, the bank retains a portion of its loan originations for investment, allocates a large amount as mortgages held for sale (MHFS), and runs a significant mortgage servicing rights (MSR) portfolio, where it collects principal, interest and escrow amounts on loans it has sold or securitised in exchange for a fee. The total carrying value of its residential and commercial MSRs was \$16.8 billion as of December 31, 2013, up significantly from \$12.7 billion a year earlier.

The bank closely monitors its net interest income sensitivity and interest rate sensitive non-interest income and expense impacts on an ongoing basis. In general terms, a decline in interest rates will negatively affect the fair value of its MHFS and MSR portfolios, given the likely increase in prepayments and reduction in expected duration. However, it anticipates earning more fees through mortgage refinancing and new originations. While that provides what the bank calls a partial natural business hedge, it also uses interest rate swaps, options, swaptions, futures and forwards to further manage its interest rate and prepayment risk.

The bank does not split out details of its interest rate hedges, but reported \$100.4 billion notional in interest rate contracts designated as hedging instruments under US accounting rules and a further \$220.6 billion designated as economic hedges as of December 31, 2013. The latter would largely include the interest rate swaps, options and swaptions used to hedge fair-value changes in its MSR and MHFS portfolios.

On the other side of the Atlantic, Nationwide, the UK's third largest mortgage lender with a prime mortgage lending portfolio of £115.7 billion, also uses derivatives to hedge interest rate and prepayment risk. According to its 2013 annual report, the firm uses interest rate swaps, interest rate options, cross-currency swaps, interest rate futures, forward rate agreements, foreign exchange contracts and equity index swaps to hedge balance sheet and income exposures arising from fixed-rate mortgage lending, fixed-rate savings products and funding and investment activities. The majority of its derivatives portfolio is subject to two-way collateral agreements.

Nationwide conducts regular analysis to monitor its sensitivity to changes in interest rates, paying close attention to the impact on prepayment rates. As part of this, it measures changes to its net interest margin to variations in interest rates using a dynamic forecasting model and interest rate scenarios, and is calculated forward for a 12-month period, incorporating the impact of prepayment options within its mortgages.

The firm held £469 million in notional of interest rate caps, collars and floors in 2013, with a further £344 million in swaptions. The total notional size of its hedging book was £142.5 billion, most of which comprised interest rate swaps, according to its 2013 annual report.

## INFLATION SWAPS

- Utilities

Much of the inflation activity, particularly in the UK, comes from utilities and infrastructure companies looking to hedge inflation-linked revenues. In many cases, these firms are bound by statute to raise their prices by an amount linked to inflation. As such, they are keen to match the structure of their liabilities with that of their revenues.

There is, for example, approximately £35 billion in sterling-denominated corporate index-linked bonds outstanding, with the majority issued by utilities and infrastructure providers such as Anglian Water, National Grid Gas and Network Rail.

Faced with a relatively small investor base for index-linked bonds, however, these utilities may opt to issue nominal fixed-rate debt and enter into an inflation swap where they pay inflation and receive fixed rate.

- Pension funds

Entities on the other side of the supply-demand equation include UK pension schemes, which need to increase their pension pay-outs by an inflation-adjusted amount (see box). This can pose a significant risk to pension funding levels – according to the UK PPF and the Pensions Regulator, an increase of 0.1% in the assumed rate of inflation would lead to an aggregate increase in defined-benefit pension scheme liabilities of 0.8%, or £10.5 billion.

Several CCPs plan to clear inflation, starting with zero-coupon swaps referencing the UK retail prices index (RPI), possibly during 2014. These swaps account for an estimated 25% of the inflation derivatives market by notional.

However, any clearing service for inflation swaps could be relatively one sided, with dealers paying and pension schemes receiving inflation. The utility firms supplying the inflation would likely be able to qualify for a corporate exemption, so would not be compelled to clear (see appendix 1).

Given the relatively few dealers active in inflation compared with the interest rate swaps market, the collapse of a big player may require remaining clearing members to absorb large inflation payer positions, on top of those they already have. This could create problems in any auction process following a default.

The inflation market is much broader than zero-coupon inflation swaps linked to RPI, however. In the UK, pension schemes have been required to adjust pension payments based on the RPI, but these adjustments have been floored at 0% and capped at an upper bound, typically 5%. Many pension schemes have been keen to hedge this so-called limited price indexation, but the optionality component is not currently clearable. Pension funds could hedge with RPI swaps instead, but would be running an unhedged residual risk, which would expose them to losses if inflation turns negative.

- Asset managers

A variety of other investors – asset managers, for instance – have also increased their use of inflation caps and floors in recent years as a result of uncertainty about the future direction of inflation. The economic slump following the crisis gave rise to fears of deflation, prompting interest in inflation floors. But the introduction of quantitative easing in the UK, US and Japan has stoked anxiety about future inflation, generating interest for high-strike inflation options. These instruments have allowed users to put on flexible, cost-effective hedges, tailored to their view on the future path of inflation.

It is understood there are no immediate plans to clear inflation options, along with swaps linked to other inflation indices and asset swaps.

### **The two-sides of inflation hedging**

National Grid is a Warwick, UK-headquartered electricity and gas company that owns the high-voltage electricity transmission system in England and Wales, and operates the system across the UK. As with other regulated UK utility companies, it is only allowed to adjust prices by an amount linked to inflation. To ensure its borrowings match its revenue, it issues a part of its debt in an index-linked format. According to its 2012/2013 annual report, bonds linked to the UK retail prices index (RPI) comprised roughly £6.5 billion of its total £21.4 billion net debt position. National Grid also uses inflation swaps to manage its exposure to UK RPI, with approximately £1.3 billion in notional outstanding as of March 31, 2013.

On the other side of the equation are UK pension schemes, which need to receive inflation to manage their assets and liabilities. The BT Pension Scheme is one of the largest in the UK, with 318,751 members and £39.6 billion in net assets. According to its financial report for the six-month period to June 30, 2013, it maintained a 22.6% investment allocation to inflation-linked instruments. That represents the biggest portion of its investment portfolio, with overseas equities accounting for 20.6% and fixed-income and cash comprising 19.7%. That is still a little below its long-term strategic asset allocation of 31%, however. This long-term target for inflation-linked instruments was set in April 2013, having previously been fixed at 15%.

Derivatives are used to both rebalance the scheme's asset allocation and to reduce the risk associated with its liabilities. According to the financial report, BT Pension Scheme had just over £2 billion notional in inflation swaps outstanding at the end of June, where it received inflation and paid fixed rate.

## CLEARABLE PRODUCTS IN NON-CLEARABLE CURRENCIES

Approximately \$8 trillion of the interest rate market comprises transactions in products that are available for clearing, but in currencies that can't be cleared. That includes currencies like the Brazilian real, Korean won and Mexican peso, which together account for roughly \$5 trillion in notional outstanding.

**Table A**

### NON-CLEARABLE CURRENCIES (DECEMBER 31, 2013, \$TRILLION)

Currency	Clearable IRD in non-clearable currencies	Non-clearable products in non-clearable currencies	Total: All IRD in non-clearable currencies
Brazilian real	0.80	0.07	0.87
Korean won	1.69	0.29	1.98
Mexican peso	1.60	0.14	1.74
Other	3.75	0.83	4.58
Total	7.79	1.33	9.12

*Source: DTCC*

Those countries have been developing local-currency capital markets, enabling domestic entities to issue onshore without having to manage the currency risk associated with a non-domestic currency issuance. According to figures from the BIS, outstanding domestic debt securities in Brazil totalled a dollar-equivalent \$2 trillion at the end of June 2013. The domestic Korean market reached \$1.27 trillion, while Mexico totalled \$568 billion.

A growing number of international firms are also looking to tap into new pockets of investor demand by issuing in domestic currencies – although exact figures cannot be pulled out of BIS statistics.

In both cases, issuers would likely want to hedge interest rate risk through local-currency interest rate swaps. However, these markets are still in the nascent stages of development, and are relatively illiquid, creating challenges for CCPs to clear those currencies in the short term.



## CONCLUSION

The huge regulatory and industry effort to move to central clearing is progressing, and a growing proportion of the derivatives market will be cleared as mandates come into force across the globe, more countries develop clearing infrastructure, and CCPs expand the products, maturities and currencies they clear.

However, a significant part of the interest rate derivatives market currently remains non-clearable. These include instruments such as swaptions, options, inflation swaps and cross-currency swaps, widely used by corporates, pension funds and insurance companies for important risk management purposes.

These products do not necessarily pose significantly more risk than standardised, clearable products. In some cases, the market for those products is smaller and is traded by fewer dealers, raising concerns about whether enough clearing members would be able to participate in the default process. In other cases, like inflation swaps, the main suppliers of inflation – corporates – are exempt from the clearing requirement, meaning the clearable inflation risk might be one directional. Meanwhile, in the case of cross-currency swaps, the lack of a net settlement system for deliverable forex transactions has stymied attempts to clear at a reasonable cost.

Despite not being clearable, these products have an important social value. Pension funds, for instance, are able to put on flexible swaption hedges in an uncertain interest rate and inflation environment, reducing the volatility of their funding positions – and potentially eliminating the need for corporate sponsors to make large, one-off payments. Corporates, meanwhile, are able to tap into new pockets of investor demand and take advantage of pricing improvements while ensuring they have eliminated mismatches in assets and liabilities.

## APPENDIX 1

### Background

Many countries have been working to develop the legislation and infrastructure to support central clearing since the Group of 20 nations declared in September 2009 that all standardised derivatives should be cleared through CCPs. The first clearing mandates came into force in Japan in November 2012 – for domestic dealers trading Japanese credit default swap indexes and yen-denominated interest rate swaps referencing Libor. The US followed last year, rolling out mandatory clearing obligations under the Dodd-Frank Act for certain interest rate and credit derivatives in three phases: March 11 for swap dealers, major swap participants and so-called active funds; June 10 for commodity pools, banks and private funds; and September 9 for accounts managed by third-party investment managers, pension plans and entities that weren't captured by the earlier two deadlines.

The universe of products mandated for clearing in these countries is expected to be broadened in 2014, with non-deliverable forwards, for instance, likely to be captured under US rules. Meanwhile, other countries are expected to follow suit with their own clearing obligations over the next 12 months, including Australia, Canada, the European Union, Hong Kong, Singapore and South Korea.

In Europe, for instance, the first CCP authorisation under the European Market Infrastructure Regulation (EMIR) – Swedish clearing house Nasdaq OMX – was announced on March 18. The European Securities and Markets Authority (ESMA) has six months from that point to conduct a consultation and draw up regulatory technical standards for each class of product subject to a proposed clearing obligation. The European Commission then has to endorse the standards, before they pass to the European Parliament and Council of the European Union for approval. According to a timeline published by ESMA, a clearing obligation could come into effect no sooner than nine months after the authorisation of a CCP by a national authority and as late as 16 months, putting the first clearing obligation at the fourth quarter of 2014 or early 2015.

As these mandates come into force, the volume of cleared products is likely to rise. For instance, the volume of interest rate derivatives cleared through SwapClear, the interest rate clearing platform run by LCH.Clearnet, increased by 14.4% between February 2013 – before the first US clearing mandates were implemented – and the end of that year (although trade compression at the CCP was temporarily suspended between April and December, which means notional amounts outstanding were higher than they otherwise would have been).

Both the Dodd-Frank Act and EMIR include exemptions for sovereigns, supranationals and corporates that use derivatives to hedge commercial risk. These users, classed as non-financial customers in the BIS semiannual survey, accounted for \$36 trillion of interest rate derivatives notional outstanding at the end of June 2013.

A three-year carve-out for European pension funds was also included in EMIR, which will run until 2015, with the possibility of a three-year extension.

Meanwhile, the Working Group on Margining Requirements – a body run by the Basel Committee on Banking Supervision and the International Organization of Securities Commissions – published final margin requirements for uncleared over-the-counter derivatives trades in September 2013.<sup>10</sup> Those rules set a framework for the posting of initial and variation margin on uncleared trades – and are, in part, explicitly meant to act as an incentive to central clearing. In other words, non-cleared products will likely be subject to higher margining requirements than identical cleared products, all things being equal. This is largely down to a requirement that initial margin calculations should be based on a one-tailed 99% confidence interval over a 10-day horizon – significantly higher than the five-day close-out period for cleared derivatives.

Those rules will be phased in between December 2015 and December 2019. Eventually, financial entities and systemically important non-financial firms will be subject to the rules if their aggregate month-end average national amount of non-centrally cleared derivatives exceeds \$8 billion.<sup>11</sup> Non-systemically important corporates are exempt – although the rules need to be implemented by national regulators.

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<sup>10</sup> <http://www.bis.org/publ/bcbs261.pdf>

<sup>11</sup> A €50 million threshold has also been put in place, meaning counterparties only need to exchange initial margin on uncleared derivatives once the initial margin requirement at the group consolidated level hits €50 million.

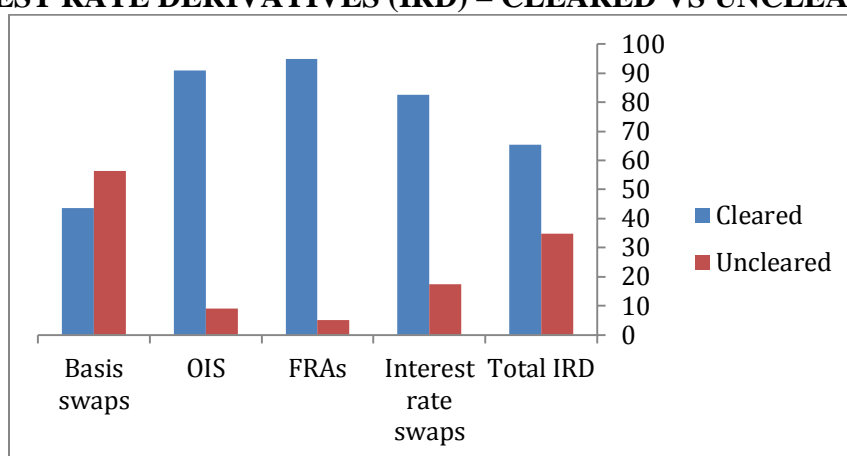
## APPENDIX 2

### Uncleared Derivatives

While the proportion of the interest rate derivatives market routed through CCPs increased over the course of 2013, a significant part of that asset class remains outside of clearing. Between \$123 trillion and \$141 trillion remains uncleared (see figure 5). This percentage will inevitably shrink as new clearing mandates come into force, and clearing infrastructure is developed in other countries.

**FIGURE 5**

#### INTEREST RATE DERIVATIVES (IRD) – CLEARED VS UNCLEARED (%)



Source: LCH.Clearnet, CMS Group, JSCC, DTCC, BIS

However, a sizeable portion of the derivatives market will remain uncleared, in some cases because CCPs are unable or unwilling to clear certain products. That doesn't necessarily mean these instruments are much more complex than cleared transactions, or that they pose significantly more risk – it could be that the contracts have non-standard terms because they are customised for a particular client, or there are technical issues in developing a valuation model or enabling the settlement of deliverable currencies. In some cases, the relatively small number of dealers active in trading a particular product means there are too few firms to participate in the CCP default process.

Several CCPs are working to develop a framework for clearing swaptions, for instance, but have stumbled over the extra complexity in clearing non-linear products, the customised nature of the product and the relative lack of liquidity in that market compared to the interest rate swaps space. The smaller pool of dealers active in this instrument means clearing houses may face difficulties in conducting an auction following a default, particularly in stressed markets.

The issue is particularly acute for the inflation swaps market, which is concentrated among a small number of large dealers. Due to the structure of the market, those firms are also likely to be positioned the same way – payer inflation swap positions (see inflation section for explanation) – leaving clearing members that are active in the inflation sector potentially reluctant to take on additional exposures during any auction of defaulted positions.

The clearing of cross-currency swaps is also likely to be hampered by concern over the physical exchange and settlement of currencies – something that may require a payment-versus-payment solution, similar to CLS. This may be challenging to implement in the short term given the need to settle on a net basis through a CCP – CLS operates a gross settlement model.

The challenges have been highlighted by attempts to clear other foreign exchange products in the past: specifically, forex options. Progress on forex option clearing came to a halt in 2011 because of a need for CCPs to guarantee full and timely settlement of currencies – a condition that could lead to a significant liquidity shortfall at a CCP. An industry study conducted last year found that the same-day liquidity obligation for a CCP clearing forex options could be as high as \$161 billion.<sup>12</sup>

Even if swaptions and inflation swaps become clearable this year, however, they may not be subject to mandatory clearing requirements. Regulators have said they will consider the depth of the market, availability of prices, volume of clearing members and number of CCPs offering the product when making clearing obligation determinations – criteria that may not be met in the case of those two instruments.

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<sup>12</sup> Survey by the global foreign exchange division of the Global Financial Markets Association ([http://www.gfma.org/uploadedFiles/Initiatives/Foreign\\_Exchange\\_\(FX\)/GFXDOTCFXOptionsAnalysisResults2013Nov18\(1\).pdf](http://www.gfma.org/uploadedFiles/Initiatives/Foreign_Exchange_(FX)/GFXDOTCFXOptionsAnalysisResults2013Nov18(1).pdf))