Goldman and the OIS gold rush

It's the untold story of the switch to overnight indexed swap discounting. As the Street haltingly adjusted to the new reality, some desks are said to have booked profits running into the hundreds of millions of dollars – earning grudging praise, or just grudges, from their peers. By ***Matt Cameron***

"They rang everyone on the Street with this one," says one head of swaps trading at an Asian bank, recalling how his firm was repeatedly asked by Goldman Sachs to step into a package of swap trades in 2008. The trades in question were two cross-currency swaps in the same currency pair – one would be out of the money for the new counterparty, while the other was flat. Goldman was offering to pay around $200 million to the bank to step in – money that would immediately be posted back to the US bank as collateral.

But it was not as straightforward as it seemed. Unknown to its prospective counterparties, Goldman Sachs had come to the conclusion that cash-collateralised trades should be discounted using an overnight indexed swap (OIS) rate – the rate paid on the collateral – rather than Libor, as was the practice at the time (*Risk* March 2010, pages 18–22, *www.risk.net/1594823*). Using the lower OIS rate to discount the trade would produce a bigger liability and ought to mean a bigger upfront payment – but a counterparty discounting at Libor would not twig.

"The problem was that everyone was valuing trades at Libor at the time, so we would have effectively been underpaid to assume the liability. It was sneaky," says the swaps trading head.

Everyone who is anyone in the over-the-counter market has a story like this. From one day to the next, the rules of the game changed – but only a few dealers knew it. Suddenly, fortunes could be won or lost on the minutiae of the credit support annex (CSA) that governs collateral posting between two counterparties. Banks that were in the know employed teams of lawyers to comb through those documents, and set up desks dedicated to trading on the information they gathered.

Was that sneaky, or was it smart? Traders, by and large, say it was smart. Some clients – particularly insurers that were asked to pay for the collateral-posting rights Goldman would lose on a trade unwind – say it was underhand. Whatever the ethics, it was massively profitable. One European bank made more than $500 million over a three-year period, according to a former trader; another ex-trader at a different European bank puts its OIS-related profits at $600 million over a similar period of time.

"We ensured we were the right way round and a market leader. We may not have made as much as Goldman but they started earlier, had the systems, and were able to be more aggressive," says the second swaps trader.

Risk spoke to six former Goldman Sachs traders to tell the story, for the first time, of how the bank – and a handful of clued-up peers – made fortunes from the switch to OIS discounting. But how much Goldman itself earned is still shrouded in mystery – and the bank declined to provide any official comment for this article. The bank's former traders also refuse to provide any numbers, but its rivals put it at around $1 billion. One of the

Illustration: Eoin Coveney, nbillustration

Goldman traders, asked about that figure, only says he "wouldn't want to understate the profitability of this enterprise".

Like any gold rush, the early months were the most lucrative. As the rest of the market gradually realised what was happening, opportunities disappeared – when everyone else was armed with the same knowledge, the gold field became a minefield. Collateral disputes multiplied, simple trade novations became a source of intense paranoia and dealers stopped backloading portfolios into clearing houses, where collateralisation practices change (*Risk* September 2011, pages 24–27, *www.risk.net/2105032*).

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>
> Satya Pemmaraju, Droit Financial Technologies

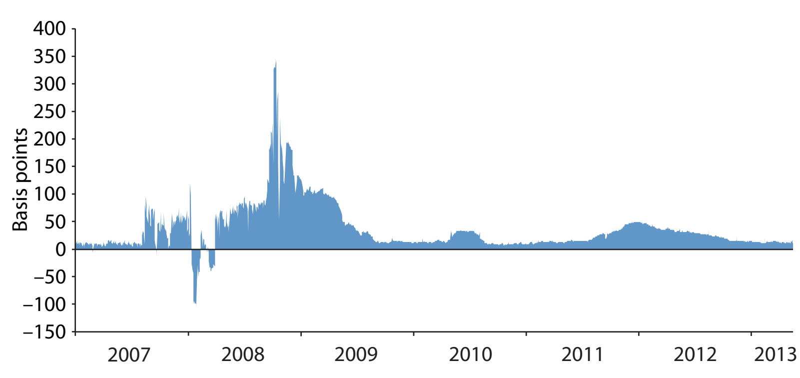
It was chaotic, unforgiving, bewildering. Traders had the time of their lives. "Everyone was fire-fighting. It was a very tense few years, and there was an awful lot of stuff going on. It had a Wild West-type feel, and it was breaking new ground. With hindsight, they were fantastic times. I learned more in those two years than in the previous 10 years of my career," says one swaps trader at an international bank.

So, how did it all play out? Put simply, Goldman and other dealers were able to profit in two ways. First, as the basis between Libor and OIS started to widen, it meant anyone using the higher Libor rate was working with valuations that were too low – the spread blew out from 6 basis points on January 3, 2007, to a crisis-era peak of 344bp on October 2008 (see figure 1). As a result, Goldman and others started positioning their portfolios to benefit when they made the switch from Libor to OIS discounting – they built in-the-money positions that would be magnified by the change, and tried to minimise trades with a large negative present value (PV).

This added up rapidly when applied across a whole portfolio. One ex-derivatives trader says using Libor rather than OIS to discount a $100 million notional five-year interest rate swap could result in a difference of around $2 million on a trade with a PV of around $10 million.

At a more complex level, dealers began to recognise the complexities associated with CSAs in which a variety of different currencies could be posted (*Risk* March 2011, pages 18–23, *www.risk.net/2027812*). Each currency requires a different discount rate to be used – the federal funds rate is paid on dollar cash collateral, while the euro overnight index average (Eonia) is paid on euro collateral, for example – which results in a different value for the swap. In order to optimise collateral usage, and swap valuations, a dealer should theoretically post whichever currency is cheapest for it to deliver at any point in time, an embedded option that had been completely ignored up to this point, but which suddenly became valuable – especially as the cross-currency basis between dollars and euros blew out during the crisis. As a result of that basis move, it became hugely advantageous to receive dollars and post euros in CSAs – a position many banks sought to engineer.

1 Federal funds and three-month dollar Libor basis



While most dealers only started waking up to the new orthodoxy in 2008 and 2009, Goldman is believed to have identified OIS as the correct rate – and to have recognised the need for CSA-specific valuation – as far back as the early 2000s. It started building systems to deal with this new world in 2005.

"It took a lot of work to get the systems in place. But what was difficult was that because each counterparty had a different CSA, we had to read all of those agreements and build an infrastructure that could develop an individual curve for every CSA. It was essential in being able to price the cheapest-to-deliver collateral and create CSA-based discounting. This was a massive undertaking, and we had 10 lawyers who spent all their time going through CSAs," says a second ex-Goldman trader.

Once that work was complete, the bank analysed what would happen to its various portfolios in terms of profit and loss if it were to switch to OIS discounting, and then started a painstaking process of optimising and pre-positioning its portfolio to benefit from the move.

"We started to take an in-depth look at the portfolios and model what would happen if we were to flip the switch. Where that would result in losses, we looked to optimise the trades so as to protect the book," says the first former Goldman trader.

The pre-positioning of portfolios was simple in concept, and four other banks say they did something similar. Because many banks and clients were still discounting trades using Libor, which surged away from OIS rates during the second half of 2007, the present value of their positions would be a lot smaller than if the correct OIS rate was used. Therefore, a bank with a position that was significantly out-of-the-money could pay above market prices to unwind the trade, but still make money because it had paid less than the true value of the trade when seen through an OIS lens.

> "Some banks were charging for the optionality in unwinds, and I think that was very disingenuous. Essentially, these were documents signed 10 or 15 years previously to help increase business between us and the banks, and nobody back then valued the optionality" Terry Leitch, ex-Aegon

For example, if a bank owed a pension fund $100 million in 10 years' time, and the PV discounted at Libor was $80 million, the PV at OIS might be $84 million. The bank could then pay the client $82 million to unwind the trade – a better price than its peers would be willing to pay to step into the trade, but less than the true value of the swap.

"The idea is to shift money along the curve and monetise as much negative PV as possible – at the right price – by trying to unwind positions at Libor flat, or Libor plus a little, and build up as many collateralised positive replacement values as you can. When you are able to switch, those values become real and you recognise a substantial gain," says Satya Pemmaraju, founding partner of Droit Financial Technologies, and former managing director in fixed-income, currencies and commodities trading at UBS. Swaps with pension funds and life insurers provided fertile ground for this strategy – traditionally large fixed-rate receivers, falling rates left swap positions for many of these firms heavily in-the-money.

"Most dealers eventually picked up on the arbitrage," says a swaps trader at a US bank in London. "Take a lot of the European pension funds – they had massive in-the-money positions, and some wanted to liquidate those swaps because of counterparty risk concerns during the crisis. So if you were smart and discounted using Eonia rather than Euribor, you could lock in significant gains by unwinding or stepping into trades. The early movers were paying out much smaller values than they should have been, and that alerted other banks as to why they were losing trades."

Risk spoke to six insurers and pensions funds that say they received requests from Goldman and other banks to unwind or novate the trades away.

"There were definitely banks that were marketing the fact they could pay you more to unwind the trade or to re-coupon the swaps. The only question was whether that would be full OIS or not, which I suspect it wasn't. But we saw many bids better than Libor," says one head of derivatives at a US insurer.

Some dealers accuse rivals of taking advantage of clients by paying less than the true value of the swaps – with most of the criticism directed at Goldman. Its former traders defend the way the bank handled these transactions.

"We did a lot of education on this and presented papers not only to clients but also to regulators. We were offering better prices to unwind the trades than most on the Street and our clients knew why that was the case. This wasn't something we were trying to hide. Clients could also take advantage of the differential in discounting between different dealers and recognise some decent value," says the second former Goldman trader.

That is backed up by some swap end-users. "They gave us a presentation and explained the math behind it, so we knew fully what we were going into. And by the same token we were looking for opportunities too – if certain banks, like Goldman, were paying above market prices, then it made sense for us to do the trade with them. Others were significantly mispricing," says another swaps trader at a different US insurer.

Max Verheijen, head of trading at Cardano, a risk management and advisory firm that trades on behalf of institutional investors, agrees: "We definitely made use of the differences in pricing models used by banks. Often, it proved profitable novating swaps to other parties – instead of unwinding a trade with the existing party – because different models were being used for the same CSAs. We really have been able to make an opportunity profit on these transactions."

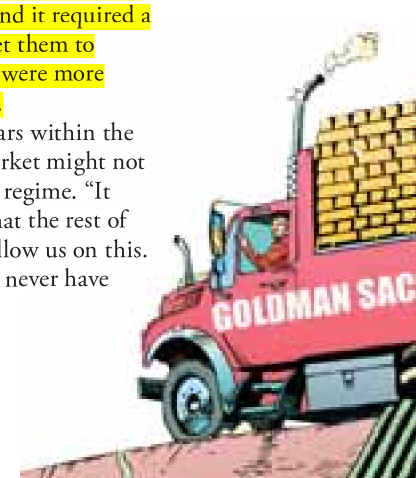
However, when Goldman did flip the switch to full OIS discounting – sometime in 2008, and two years before many of its competitors – it had a tougher time making it stick.

"Essentially, we present-valued the profit and loss that would have accrued over the life of the swaps trades, and when that switch was made and the valuations of the trades changed, we needed to receive the collateral to match those new valuations. This meant making calls to clients. There were a lot of hard conversations and upset counterparties. It took a long time and a lot of effort to educate clients and to explain how we were valuing trades and why we were calling for more collateral. It was really tough," says the fourth ex-Goldman trader.

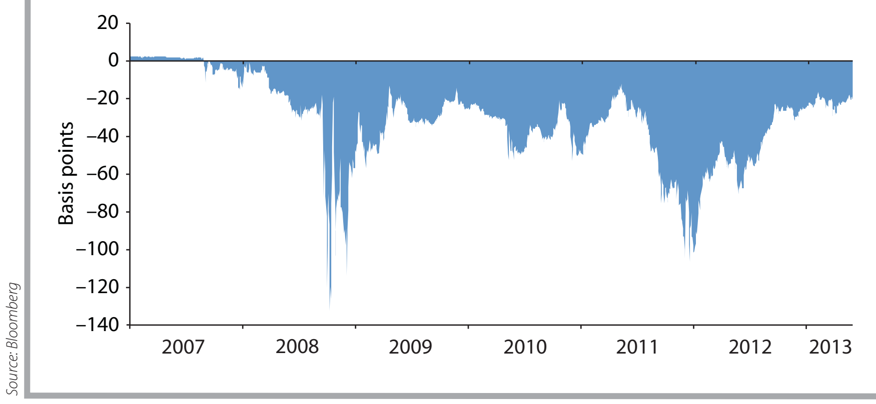
According to Goldman's 2008 annual report, the bank received cash collateral of $137 billion that year, a 132% increase on the $59 billion received in 2007. Meanwhile, the amount of cash collateral posted in 2008 was $34 billion, only a 22% increase on the $27 billion posted in 2007. Essentially, the bank's derivative assets ballooned massively in size, while its liabilities barely changed – which hints at the furious behind-the-scenes effort to optimise its book ahead of the valuation switch.

Another problem for the bank was that it became harder to compete against firms that were still discounting with Libor and producing too-low swaps prices. "This was another headache. Essentially, we would end up pricing ourselves out of the market on certain trades, and it required a lot of client education to get them to understand why our prices were more expensive," the trader adds.

As a result, there were fears within the firm that the rest of the market might not embrace the new valuation regime. "It was by no means certain that the rest of the market was going to follow us on this. The OIS-Libor basis might never have



2 Euro/dollar one-year cross-currency swap basis



spiked, and the market conventions might have stayed as they were. We were confident we were right, but the truth is we could not predict whether the market would move to this convention – that was definitely a risk," says the first former Goldman trader.

Apart from the high-level shift from Libor to OIS discounting, banks also found other ways of optimising their collateral posting – specifically, taking advantage of the widening cross-currency basis. During the crisis, this market became stressed as many European banks turned to cross-currency swaps to raise dollar funding when other avenues started to dry up – in turn, causing the basis to blow out. It became very expensive to raise dollars, but cheap to borrow euros. For savvy swap desks, this presented an opportunity (see figure 2).

As a simple example, take a swap desk with two offsetting trades, one under a euro-only CSA and the other under a dollar CSA. If the desk was in-the-money on the dollar CSA, it could in theory take the dollars it received and lend them out in the cross-currency swap market, being paid a large basis to borrow euros, which it would then post under its euro CSA. "Once you realised that euro was the cheapest-to-deliver collateral, it became completely obvious that you could optimise collateral posting so as to lock in the funding bases, and start moving your collateral around *en masse*," says Droit's Pemmaraju.

The one-year euro-US dollar cross-currency basis had generally floated around 1–2bp prior to the crisis, but widened to –21bp on June 2, 2008, and eventually peaked at –132.5bp on October 10. It has remained between –20bp and –60bp ever since, breaking out of that range a few times in late 2011 as the eurozone debt crisis again caused US dollar funding to dry up for European banks.

Prior to the currency bases blowing out, Goldman had tried to insulate itself from the risk that other counterparties would wake up to collateral-based valuation and would recognise the value of the options embedded in multi-currency CSAs. It did this by asking clients to ditch the option to post euros. Many agreed.

"A lot of counterparties were posting us dollars anyway, and we didn't want to get stuffed by being posted the worst funding collateral. For example, if you allow both dollars and euros, you are short a switch option – changing that to dollars is in your favour. We were protecting ourselves by not being short that option. And we were able to get a lot of those agreements changed with firms that may have protested if they thought about it the same way we did," says the first ex-Goldman trader.

He says the firm also used novation as an additional safeguard, giving a hypothetical example: "If I had a trade on with Bank A, which had a CSA that allowed both dollars and euros, but got Bank B – with which I had a dollar-only CSA – to intermediate the trade, I would no longer be short that switch option."

There was a sneakier variant of this – an offensive, rather than defensive, move – in which one dealer would ask a client to approach its existing bank counterparty to arrange an assignment of the trade. The result would be that the new dealer could interpose itself between the two and hoover up valuable collateral from one side, while posting less valuable assets on the other.

"It was a simple mechanism – approach clients that had trades on with other dealer counterparties with which you had advantageous CSAs, and try and get those clients to agree to the assignments. For example, if you had a euro CSA with the client that was in-the-money, but a dollar CSA with its counterparty, you could step in between and extract value," says one swaps trader at a European bank in London.

When the bases between currency pairs started to widen, other banks saw the hidden value in multi-currency CSAs. As they did so, the practices used by Goldman became commonplace – every dealer was trying to arbitrage every other, either by exercising the switch option in a CSA or, in its more sophisticated form, by playing the novation game. And while traders may have understood and recognised what was going on, back-office and operations staff often did not. Frequently, traders were frustrated that their bank was agreeing to collateral substitution requests that could turn a profit into loss. But, sometimes, there was a way out.

"There was one really special day," says the international bank's swap trader, recalling a standoff his former firm – a large European dealer – had with Goldman in 2009.

"Somehow, someone in the firm agreed to the novation of a large out-of-the-money swap portfolio from a client, leaving us facing Goldman and posting a load of US dollars, which was an awful position to be in. This was at a time when dollars were really expensive to post, especially if you had to fund through the cross-currency swap market where the basis blew out," he says.

The bank decided it was going to fight fire with fire. It combed through the details of its CSA with Goldman and, to its delight, found it could also post US Treasury inflation protected securities (Tips), which had little value as collateral.

"No-one would touch Tips, so we promptly pulled all the cash back and posted them linkers, as we had full substitution rights. They weren't pleased at all, and it threatened the relationship for a fair while, escalating to just below board level. But it was in the terms of the CSA, so we told them they would have to live with it. Everyone knew everyone else was playing these games back then. They got us, but we got them back," the trader chuckles.

Most of the early action was in the interest rate swap market, but it migrated to other asset classes later on, where traders were unaware of the implications. "I remember being asked to step into a large out-of-the-money options portfolio," says one equity derivatives trader at a European bank in London. "The bank asking for the novation said its credit limits with the other bank counterparty had been breached and it needed to reduce its exposure. But the deal didn't seem right to me, there was something fishy about it. So I stalled. I was reviewing the transaction for two weeks, and eventually figured out the trick – the bank asking us to step into the trade had a euro CSA with us, and a dollar CSA with the original counterparty. But we also had a dollar CSA with the counterparty. If we had stepped into the trade, we would have received euros, posted dollars, and bled around $15 million on the cross-currency basis."

But one of the biggest arbitrage mechanisms was carried out by backloading trades into SwapClear, the interest rate swap clearing service at LCH.Clearnet. The clearing house only accepts cash collateral in the currency of the underlying trade – so, for example, a dollar interest rate swap would have to be collateralised with US dollars. Therefore, banks could persuade unsuspecting dealer counterparties with which they had in-the-money dollar swaps under a euro CSA to backload those trades into SwapClear. The bank would have effectively performed a collateral switch from euros to dollars.

While most traders bear no grudges about all of this, some clients see it differently. In one case, an insurer that sought to unwind a trade with Goldman Sachs was told it would have to pay the bank for the loss of the option in the CSA. It became a relationship-ending dispute.

"We certainly had some issues with Goldman. When we were trying to unwind, we were seeing a much lower value from them, and they told us they were charging for the optionality. But this was no small amount – to them it was extremely valuable, they were essentially trying to add a bid-offer spread to the unwind. In the end, we didn't unwind the swap, and instead did an offsetting transaction. To this day, we don't trade with them," says one derivatives trader at a US insurer.

Others have similar complaints. "Some banks were charging for the optionality in unwinds, and I think that was very disingenuous. Essentially, these were documents signed 10 or 15 years previously to help increase business between us and the banks, and nobody back then valued the optionality. Everyone was blind to it, so for banks to start charging for it out of the blue when it goes their way just doesn't seem fair," says Terry Leitch, former head of derivatives trading at insurer Aegon in New York.

The third ex-Goldman trader says the bank always explained to clients why it was charging them, and was consistent across the board. "We tried to communicate the pricing as early as possible, and most of the insurers said they understood it intellectually, but they said most of our competitors didn't price it, and that we were being a pain in the neck. But we were doing the right thing; we were pricing the trade, to the best of our knowledge, in the correct way."

Some clients agree, but were no less unhappy – in these cases, it was simply the age-old story of a dispute between buyer and seller. "I hold no hostility towards them. I understand their business decision and the math behind it – it makes sense. But we're talking about millions of dollars here on large portfolios, and it's not something I want to pay," says the head of derivatives trading at another US insurer.

Other dealers, though, argue that while the maths might make sense, banks should not charge clients for optionality in multi-currency CSAs because the value is impossible to realise. "In order to hedge the optionality, you need cross-currency basis options, which don't trade at all – and if they did, the bid-offer spread would be as wide as Kansas. Essentially, Goldman has marked stuff it cannot trade, and if that is the case, then it is questionable whether it should be charged to clients," says another swaps trader at a European bank in London.

For the same reason, any bank that has marked the value of those options on its books – and Goldman is believed to be the only one to have done so – will see the value bleeding away over the life of the trades. But the third ex-Goldman trader says the bank was extremely conservative when marking gains on what it calls cheapest-to-deliver valuation adjustment.

"Yes, it's very tough to monetise. While you can relatively easily price the intrinsic value by looking at the cross-currency forwards, there is no market for cross-currency forward options. So when you price the option, you have to be extremely conservative. There would be no point marking something we would then bleed over the next few years," he says. ■

The morals and manners of the OIS gold rush

Trading is a dog-eat-dog profession and, in the interdealer market, there is widespread – if occasionally grudging – admiration that Goldman Sachs was first to spot the opportunities in the new valuation regime. A different standard applies to trades between dealers and clients, of course, and Goldman has been widely criticised for ignoring this distinction in recent years, treating customers as counterparties. It's a claim some of the bank's rivals make in the context of the switch to overnight indexed swap discounting, and is one that former Goldman Sachs traders deny.

Here, three different takes on the behaviour expected of a swap dealer:

■ "I applaud them. I really do. They were the smartest guys on the Street. They thought about the issues before anyone else, built the systems to take advantage of the situation and implemented it before anyone else knew what was happening. Every other bank I know wishes they could have done exactly the same. I have the utmost respect for them. And they did us all a favour in the end – you just had to make sure you weren't lunch" – the head of fixed income at an international bank in London.

■ "Between dealers, all bets are off. If they don't get it, then that's tough. If two dealers fundamentally are valuing the same instrument differently, then there are trades to be done. If someone thinks the price is X and the other thinks it is Y, then that is what creates markets. But when dealing with clients, you have to sit down with them and explain why prices are different, and why you are asking to novate or unwind trades. And sometimes, you need to waive certain charges where it is disingenuous to levy clients. Otherwise it disincentivises clients to use the product" – the head of swap trading at a US bank in London.

■ "We weren't trying to profit unknowingly off people. This was a modelling issue. We valued swaps differently and it could have gone either way. And before this was made public, we had dialogues with our customers for years, because if someone comes to unwind and they get charged a lot more, they will ask why. So in no way was there any type of unsavoury behaviour. It wasn't our intent to go out and fool people. The price did all the talking" – an ex-Goldman trader