Developing a real US market

The US inflation derivatives market's growth has been sporadic, but there are now signs that it is entering a more sustained period of development. At a recent roundtable discussion in New York, BGC invited leading players to discuss how improved liquidity is creating opportunities for issuers, investors and dealers

Risk: Volumes have been extremely strong this year. Can we put some historical context around the market's current vibrancy?
D'Arcy Miell: The interbank market has witnessed a gradual, rather than sudden, increase in volumes this year for both asset swaps and zero-coupon trades. We are on schedule to eclipse 2004, the busiest year so far, when around $12 billion of notional was traded through the entire brokered market in the US. By the start of May, around $4 billion of notional had been traded – including more than $1 billion during the first week of May alone. The future looks promising. Certainly the US inflation derivatives market is in its most buoyant state for years, and that is due to a combination of new entrants and re-emergent participants.

The Panel

Valdimar Armann Head of US inflation products, ABN Amro
Michael Ashton Head of US inflation trading, Natixis Capital Markets
Jeremie Banet Head of US inflation trading, BNP Paribas
Pedro Goldbaum Inflation derivatives and structured notes trader, Bear Stearns
Sébastien Goldenberg Managing director, Head of inflation products, Citi
Jerry Ing Head of US inflation derivatives trading, Goldman Sachs
Nikolay Stoyanov US inflation derivatives trader, Barclays Capital

Risk: What is the focus of this activity in terms of instruments?
Jerry Ing: We have started to look at TIPtions – there is always some demand for deep out-of-the-money puts, buyers of protection in four standard deviation scenarios. Sometimes we see supply of high strike calls as part of an overwriting strategy for real money inflation portfolios. One of the interesting flows that we expect to develop has to do with real return equity strategies; at the moment though, these tend to be one-off transactions. In terms of demand for high-strike caps or high-side inflation protection, that really depends on how mean-reverting the market expects inflation to be: will the US Federal Reserve step in immediately if inflation spikes up, for example? A 15- to 20-year high-strike cap traded in the market last year, the volatility implied by the option price seemed to suggest that the market didn't believe that inflation was that mean-reverting.
Sébastien Goldenberg: Our recent experience differs. There seems to be a consensus among end-users that inflation is mean-reverting – especially due to perceived likely action of the Fed to keep inflation under control. So, we have seen a lot of reverse enquiries for range accruals where investors are trying to capture that perceived mean reversion and get some yield pick-up in both dollars and euro.
Nikolay Stoyanov: Alongside the variety in terms of types of products, it is the new tenor range of product being traded that has expanded. Last September, October and November were catalyst months for the revival of the long end. Prior to that, mostly inflation swaps in the four- to 10-year range were quoted reasonably tight. In those three months, however, there was a substantial surge in the number of trades in the interdealer market with tenors beyond 10 years out to 30 years, incidentally extending beyond the maturity of the longest inflation-linked cash bond. Ever since markets in the long end have remained more consistently and tightly quoted, whether in terms of outright zero-coupon swaps, on a curve spread basis, or asset swaps. On the flip side, year-on-year inflation swaps used to trade alongside zero-coupon ones on the interdealer market, but have disappeared over the past year or so. While year-on-year swaps do have the added complication of embedded convexity, they also have less reset and seasonality risk.
Valdimar Armann: What was mentioned before on the long-end zero-coupon break-even inflation swaps is a very important step for the US inflation derivatives market. It showed the market that, even though the long end of the curve looked completely dead then, by starting to show bids or offers it pulls in other participants. Liquidity in this market tends to focus on a few points on the curve where there is need so, even though nothing is in the market, it doesn't mean that liquidity is not there. The message also feeds quickly to clients who are more comfortable with trading swaps if liquidity is there. Few things worry end-users more than not being able to either close their positions or, in terms of an ongoing hedging programme, that there is sufficient liquidity to maintain that programme.

Demand for fixing contracts will increase as more zero-coupon swaps mature

Pedro Goldbaum, Bear Stearns

Risk: **What has been happening with the often-talked-about consumer price index (CPI)-fixing product, and is the caps-and-floors market back?**
Jeremie Banet: Development of the over-the-counter (OTC) CPI-fixing contract is most encouraging. Typically, dealers had only been worried about their fixing risk in the week or so before. But, more and more, we are trading CPI fixing one-month forward and beyond. There is interest from many banks in using this more as a hedging tool, and also from end-users as a more speculative play. What has been especially apparent in the past two months is activity by real money players.
Pedro Goldbaum: In terms of building up the market for the CPI-fixing product – I think there is great potential there. A lot of trades in this market are quite young and demand will increase as more zero-coupon swaps get close to maturity. As we do more and more of these two-year swaps, for example, there will be a point where we have a zero-coupon swap terminating every month and will probably want to do something in the fixing product to manage that risk. Also, now that we are seeing further into the future with these products, this activity further along the curve is helping the market to better price seasonality

Risk: **Where are the potential natural payers of inflation convexity?**
JI: Making the underlying more liquid will certainly promote more people to take risks in terms of buying and selling optionality, but fundamentally there aren't very many natural long or short inflation convexity positions in the market. There are, for example, some real estate companies that are naturally short caps because of legal contracts imposing limits on yearly increases in rents. These types of accounts are generally not involved yet and, until they are, hedge funds are unlikely to become very active as the dealer market is going to be so wide that hedge funds get priced out.
PG: There are also some insurance companies that will naturally be long and short inflation caps and floors – for example, writers of terminal value insurance where you agree to purchase equipment from a corporation at a given price in the future. With this kind of contract you might in effect take some loss if inflation is low. This is another player that could step into the market and create real demand.

Risk: **Has the OTC CPI-fixing contract in the US obviated the long-voiced need for the development of a healthy exchange-traded contract?**
Michael Ashton: I don't think so. I was involved in the design of the original US exchange-traded contract, which, it is fair to say, the market did not take to. It is surprising because there was great enthusiasm when that contract was first proposed and shown to potential customers and users. The fact that it didn't result in more trading may be to do with the fact there was only one market-maker, among other reasons. But this general approach has merit. Making some of the more vanilla parts of this market exchange-traded has an advantage in that it is more transparent for the end-user, while simplifying issues around credit. From the dealers' perspective it is a low-margin product so it doesn't hurt to have that out there and let everyone see what inflation seasonality looks like. We can argue about the specific design but, in essence, listing a contract should benefit the market.
SG: There is a need for an exchange-traded product, but we must also be realistic and accept that this won't necessarily be a product that trades actively all day long – it's not as if inflation expectations of the next two or three fixings typically change several times a day. Next year, the first large European linker issued by a sovereign will redeem (BTPEI 2008), and its is estimated that around 70% of its outstanding has been asset-swapped. This is a pressing concern in Europe, which perhaps explains the drive towards creating a viable exchange-traded contract to hedge fixings. In the US, we may have

to wait for a similarly large size of concentrated fixing risk shared by the market in order to generate a similar motivation.

Risk: What drove the surge in volume during the first week of May?

PG: It is important to remember that the nature of liquidity in the inflation market is different to that witnessed in most other derivatives markets. There is seasonality and liquidity tends to fluctuate rather than being continuous. In a sense, liquidity concentrates where people need to do things. Currently, we are seeing a lot of activity at the short end of the inflation curve. So, when it becomes obvious that someone needs to do something at that kind of tenor in the market, other firms tend to come in at the same point and offer liquidity too. Clients are often most concerned about liquidity in developing markets, so it is important for them to know that liquidity tends to come in whenever it is needed in the inflation market. That said, ongoing liquidity in the US has noticeably improved this year – especially in the basic product: zero-coupon swaps. These are the building blocks of more complicated structures and there is a sense that it's just a matter of time before this much-improved liquidity prompts the options market to take off too.

MA: The fact that so many spreads have been traded is, in itself, an interesting indicator of growing liquidity. Traditionally, one of the problems that dealers who were not market-makers in Tips encountered was that liquidity tended to simply flow back and forth between the cash and derivatives markets. So, for instance, when doing a zero-coupon inflation swap trade, you would subsequently go to the Tips market to hedge that. When you execute spreads and asset swaps you typically have structures that, in effect, have built-in liquidity. To me, this is suggestive of how we will make the market healthier and more liquid: by doing more transactions that are less risky, if you will, because no hedge needs to be exchanged. If we want to move from the $25 million–$50 million size trades that we currently see in inflation derivatives, to the $500 million–$1 billion standard that Libor swaps have, this is one obvious way to get more non-Tips dealers involved.

Risk: How has the US market's improved depth and liquidity manifested itself most obviously this year?

VA: You tend to see broker market prices more often around 1–2bp spread, especially on five- and 10-year zero-coupon swaps, and some of the asset swaps tend to be quoted regularly within that spread. I think many banks are converging their setup to the European desk setup where the inflation-linked bonds and inflation swaps are traded off a centralised inflation desk and even by the same trader. Here in the US there has been a disconnection between the bonds and the swaps as the bonds are traded off treasury desks, while the swaps are traded off the exotic desks, which is not the optimal setup.

NS: There are certainly more market participants nowadays. Quotes are tighter and there is less disagreement among dealers over pricing. The latter effect is quite apparent on the interdealer market. Even for instruments that are not actively traded there is convergence in pricing. Existing and potential clients are gaining confidence that this market is here to stay and has enough liquidity to absorb increasingly larger positions without substantial increase in the transaction cost. I also believe that people are starting to appreciate inflation swaps as an essential complement to the inflation-linked cash market. They are flexible in their specifications and serve as a backbone for more complex inflation-linked derivatives structures, which can be tailored to very specific risk needs. Furthermore, a position in zero-coupon inflation swap, for example, as opposed to cash breakevens, does not carry the 'speciality' of a bond exposure and involves no repo. In particular, it is not exposed to the repo differential between the inflation-linked and the corresponding nominal bond, where the latter has a non-trivial likelihood to trade special while the former does not.

JB: The inflation derivatives market has benefited greatly from increased liquidity in the Tips market this year. This has helped derivatives dealers know with more certainty where to price the mid-point. Compared to last year, many more are active in the cash market. Likewise, Tips traders are using zero-coupon swaps more actively as a hedge – this was especially apparent last November when Tips traders took great advantage of liquidity in zero-coupon swaps, especially at the back end of the curve; cash traders offset the risk of their sold Tips positions by buying zero-coupon swaps and, ever since, the back end of the swaps curve has been more liquid as dealers manage their positions. Contrast this with how things used to be where it was only the traders of zero-coupon swaps that would hedge with Tips and then asset-swap it.

> **There is a real need for the product on both supply and demand side that is not driven by regulation**
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> **Valdimar Armann, ABN Amro**

Risk: In terms of market development – have we reached the point that, a few years ago, you thought we would have by 2007?

SG: Back then, I had thought the US market would follow the lead of the European market and to have progressed more than it actually has. The US market still has to find natural payers of inflation. One very interesting benchmark to illustrate this can be found in the asset-swap market. As long as the asset-swaps level does not go through the GC level, it means that the market hasn't truly found liquidity and that Tips are still the hedge for swaps. In Europe, it wasn't until 2002–2003 that this actually happened. The European market actually managed to find some payers and that has led to more balance in supply and demand. Looking at the US curve now, the asset-swap level is still roughly driven by the GC level, within a couple of basis points. Without a natural supply for using derivatives, Tips asset-swap spread is not likely to trade through the GC level. If the participants could source inflation from the most obvious candidate such as toll roads, toll bridges and utilities as they do in Europe, it would increase the pace of the growth of the US inflation derivatives market. Finding some swaps payers is the key to pushing this business forward. This will happen, and I strongly believe in the growth of the US inflation market.

Clients have become much more focused on coming up with a plan to retire the [healthcare] liability
Michael Ashton, Natixis Capital Markets

Risk: **So is this the year that we get on to a firmer footing and really move forward in the US?**

MA: I believe so. I don't think the absence of payers is necessarily as big a problem as we used to fear it was. One reason asset-swap levels differ so much compared with those in Europe is that, in the US, Tips never go on special, while treasuries always do. As Tips start to go on special, maybe that will be a sign of a more two-way inflation flow happening – but that is something that will show up in the cash market first. Other things happening now are also very promising for the development of the US inflation market. Accounting standards setters are helping things along – FAS 158 in the corporate accounting world and GAS 43 and 45 for municipalities. Moves towards mark-to-market accounting are tending to push corporate treasuries and municipalities to consider hedging and liability-driven investment (LDI) much more finely than ever before. Previously, pension deficits were mentioned in footnotes, they fluctuated, but they did not pass into the actual financial statement. We have seen clients become much more focused on getting their arms around those liabilities, hedging them and coming up with a plan to retire the liability. This change in thinking would have happened eventually, but not as quickly without accounting rule changes.

JI: Accounting, regulation and an influx of payers into the market would all be helpful, but what would spark interest dramatically right now is market-implied inflation breaking its range. The market has always been one-sided: inflation swaps trade at around 30bp rich relative to the level implied by Tips breakevens, but the bid ask spread is still relatively tight. Ask any dealer here and you would get a market that is only 3–4bp wide. What is missing currently is a strong fear of inflation going up and out of the comfort zone. If economic data goes that way, everything else is in place for the market to take a leap forward: we have an active broker market and dealers have the requisite risk management systems in place. The notional size of the US Tips market is around $430 billion, so the potential for the derivatives market is great.

NS: Higher inflation could prompt a slight paradigm shift. I believe that when people think about returns they tend to do so in nominal terms rather than in terms of purchasing power, because a precise dollar value is easy to appreciate. Purchasing power, on the other hand, is more elusive as a concept, especially if one is unsure about the extent of correlation between his or her individual consumer basket and the headline CPI. However, slightly higher inflation would in part shift the focus from nominal to real returns, which in turn should spark higher interest in inflation-linked products. Nevertheless, to the extent that higher inflation would be followed by tighter monetary policy by the Fed, such effect may be mollified.

As far as the regulatory framework is concerned, by all means, explicit linkage of assets or liablilities to inflation would be tremendously helpful for this market. In the lack of such an environment, however, I believe that education would help enable organisations to identify and quantify their inflation exposures. Familiarity with the inflation market would, at the very least, allow them to make a more informed decision of whether and when to lock in a particular inflation exposure. More often than not, chances are that the particular inflation risk is not strictly linked to the headline CPI. Nevertheless, holding a basis risk, i.e., specific inflation exposure versus headline CPI, should already reduce the overall risk.

VA: The asset/liability management (ALM) concept is not as well established in the US, and this is the context in which inflation products fit very well. So, education is very important too. If clients do not know that there are products out there to help them manage risk, they will never use them. The increasing presence of dedicated inflation swaps traders and structurers at banks in the US is one positive sign that we are heading the right way.

MA: Those last two opinions represent the two biggest camps in the debate over the US inflation derivatives market's evolution; on one side you have the view that inflation must surge for this market to be interesting, which is a bit like saying you cannot sell earthquake insurance if nobody has ever felt a tremor. There is something to that. Then you have an argument that hedging should be viewed more strategically.

SG: The truth probably lies somewhere in the middle. I do believe that regulation and legislation will move the market forward and that customers need to be educated, but I don't believe that fear of high inflation will move the market forward. In Europe, it was definitely tighter regulation that pushed pension funds to hedge and the market is now quite liquid. In the swaps market, you can trade a 30-year swap in €50–100 million size, but – if you want to trade a bond – you would typically struggle to do a fraction of that size. Following the lead of the UK, LDI is spreading throughout Europe. Twelve months ago, LDI wasn't a term that was widely used in Europe, but now you have a lot of French and Italian pension

Tips traders are using zero-coupon swaps more actively as a hedge
Jeremie Banet, BNP Paribas

Regulation and legislation will move the market forward and customers need to be educated

Sébastien Goldenberg, Citi

funds actively looking at hedging liabilities through LDI, which typically involves buying inflation protection via a swaps overlay. Meanwhile, the surge in acquisition finance and private finance initiative deals has provided the market with balance by creating a supply of inflation payers.

JB: I think it would be very optimistic of us to simply wait for regulation to change. As mentioned, the ALM and LDI culture hasn't developed in the US yet and pensions are typically still massively long stocks. The prime mover that reallocates from stocks to inflation always faces the concern that their performance could look poor compared with their peer pension funds that benefit from any equity outperformance. In a sense, it's almost as if pension funds would prefer to all fall together during times when stocks don't perform well, rather than more sensibly taking risks that better match their liabilities. But two major US plans' consultation with the Street about inflation derivatives last year was an encouraging sign that changes are on the horizon.

VA: I had been hoping that the takeoff in the US would be quicker but, in the past year, I have seen an extremely interesting evolution. One has to realise that, to a large extent, the market in the UK and Continental Europe is driven by regulation that we do not have here in the US. Interestingly, here regulation is pushing in the right direction but nonetheless I have seen a real need for the product on both supply and demand side that is not driven by regulation. I believe the trick is not only to find the inflation payer but to find the inflation receiver as well.

Risk: **Returning to the thorny question of the supply side and encouraging entities other than the US Treasury to pay inflation, for example, was last year's relatively large issuance by municipalities any help?**

VA: Municipalities are definite candidates for filling the void in terms of natural inflation payers in the US and they are becoming evermore familiar with the market. That said, most inflation-linked issuance to date has been swapped back and so it hasn't really solved the problem.

MA: There is a more subtle problem at play too. It is hard to find issuers that have exposure to headline inflation. They tend to view their exposure to a particular component: automobile inflation or healthcare inflation, or a particular region's inflation, for example. Finding an issuer to issue a generic inflation-linked product can be difficult.

The inflation market can provide at least partial hedge to implicit inflation exposure linked to a different index

Nikolay Stoyanov, Barclays Capital

Risk: **Would dealers be willing to structure something that references a more specific inflation rate and take on the basis risk?**

MA: I'm actually surprised we haven't seen any deals where a party pays healthcare inflation, for example. If you're a municipality that has a major healthcare company as a key taxpayer, for example, then your tax receipts are very closely tied to what happens to healthcare inflation. All dealers certainly have any number of clients that would like to receive healthcare. I'm fairly confident that, within a year, we will start to see this kind of more specific inflation trade.

Risk: **Isn't it fair to say that, in an ideal world, inflation supply would come directly from swaps?**

SG: Yes, and the market participants can be innovative to balance the lack of supply of inflation-linked swaps. Take the example of the UK in recent years. The UK Debt Management Office (DMO) issued a 50-year note. It was a tremendous success, and has suddenly generated some very cheap funding opportunities for a load of corporates, who wanted to benefit from this great opportunity too. The trouble was there was no investor demand for corporate triple-B issuing ultra-long-dated inflation-linked bonds. More specifically, there was no buyer for that combination of credit and inflation for this maturity. But, splitting the credit and inflation created a market. Bond insurance allowed these issues to be sold to Libor-based investors, with the inflation extracted and transferred to pension funds implementing LDI via swaps. This has generated heavy supply into the ultra-long inflation swaps market. Within 18 months of the UK DMO issuance, the outstanding of corporates' long-dated inflation-linked issuance doubled. In that example, the inflation receivers were end-users; keeping the inflation risk to hedge their long-dated liabilities. Selling TIPS in asset-swapped to fast money accounts such as hedge funds in order to source inflation derivatives can only be a temporary solution, as those participants are likely to unwind this type of risk within a short period of time.

VA: When you look at the European market you can see that a big chunk of the supply on the far long end is coming through the bond market. Both Italy and Greece have issued 50-year inflation-linked bonds that have been bought by asset-swap investors who pay the inflation from the bonds to a bank that recycles the inflation to a receiver, typically a pension fund. I guess this will be a way forward in the US as issuers will have difficulty in paying

inflation straight through swaps due to accounting treatment but they are able to issue a bond that is linked to an inflation index in their economic operating environment.
JI: One category of natural payers with which the dealer community may have some success is private equity players. Certainly part of the investor base in private equity infrastructure funds has a desire to be long inflation. But there are also many investors for which this is not such an important part of their targeted risk exposure, and so paying inflation to earn an extra 20–30bp of carry may well appear attractive.

What would spark interest right now is market-implied inflation breaking its range
Jerry Ing, Goldman Sachs

Risk: **The municipalities are one category of participant gaining familiarity with the inflation market. Another category that some thought would be significant participants by now is the hedge fund community. They do not appear to be tremendously active currently – why not, and where are they dipping their toes in the water?**
JB: The hedge fund community is already a big player in the Tips market – using it to put on their views on inflation and playing the seasonals this way too. We have seen a few hedge funds move from Tips to derivatives to arbitrage the curve, to monetise the cheapness of certain bonds. The biggest flows we have seen so far this year involved funds trying to buy cheap Tips and then swap them back to the swap curve to avoid any funding and repo cost.
JI: I would characterise most hedge fund activity as selling of asset-swap spreads. Most of the flows are concentrated in the five to 10-year sector – the most liquid part of the inflation swaps curve. Most funds view it as a free asset-swap widener trade – it currently has around 3–4bp negative carry, so they are paying that cost, in effect, to have a trade that will profit if swap spreads ever widen out. In other words, they are paying 3bp of carry for the option that the US inflation market finds the natural supply it has been looking for. There is currently an opportunity to put on a convergence trade – nominal swap spreads versus Tips asset-swap spreads – but we haven't seen very many hedge funds do that yet. And, from time to time, we have seen interest in short-term options on breakevens widening or tightening, but generally these flows have been quite muted and, at this point, the market isn't quite liquid enough for most funds to get involved.
VA: Hedge funds are particularly sensitive to bid-offer spreads so, as liquidity grows, they will begin to increasingly look at derivatives as an alternative to Tips – one free from the hassle associated with repos.

Risk: **Presumably, better liquidity in recent months is going to bear fruit in terms of increased hedge fund participation?**
MA: It should. Last year, a small number of inflation relative-value hedge funds even launched. It used to be that if you entered into a 10-year swap and you wanted to get out of it in three months, you would be at the mercy of dealers' seasonal assumptions. But, now that the resets have started to trade, we have a much better picture of what the seasonality looks like and much more agreement on where a 9.75-year swap is and that helps hedge funds.
VA: Also, the fact that more banks are in the market means that hedge funds can go to 10 banks instead of just the few they used to. This should make them much more comfortable with the inflation derivatives market.

Risk: **Is managing risk on an inflation derivatives desk significantly easier now, compared with a few years back?**
NS: Dealers are certainly more comfortable with the analytic aspects. The fact that quotes are far tighter and more bid-offers are frequently observed for various tenors on the curve makes everyone more comfortable. But then you have the flip side. When the market started several years ago, longer-term trades were executed. These four- to five-year trades, for example, are coming to maturity over the next year or so, which is why reset risk and fixing exposures are more of a focus now and participants are developing exchange-traded and OTC contracts to help manage these.
SG: Part of the reason the market has become more liquid is because the dealer community did its internal homework when the market emerged. We have had to educate our management and our risk management to new types of risks. With regard to the 'model risk', there are reserves and other conservative measures taken, but a lot of it comes down to the risk appetite of the dealer, its commitment to the development of the product and the market, and using consensus pricing services to benchmark.
NS: What also gets dealers more comfortable is that you have a trade from inception that has matured and there has not been any cataclysmic event. This builds comfort in the fact that you know where things are trading and that unrealistic assumptions are not being used in the modelling.

BGC wishes to thank all participants for their valuable contributions to this roundtable discussion and we invite any feedback from anyone interested in discussing these issues now and in the future. We appreciate the opportunity to work together in the exciting development of the inflation derivatives markets in the US.

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