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The determinants of the swap spread

Moorad Choudhry *

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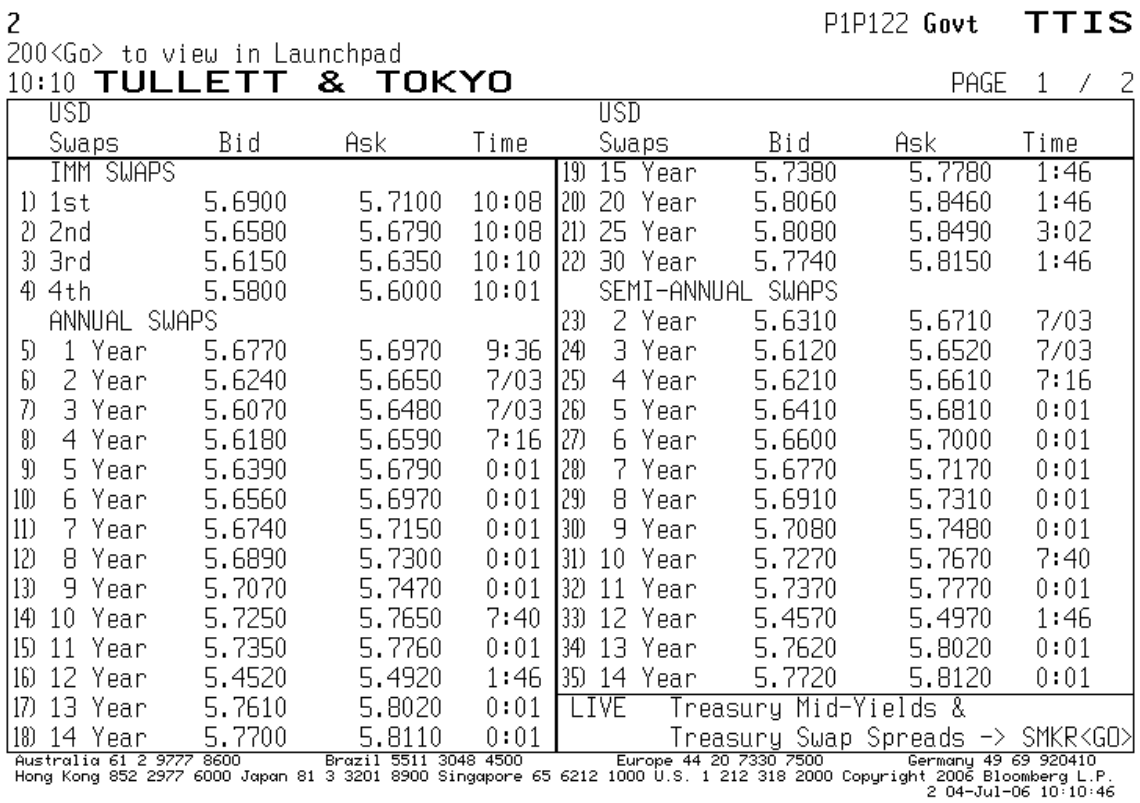
Interest-rate swaps are an important ALM and risk management tool in banking markets. The rate payable on a swap represents bank risk, if we assume that a swap is paying (receiving) the fixed swap rate on one leg and receiving (paying) Libor-flat on the other leg. If one of the counterparties is not a bank, then either leg is adjusted to account for the different counterparty risk; usually the floating leg will have a spread added to Libor. We can see that this produces a swap curve that lies above the government bond yield curve, if we compare Figure 1 with Figure 2. Figure 1 is the USD swap rates page from Tullett & Tokyo brokers, and Figure 2 is the US Treasury yield curve, both as at 3 July 2006. The higher rates payable on swaps represents the additional risk premium associated with bank risk compared to government risk. The spread itself is the number of basis points the swap rate lies above the equivalent-maturity government bond yield, quoted on the same interest basis.



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USD Swaps	Bid	Ask	Time
IMM SWAPS			
1) 1st	5.6900	5.7100	10:08
2) 2nd	5.6580	5.6790	10:08
3) 3rd	5.6150	5.6350	10:10
4) 4th	5.5800	5.6000	10:01
ANNUAL SWAPS			
5) 1 Year	5.6770	5.6970	9:36
6) 2 Year	5.6240	5.6650	7/03
7) 3 Year	5.6070	5.6480	7/03
8) 4 Year	5.6180	5.6590	7:16
9) 5 Year	5.6390	5.6790	0:01
10) 6 Year	5.6560	5.6970	0:01
11) 7 Year	5.6740	5.7150	0:01
12) 8 Year	5.6890	5.7300	0:01
13) 9 Year	5.7070	5.7470	0:01
14) 10 Year	5.7250	5.7650	7:40
15) 11 Year	5.7350	5.7760	0:01
16) 12 Year	5.4520	5.4920	1:46
17) 13 Year	5.7610	5.8020	0:01
18) 14 Year	5.7700	5.8110	0:01

USD Swaps	Bid	Ask	Time
19) 15 Year	5.7380	5.7780	1:46
20) 20 Year	5.8060	5.8460	1:46
21) 25 Year	5.8080	5.8490	3:02
22) 30 Year	5.7740	5.8150	1:46
SEMI-ANNUAL SWAPS			
23) 2 Year	5.6310	5.6710	7/03
24) 3 Year	5.6120	5.6520	7/03
25) 4 Year	5.6210	5.6610	7:16
26) 5 Year	5.6410	5.6810	0:01
27) 6 Year	5.6600	5.7000	0:01
28) 7 Year	5.6770	5.7170	0:01
29) 8 Year	5.6910	5.7310	0:01
30) 9 Year	5.7080	5.7480	0:01
31) 10 Year	5.7270	5.7670	7:40
32) 11 Year	5.7370	5.7770	0:01
33) 12 Year	5.4570	5.4970	1:46
34) 13 Year	5.7620	5.8020	0:01
35) 14 Year	5.7720	5.8120	0:01

LIVE Treasury Mid-Yields & Treasury Swap Spreads -> SMKR<GO>

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2006 Bloomberg L.P.
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Figure 1 USD interest-rate swap rates, 3 July 2007
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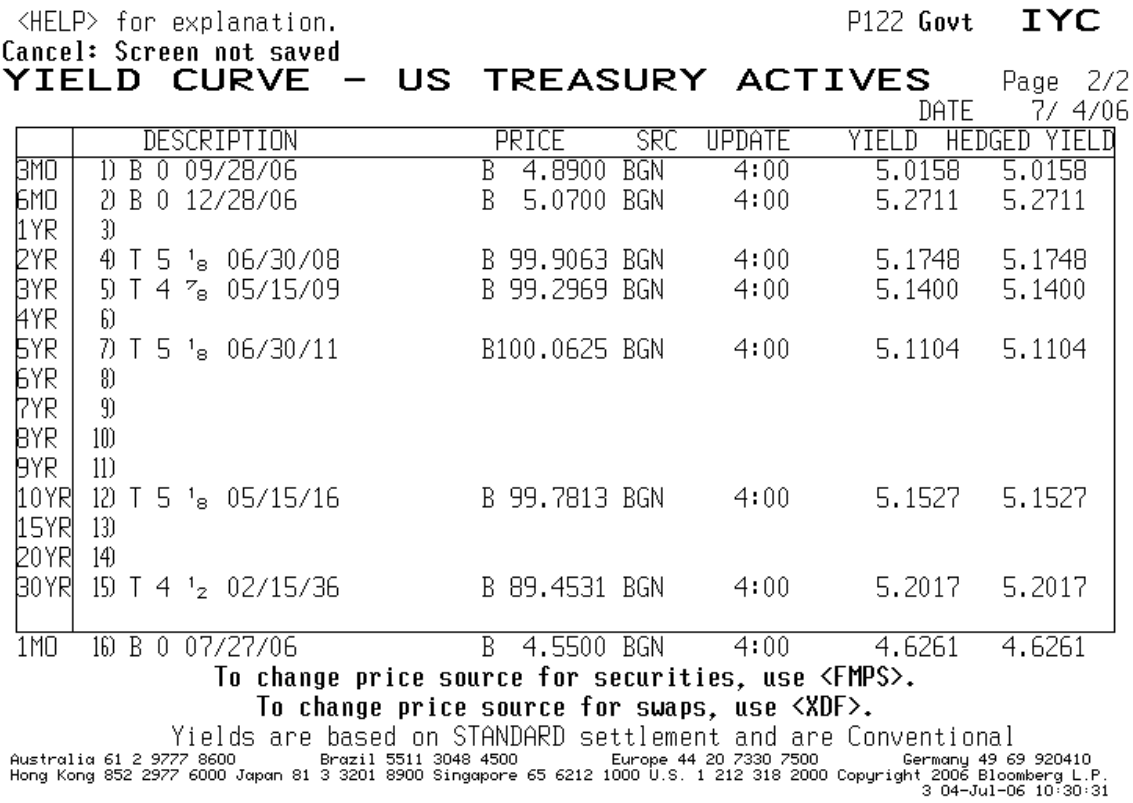

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DATE 7/ 4/06

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3MO	1) B 0 09/28/06	B 4.8900	BGN	4:00	5.0158	5.0158
6MO	2) B 0 12/28/06	B 5.0700	BGN	4:00	5.2711	5.2711
1YR	3)					
2YR	4) T 5 1/8 06/30/08	B 99.9063	BGN	4:00	5.1748	5.1748
3YR	5) T 4 7/8 05/15/09	B 99.2969	BGN	4:00	5.1400	5.1400
4YR	6)					
5YR	7) T 5 1/8 06/30/11	B100.0625	BGN	4:00	5.1104	5.1104
6YR	8)					
7YR	9)					
8YR	10)					
9YR	11)					
10YR	12) T 5 1/8 05/15/16	B 99.7813	BGN	4:00	5.1527	5.1527
15YR	13)					
20YR	14)					
30YR	15) T 4 1/2 02/15/36	B 89.4531	BGN	4:00	5.2017	5.2017
1MO	16) B 0 07/27/06	B 4.5500	BGN	4:00	4.6261	4.6261

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To change price source for swaps, use <XDF>.
Yields are based on STANDARD settlement and are Conventional

Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2006 Bloomberg L.P.
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Figure 2 US Treasury yield curve, 3 July 2006

In theory, the swap spread represents only the additional credit risk of the interbank market above the government market. However as the spread is variable, it is apparent that other factors influence it. An ALM desk will want to be aware of these factors, because they influence swap rates. Swaps are an important risk hedging tool, if not the most important, for banks so it becomes necessary for practitioners to have an appreciation of what drives the swap spreads

Historical pattern

If we plot swap spreads over the last ten years, we note that they have tightened in the last five years or so. Figure 3 shows the spread for USD and GBP for the period 1997-to the first quarter of 2006.

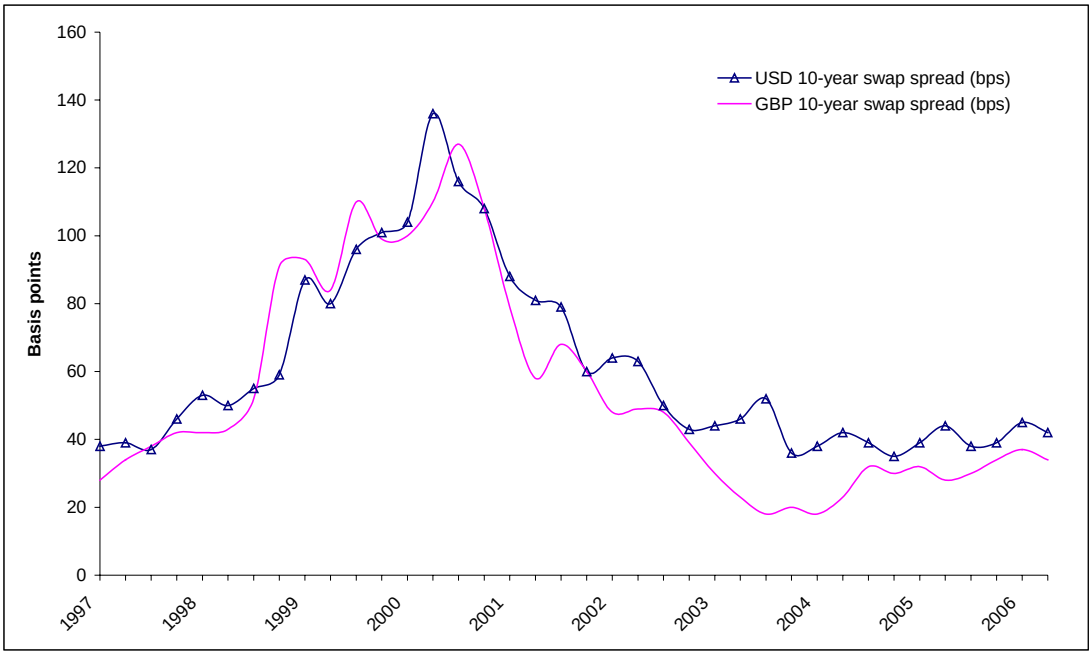

Figure 3 USD and GBP interest-rate swap spreads over government curve, 1997-2006
(Source: Bloomberg L.P.)

We see that spreads have reduced in recent years. The highest spreads for both currencies was reached during 2000, when the 10-year sterling swap spread peaked at around 140 bps above the gilt yield. The tightest spreads were reached during 2003, when the 10-year sterling spread reached around 15 bps towards the end of that year. At the beginning of 2006 sterling spreads were still lower than the 10-year average of 55 bps. This implies that the perceived risk premium for the capital markets has fallen.

Note how the change in spread levels coincides with macro-level factors and occurrences. For instance, spreads have moved in line with:

- the Asian currency crises of 1997;
- the Russian government bond default and collapse of the Long Term Capital Management hedge fund in1998;
- the "dot.com" crash in 2000;
- the subsequent loosening of monetary policy after the dot.com crash and the events of 9/11.

This indicates to us, if just superficially, that swap spreads react to macro-level factors that are perceived by the market to affect their business risk, credit risk and liquidity risk. Spreads also reflect supply and demand, as well as the absolute level of base interest rates.

Determinants of the spread

We already noted that in theory the swap spread, representing interbank counterparty risk, should reflect only the market's perception of bank risk over and above government risk. Bank risk is captured in the Libor rate – the rate paid by banks on unsecured deposits to other banks.[1] So in other words, the swap spread is meant to adequately compensate against the risk of bank default. The Libor rate is the floating rate paid against the fixed in the swap transaction, and moves with the perception of bank risk. As we implied in the previous section though, it would appear that other factors influence the swap spread. We can illustrate this better comparing the swap spread for 10-year quarterly-paying swaps with the spread between 3-month Libor and the 3-month general collateral (GC)) repo rate. The GC rate is the risk-free borrowing rate, whereas the Libor rate represents bank risk again. In theory, the spread between 3-month Libor and the GC rate should therefore move closely with the swap spread for quarterly-resetting swaps, as both represent bank risk. A look at Figure 4 shows us that this is not the case. Figure 4 compares the two spreads in the US dollar market, but we do not need to calculate the correlation or the R^2 for the two sets of numbers. Even on cursory observation we can see that the correlation is not high. Therefore we conclude that other factors, in addition to perceived bank default risk, drive one or both spreads. These other factors influence swap rates and government bond yields, and hence the swap spread, and we consider them below:

[1] In theory. In fact banks are more likely to pay Li-mid to other banks, and the biggest banks pay Libid. But we can safely ignore this for the purposes of our discussion here.

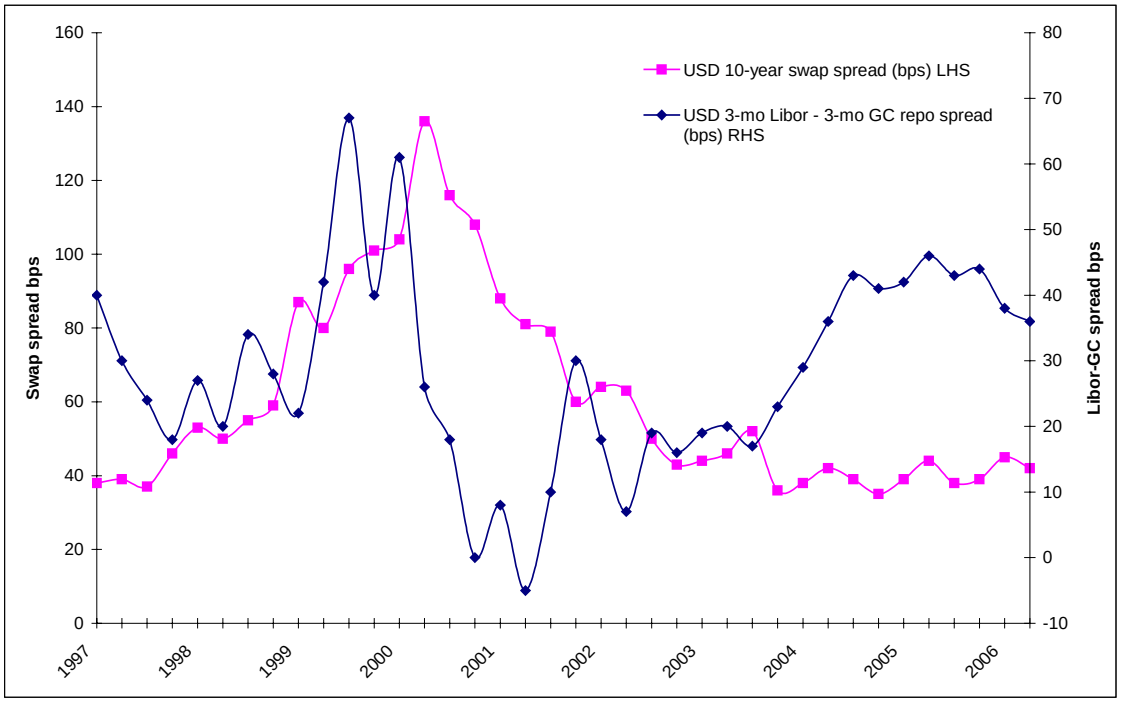

Figure 4 Comparison of USD 10-year swap spread and 3-month Libor-GC repo spread
(Source: Bloomberg L.P.)

- Level and slope of the yield curve

The magnitude of the swap spread is influenced by the absolute level of base interest rates. If the base rate is 10% so that the government short-term rate is around 10%, with longer-term rates being recorded higher, the spread tends to be greater that that seen if the base rate is 5%. The shape of the yield curve has even greater influence. When the curve is positively sloping, under the expectations hypothesis investors will expect future rates to be higher, hence floating rates are expected to rise. This would suggest the swap spread will narrow. The opposite happens if the yield curve inverts

Figure 5 shows the GBP 10-year swap spread compared to the GBP gilt yield curve spread (10-year gilt yield minus 2-year yield). We see that the slope of the curve has influenced the swap spread; as the slope is narrowing, swap spreads are increasing and vice-versa.

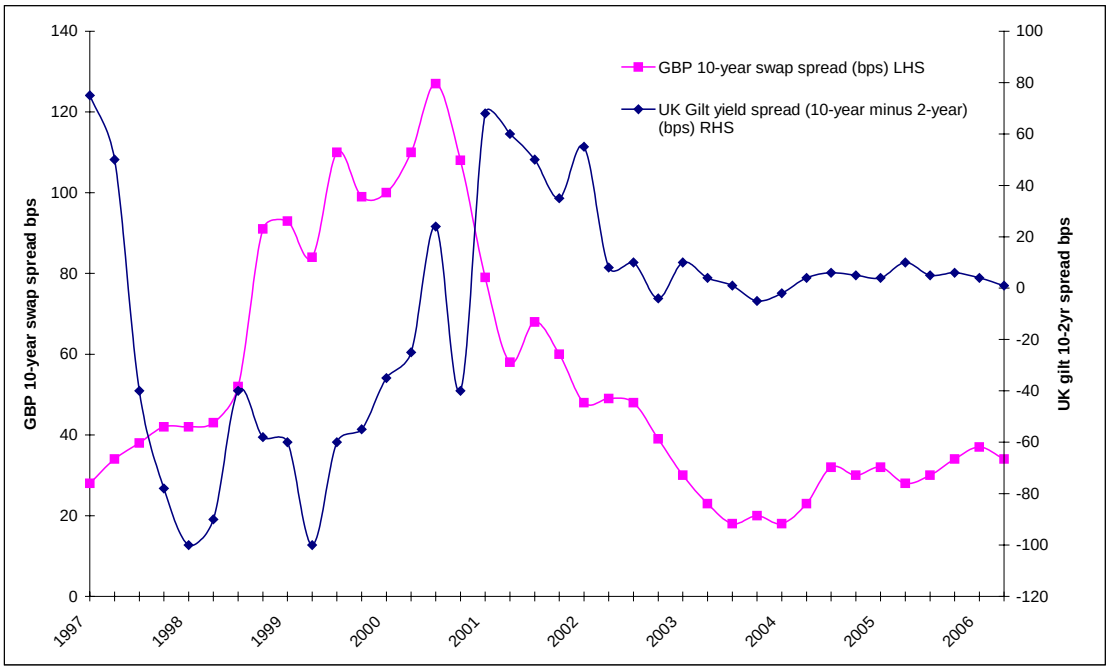

Figure 5 GBP swap spreads and gilt spreads compared 1997-2006 (Source: Bloomberg L.P.)

- Supply and demand

The swap spread is influenced greatly by supply and demand for swaps. For example, greater volumes cash market instruments drive up a need for hedging instruments, which will widen swap spreads. The best example of this is corporate bond issuance; as volumes increase the need for underwriters to hedge increases. However greater bond issuance also has another impact, as issuers seek to swap their fixed-rate liabilities to floating-rate. This also increases demand for swaps

- Market volatility

As suggested by Figure 3, swap spreads widen during times of market volatility. This may be in times of market uncertainty (for example, the future direction of base rates or possible inversion of the yield curve) or in times of market shock such as 9/11. In some respects widening during periods of volatility reflects the perception of increased bank default risk. It also reflects the "flight to quality" that occurs during times of volatility or market correction: this is the increased demand for risk-free assets such as government bonds that drives their yields lower and hence swap spreads wider.

- Government borrowing

The level of government borrowing influences government bond yields, so perforce will also impact swap spreads. If borrowing is viewed as in danger of getting out of control, or the government runs persistent large budge deficits, government bond yields will rise. All else being equal, this will lead to narrowing swap spreads.

We can see then that a number of factors influence swap spreads. An ALM or Treasury desk should be aware of these and assess them because the swap rate represents a key funding and hedging rate for a bank.

*** Moorad Choudhry** is Visiting Professor at the Department of Economics at London Metropolitan University. This article is an extract from Chapter 7 of his forthcoming book *Bank Asset and Liability Management* (John Wiley 2007).