HSBC

Inflation linked bonds: Accounting guidance

- Guidance based on current International Financial Reporting Standards, in particular IAS39 and proposed changes in IFRS9
- Inflation-linked bonds do not contain embedded derivatives that require separation
- Can be accounted for under any of the asset classifications within IAS39
- Interest income recognition should be based on the asset's Effective Interest Rate
- Options available over calculation of EIR although simplified approach under AG7 seems to provide most practical approach

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Embedded Derivatives

Under IAS39, embedded derivatives within host instruments require separation where they are not considered "closely related". Given that the inflation-linkage in these proposed bonds is to Thailand CPI, interest payable is unleveraged and denominated in Thai Baht it is likely that the closely related criteria will be met. As such no separation will be required and the bond can be accounted for as a single instrument under the relevant asset classification.

Under IFRS9, assets will be assessed as to whether they are considered to be "structured". As payments of principal and interest on these bonds are linked to an unleveraged inflation index representing the time value of money, this should not be considered to be structured. As such, the bond can either be held at Amortised Cost or at Fair Value Through Profit and Loss.

Asset Classification

Under IAS39 there are four potential ways to classify any financial asset:

- Loans and Receivables:
  - Amortised Cost ("AC") on balance sheet, interest recognised using the Effective Interest Rate ("EIR" – see below)
- Held to Maturity:
  - AC on balance sheet, interest recognised using EIR
- Fair Value Through Profit and Loss:
  - Fair value (Mark-to-market) on the balance sheet, changes in value recognised immediately in the profit and loss account
- Available for Sale:
  - Fair value on the balance sheet, interest recognised using EIR, difference between fair value and AC recognised in reserves

Inflation-linked bonds that are publicly traded in a liquid market will be able to be classified in any of these categories other than Loans and Receivables, as this classification is for assets that are not traded openly and a market value is difficult to ascertain.

Under IFRS9, the asset classification is simplified to just Amortised Cost and Fair Value through Profit and Loss, both of which will be available for investors to use depending on their specific business model.

Effective Interest Rate

For asset classification that requires recognition of interest using the EIR, the question arises as to how this should be calculated for an inflation-linked bond. Not only is the interest coupon variable in cash terms, depending on the current level of CPI, but there is also a level of interest to be accrued relating to the uplift in principal amounts.

Guidance on how to calculate the EIR for floating rate instruments is provided in IAS39.AG6-8.

Under paragraph AG7, the EIR is calculated at inception based on expected future cash flows, which themselves are based on future expectations of inflation. In subsequent periods, if changes in inflation expectations arise, then this is reflected in both a change in forecast cashflows and the EIR. No changes are made to the carrying value of the asset.

Under AG8, the EIR is determined at inception as above. However, where changes in inflation expectations arise, rather than changing the EIR there is an adjustment to the carrying value of the asset with any changes reflected immediately in the profit and loss account.

At present there is no clear guidance either from IFRIC or the IASB as to which is the most appropriate methodology to follow so for ease illustrations of both methods is provided below.

Assumptions

On 1 January 2010 a company purchases an inflation-linked bond for THB 100 mil. This is a 5 year bond paying a fixed coupon of 1% (real interest rate) at the end of each year. The interest is paid on the notional principal outstanding that is uplifted for CPI annually.

Illustrative Bond Terms	
Initial Notional (THBm)	100
Fixed coupon (annual in arrears)	1%
Maturity	5 years
Principal uplifted for actual CPI annually	

As of January 2010 expected CPI was as follows. Subsequent forecasts have been adjusted annually to reflect realised CPI.

Expected and Actual CPI							
			Expected			Actual	
	1 Jan 2010	1 Jan 2011	1 Jan 2012	1 Jan 2013	1 Jan 2014		Adjusted Notional
2010	3.50%					**4.00%**	104.00%
2011	3.00%	2.80%				**2.50%**	106.60%
2012	2.00%	2.90%	3.10%			**3.00%**	109.80%
2013	1.00%	2.00%	3.20%	3.50%		**-0.50%**	109.25%
2014	3.00%	2.50%	3.50%	3.60%	3.50%	**3.50%**	113.07%

Based on these expectations and the terms of the bond, the expected cash flows are therefore as follows.

Expected and Actual Cash flows						
			Expected			Actual
	31 Dec 2010	31 Dec 2011	31 Dec 2012	31 Dec 2013	31 Dec 2014	
Interest						
2010	1,035,000					***1,040,000***
2011	1,066,050	1,069,120				***1,066,000***
2012	1,087,371	1,100,124	1,099,046			***1,097,980***
2013	1,098,245	1,122,127	1,134,215	1,136,409		***1,092,490***
2014	1,131,192	1,150,180	1,173,913	1,177,320	1,130,727	***1,130,727***
Principal						
2014	113,119,205	115,018,014	117,391,301	117,732,003	113,072,725	*113,072,725*
Total	**118,537,063**	**120,499,566**	**122,904,476**	**123,249,713**	**118,499,923**	***118,499,923***

Applying the guidance under AG7

There are two potential methods to account for these cashflows and expectations under AG7, one that adheres strictly to the guidance in the standard and one that provides a working practice. Under the strict method, the EIR needs to be reassessed when expectations change. Finance income if calculated as the EIR multiplied the carrying amount on the balance sheet. EIR will be adjusted regularly to reflect new expectations of future CPI as required. Using the above information, the initial EIR is 3.53%.

AG7: Adjusted EIR methodology using expected future flows					
	Opening Balance	Adjusted EIR (below)	Finance income @ adjusted EIR	Actual Cashflow	Closing Balance
31 December 2010	100,000,000	3.53%	3,527,174	1,040,000	102,487,174
31 December 2011	102,487,174	3.96%	4,061,613	1,066,000	105,482,786
31 December 2012	105,482,786	4.67%	4,924,413	1,097,980	109,309,219
31 December 2013	109,309,219	4.82%	5,268,670	1,092,490	113,485,399
31 December 2014	113,485,399	0.63%	718,054	114,203,453	-
Total Income			**18,499,923**		

EIR is reassessed every year and is calculated based on the closing balance sheet carrying value and expected future cash flows at that time:

Calculation of expected EIR adjusted annually							
	EIR	1 Jan 2010	31 Dec 2010	31 Dec 2011	31 Dec 2012	31 Dec 2013	31 Dec 2014
2010	**3.53%**	(100,000,000)	1,035,000	1,066,050	1,087,371	1,098,245	114,250,397
2011	**3.96%**		(102,487,174)	1,069,120	1,100,124	1,122,127	116,168,195
2012	**4.67%**			(105,482,786)	1,099,046	1,134,215	118,565,214
2013	**4.82%**				(109,309,219)	1,136,409	118,909,324
2014	**0.63%**					(113,485,399)	114,203,453

Whilst this methodology strictly complies with the requirements of AG7, it can be viewed as a little confusing as the actual carrying amount in the balance sheet differs from the reference notional on the bond. The reference notional is simply the initial notional indexed for actual CPI. The differences can be seen below.

	Strict EIR Approach		Indexed-Linked Principal		
Year	**Opening Balance**	**Closing Balance**	**Opening Balance**	**Closing Balance**	**Difference Closing**
2010	100,000,000	**102,487,174**	100,000,000	**104,000,000**	(1,512,826)
2011	102,487,174	**105,482,786**	104,000,000	**106,600,000**	(1,117,214)
2012	105,482,786	**109,309,219**	106,600,000	**109,798,000**	(488,781)
2013	109,309,219	**113,485,399**	109,798,000	**109,249,010**	4,236,389
2014	113,485,399	**113,072,725**	109,249,010	**113,072,725**	-

For this reason, a simplified adjusted-EIR approach is often used for the calculation of interest for floating rate notes. This uses actual realised inflation as the basis for calculating current EIR, i.e. it assumes current inflation represent estimated future inflation. The benefit of this approach is that the carrying amount in the balance sheet should also represent the reference notional outstanding indexed for realised CPI.

AG7: Simplified approach using realised CPI						
Year	**Opening Balance**	**Actual Inflation**	**Inflation Uplift**	**Cash Coupon**	**Total Income**	**Closing Balance**
2010	100,000,000	4.00%	4,000,000	1,040,000	5,040,000	104,000,000
2011	104,000,000	2.50%	2,600,000	1,066,000	3,666,000	106,600,000
2012	106,600,000	3.00%	3,198,000	1,097,980	4,295,980	109,798,000
2013	109,798,000	-0.50%	(548,990)	1,092,490	543,500	109,249,010
2014	109,249,010	3.50%	3,823,715	1,130,727	4,954,443	113,072,725
					18,499,923	

This simplified methodology is very commonly used for other floating rate instruments. The income recognition of both methodologies is compared below. It can be seen that income recognised under the simplified approach more closely matches the actual path of CPI over the 5-year period.

Comparison of income recognition under AG7			
Year	**Strict Approach**	**Simplified Approach**	**Difference**
2010	3,527,174	5,040,000	(1,512,826)
2011	4,061,613	3,666,000	395,613
2012	4,924,413	4,295,980	628,433
2013	5,268,670	543,500	4,725,170
2014	718,054	4,954,443	(4,236,389)
	18,499,923	**18,499,923**	**-**

Applying the guidance under AG8

Under AG8, the effective interest rate is not amended for changes in future expectations. Rather it is locked at the original rate and adjustments are made to the carrying value of the bond directly through earnings. Specifically, the carrying value is adjusted to reflect the present value of the future expected cash flows discounted using the initial EIR. Using the exact same information as above, this methodology would lead to the following income recognition in the profit and loss account.

AG8: EIR fixed with adjustment to carrying value through earnings							
Year	**Opening Balance**	**Income at EIR 3.53%**	**Actual Cashflow**	**Closing Balance**	**AG8 Adjustment**	**Adjusted Closing Balance**	**Total Income**
2010	100,000,000	3,527,174	1,040,000	102,487,174	1,710,884	104,198,057	5,238,057
2011	104,198,057	3,675,246	1,066,000	106,807,304	2,167,390	108,974,693	5,842,636
2012	108,974,693	3,843,727	1,097,980	111,720,440	322,114	112,042,554	4,165,841
2013	112,042,554	3,951,935	1,092,490	114,901,999	(4,589,461)	110,312,538	(637,526)
2014	110,312,538	3,890,915	114,203,453	-	-	-	3,890,915
		18,888,996	118,499,923		(389,073)		**18,499,923**

The adjustment factor represents the difference between the initial closing balance and the adjusted closing balance – calculated by discounting all future expected flows at the original EIR as below.

Calculation of AG8 adjusted closing balance					
	Expected Cash Flows				
	31 Dec 2011	**31 Dec 2012**	**31 Dec 2013**	**31 Dec 2014**	**PV @ 3.53%**
Dec 2010	1,069,120	1,100,124	1,122,127	116,168,195	104,198,057
Dec 2011		1,099,046	1,134,215	118,565,214	108,974,693
Dec 2012			1,136,409	118,909,324	112,042,554
Dec 2013				114,203,453	110,312,538

Again, as must be the case, the total reported income for the 5-year period is THB 18,499,923, representing the sum of all cash coupons plus indexation.

Comparing the 3 methodologies

Income recognition AG7 and AG8			
Year	**AG7**		**AG8**
	Strict	**Simplified**	
2010	3,527,174	5,040,000	5,238,057
2011	4,061,613	3,666,000	5,842,636
2012	4,924,413	4,295,980	4,165,841
2013	5,268,670	543,500	(637,526)
2014	718,054	4,954,443	3,890,915
	18,499,923	**18,499,923**	**18,499,923**

All three methodologies provide the same total income over the 5-year period with differing degrees of complexity. However, the simplified method under AG7 provides the most practical solution and is consistent with how most inflation-linked issuers account for their liabilities. It also has the advantage of being easy to understand as the cash coupon received is consistent not only with the notional index amount of the actual bond but also the carrying value of the bond on the balance sheet. As stated previously there is no preferred methodology prescribed by either the IASB or IFRIC so it will be up to the individual holder to determine which the most suitable method for their business is.

Premium or discount on acquisition

The above analysis is based on the assumption that the bond it purchased at inception at par, so that the initial notional in terms of reference amount and the carrying value in the balance sheet is the same.

However, it is highly likely that the actual purchase price paid, including any fees etc, will not equate to the reference notional amount, i.e. the notional of the bond uplifted for CPI. This is particularly true for any secondary market purchases.

For bonds being accounted for under either AG7 strict or AG8 as above, this should not represent any additional complexity as the initial carrying value on the balance sheet will simply represent the initial price paid. However, those using the simplified AG7 approach will need to make some adjustments.

Under the simplified approach, it is assumed that the carrying value in the balance sheet is the same as the indexed referenced notional. Where there is difference between this reference notional and the actual price paid an adjustment needs to be made. The simplest way to deal with this is to set up a separate line in the balance sheet representing this difference (i.e. a premium or discount to reference notional) and amortise it systematically over the remaining life of the bond. For small differences it may be suitable to amortise this premium/discount on a straight line basis, however, it is probably more appropriate to use an EIR approach. Where positive inflation is expected there

should be more amortisation in the later years than earlier reflecting the growth in principal outstanding.

Again, this is a common approach used for other floating rate instruments and should be appropriate here. However, judgement will need to be made carefully where any premium/discount is considered significant as this may reduce the appropriateness of using the simplified approach under AG7.