

Position	1	2	3	4	5	6	7	8	Σ	1	2	3	4	5	6	7	8	Σ
End of year	Interest Cash Flows									Fair Value								
0	0								0	3.55								3.55
1	1	0							1	2.72	3.55							6.27
2	1	1	0						2	1.86	2.72	3.55						8.13
3	1	1	1	0					3	0.95	1.86	2.72	3.55					9.08
4	1	1	1	1	0				4		0.95	1.86	2.72	3.55				9.08
5		1	1	1	1	0			4			0.95	1.86	2.72	3.55			9.08
6			1	1	1	1	0		4				0.95	1.86	2.72	3.55		9.08
7				1	1	1	1	0	4					0.95	1.86	2.72	3.55	9.08
8					1	1	1	1	4						0.95	1.86	2.72	5.54
9						1	1	1	3							0.95	1.86	2.81
10							1	1	2								0.95	0.95
11								1	1									0.00

The interest cash flows deriving from the margin of CU 1 per position p.a. are building up from year 1 to a maximum of CU 4 p.a. in year 4. However, as seen before, the positive fair value generated under a DCF is brought forward to year 0. It develops to a maximum of CU 9.08 in year 4. Obviously, each subsequent period contains the partial reversal of prior years' anticipated FV. Eventually, the reversals will balance with newly built up fair values, leading to a constant FV of CU 9.08.

The development of NII, i.e. the aggregation level on which FV changes are recorded, shows the following profile:

Position	1	2	3	4	5	6	7	8	Σ	Σ	FV change	Fair Value NII	Accrued NII
End of year	Interest Cash Flows								CF	FV	(Δ FV)	[Δ FV + CF]	
0	0								0	3.55	3.55	3.55	0.00
1	1	0							1	6.27	2.72	3.72	1.00
2	1	1	0						2	8.13	1.86	3.86	2.00
3	1	1	1	0					3	9.08	0.95	3.95	3.00
4	1	1	1	1	0				4	9.08	0.00	4.00	4.00
5		1	1	1	1	0			4	9.08	0.00	4.00	4.00
6			1	1	1	1	0		4	9.08	0.00	4.00	4.00
7				1	1	1	1	0	4	9.08	0.00	4.00	4.00
8					1	1	1	1	4	5.54	-3.55	0.45	4.00
9						1	1	1	3	2.81	-2.72	0.28	3.00
10							1	1	2	0.95	-1.86	0.14	2.00
11								1	1	0.00	-0.95	0.05	1.00
Σ									32		0.00	32.00	32.00

Differences in reported results between to the two income measurement systems become apparent when business changes. FFV results exacerbate results from real cash flows in the build-up phase as well as in a slow-down scenario. For such scenarios, FFV accounting combined with DCF develops a pro-cyclical dynamic of mathematic precision.

Starting from the initial CU +3.55, FV changes decrease to zero in year 4 when reversals fully compensate each new build up of FV. After that, due to the revolving business, the FV changes remain zero

until year 8 when the positions start to run out and FV changes turn negative. In years 4 – 7, net interest income is identical between the different measurement methods. However, due to the underlying mechanics of DCF, results vary significantly during the years of building up the business and when positions are maturing without replacement. However, the sum of cash flows, the sum of FV results and the sum of accrued P&L is identical: CU 32.

The misinformation caused by the reporting of FFV results compared to the real, cash flow based results increases on the level of earnings (per period).

Position End of year	1	2	3	4	5	6	7	8	?	FV Δ	FV NII	Accrued NII	Cost CIR70%	Accrued €	FV €
0	0								0	3.55	3.55	0.00	0.00	0.00	3.55
1	1	0							1	2.72	3.72	1.00	0.70	0.30	3.02
2	1	1	0						2	1.86	3.86	2.00	1.40	0.60	2.46
3	1	1	1	0					3	0.95	3.95	3.00	2.10	0.90	1.85
4	1	1	1	1	0				4	0.00	4.00	4.00	2.80	1.20	1.20
5		1	1	1	1	0			4	0.00	4.00	4.00	2.80	1.20	1.20
6			1	1	1	1	0		4	0.00	4.00	4.00	2.80	1.20	1.20
7				1	1	1	1	0	4	0.00	4.00	4.00	2.80	1.20	1.20
8					1	1	1	1	4	-3.55	0.45	4.00	2.80	1.20	-2.35
9						1	1	1	3	-2.72	0.28	3.00	2.10	0.90	-1.82
10							1	1	2	-1.86	0.14	2.00	1.40	0.60	-1.26
11								1	1	-0.95	0.05	1.00	0.70	0.30	-0.65
Σ									32		32.00	32.00			

As before, the sum of accrued earnings and the sum of FV earnings over the years of activity are the same. Yet, their distribution over the interim periods reveals significantly different profiles.

Furthermore, the terminal problem of DCF will lead to the reporting of different fair values for businesses with the same volume and margin, but different maturities. To demonstrate this effect, the prior case is amended to a business with the same overall volume of CU 400 and the same overall margin p.a., but with repetitive positions of CU 200 and a 2 years' maturity:

Position End of year	1	2	3	4	5	6	7	8	Σ	1	2	3	4	5	6	7	8	Σ
0	0								0	3.72								3.72
1	2	0							2	1.90	3.72							5.62
2	2	2	0						4		1.90	3.72						5.62
3		2	2	0					4			1.90	3.72					5.62
4			2	2	0				4				1.90	3.72				5.62
5				2	2	0			4					1.90	3.72			5.62
6					2	2	0		4						1.90	3.72		5.62
7						2	2	0	4							1.90	3.72	5.62
8							2	2	4								1.90	1.90
9								2	2									0.00

Interest cash flows p.a. reach the total of CU 4 already after 2 years, i.e. 2 years prior than in the previous case. However, the fair value for this repetitive business is reported significantly lower at CU 5.62.

As the profile of changes in FV is significantly different between the cases of comparable volume and margin, consequently, reported FV results are also different during the phases of change:

Position # End of year	1	2	3	4	5	6	7	8	Σ	Σ FV	FV Δ	FV NII	Accrued NII
	Interest Cash Flows												
0	0								0	3.72	3.72	3.72	0.00
1	2	0							2	5.62	1.90	3.90	2.00
2	2	2	0						4	5.62	0.00	4.00	4.00
3		2	2	0					4	5.62	0.00	4.00	4.00
4			2	2	0				4	5.62	0.00	4.00	4.00
5				2	2	0			4	5.62	0.00	4.00	4.00
6					2	2	0		4	5.62	0.00	4.00	4.00
7						2	2	0	4	5.62	0.00	4.00	4.00
8							2	2	4	1.90	-3.72	0.28	4.00
9								2	2	0.00	-1.90	0.10	2.00
10									0	0.00	0.00	0.00	0.00

The conclusion of the analysis of the two cases is contrary to a widely held view:²⁶⁹ FV doesn't give comparable information for comparable underlying business activities.

4.2.2. Matched Positions – Repetitive Business – Changing Maturity

To analyse this situation, the previous examples²⁷⁰ of repetitive business with 4y maturity positions are extended. After a successful build up over 4 years, it is assumed, as before, that the business can be repeated each year thereafter. However, starting in year 6, clients demand changed maturities of just 1 year. The repetitive volume and margin remain the same. The impact on fair value can be seen in the following table:

Position End of year	1	2	3	4	5	6	7	8	Σ	1 FV	2	3	4	5	6	7	8	Σ FV	FV Δ
	Interest Cash Flows																		
0	0								0	3.55								3.55	3.55
1	1	0							1	2.72	3.55							6.27	2.72
2	1	1	0						2	1.86	2.72	3.55						8.13	1.86
3	1	1	1	0					3	0.95	1.86	2.72	3.55					9.08	0.95
4	1	1	1	1	0				4		0.95	1.86	2.72	3.55				9.08	0.00
5		1	1	1	1	0			4			0.95	1.86	2.72	3.55			9.08	0.00
6			1	1	1	1	0		4				0.95	1.86	2.72	0.95		6.49	-2.59
7				1	1	1	1	0	4					0.95	1.86		1.90	4.72	-1.77
8					1	1		2	4						0.95			0.95	-3.76
9						1			1									0.00	-0.95
10									0									0.00	0.00

²⁶⁹ Barth (2006), p. 3-4.

²⁷⁰ Tables 26-27, p. 94 .

Despite the fact that interest cash flows (representing the margin) remain stable, a dramatic change in business is signalled by fair value changes, starting in year 6. This is a consequence of DCF's terminal problem. DCF as it can only reflect positions with their maturity as recognised in the balance-sheet.

At the net income level, i.e. earnings, the consequences of this reporting are visible in the difference between Accrued € and FV €:

Position	1	2	3	4	5	6	7	8	Σ	Δ FV	FV NII	Accrued NII	Cost CIR70%	Accrued €	FV €	
End of year	Interest Cash Flows															
0	0								0	3.55	3.55	0.00	0.00	0.00	3.55	
1	1	0							1	2.72	3.72	1.00	0.70	0.30	3.02	
2	1	1	0						2	1.86	3.86	2.00	1.40	0.60	2.46	
3	1	1	1	0					3	0.95	3.95	3.00	2.10	0.90	1.85	
4	1	1	1	1	0				4	0.00	4.00	4.00	2.80	1.20	1.20	
5		1	1	1	1	0			4	0.00	4.00	4.00	2.80	1.20	1.20	
6			1	1	1	1	0		4	-2.59	1.41	4.00	2.80	1.20	-1.39	
7				1	1	1	1	0	4	-1.77	2.23	4.00	2.80	1.20	-0.57	
8					1	1		2	4	-3.76	0.24	4.00	2.80	1.20	-2.56	
9						1			1	-0.95	0.05	1.00	0.70	0.30	-0.65	

5. Mismatched Positions and Client Margin

Some of the earlier examples (Tables 9 -12) have demonstrated that a fair value measurement applying DCF analysis can measure only the future cash flows that will not change, but is unable to capture future cash flows that will change: DCF's terminal problem. Therefore, FV cannot reflect the risks involved in a mismatch position as it cannot measure any mismatch. The volatility reported by such a valuation method does not report the volatility inherent in the mismatch. Later examples (Table 21) have revealed that FFV accounting leads to additional distortion of reported results when changes in interest rates are simulated for positions that contain client margins, even when matched.

The following analysis focuses on the mechanics and consequences of FFV accounting with DCF for *mismatched* positions containing client margins.

5.1. Client Margin on Both Sides, Loan as well as Deposit; no rate change

In a market rate scenario of 5% flat without rate changes expected, assume a loan with a 4-year maturity and a 0.5% margin, funded – consistently – by a 1y maturity deposit, also with a 0.5% margin, a classical so-called mismatched position. Accrued NII, based on real interest cash flows, looks as follows:

Table 33: No rate change	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	5.50	5.50	5.50	5.50	22.00
Interest Expense	0.00	-4.50	-4.50	-4.50	-4.50	-18.00
Accrued NII	0.00	1.00	1.00	1.00	1.00	4.00

The corresponding reporting under FFV would report the following, different results:

Table 34	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Revenue FV Δ	1.7730	-0.4114	-0.4319	-0.4535	-0.4762	0.00
Expense FV Δ	0.4762	0.0000	0.0000	0.0000	-0.4762	0.00
Total FV Δ	2.2492	-0.4114	-0.4319	-0.4535	-0.9524	0.00
FFV NII	2.2492	0.5886	0.5681	0.5465	0.0476	4.00

The ‘terminal problem’ of DCF causes an asymmetric anticipation of the margin results for the 4y-maturity compared to the 1year maturity. The anticipatory effect covers 4 years of loan margin, but only 1year of the liability margin. Thus, FFV accounting reports a different upfront positive FV in year 0 for an asset and a deposit with the same margin. Consequently, it creates different subsequent reversals until maturity. On the liability side, the same fair value for a 1 year maturity will be reported for the next three years, resulting in a constant zero FV change.

Compared to the initial case (Table 21) of a matched position, FFV accounting for a mismatched position reports different results even if nothing changes except the maturities.

Table 35	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FFV NII matched position ²⁷¹	3.5460	0.1772	0.1362	0.0930	0.0476	4.00
FFV NII mismatch position ²⁷²	2.2492	0.5886	0.5681	0.5465	0.0476	4.00

In both cases, real cash flow contributions to earnings remain stable throughout the interim periods, but FFV accounting signals volatility which is, interestingly, higher for the matched than for the mismatched position. It documents the inability of fair value methodology to report inherent risk which would be considered higher for a mismatched position.

Fair value can consider margins only to the extent that the time horizon of the respective instrument permits their recognition. Therefore, FFV accounting reports different results dependent on which side of a mismatched position the margins are earned.

²⁷¹ See Table 21, p. 90-91.

²⁷² See Table 34, p. 98.

5.2. Client Margin on either Side: Loan or Deposit; no rate change

To demonstrate this effect in the 4 –to-1y mismatch example, assume that the total margin is earned in full on either side of the position, the asset or the deposit side.

Assume the full margin of 1% is only on the loans’ side, i.e. the contracted client rate is 6%. Fair value and its reversals would occur for the full 4y period with the following discrepancy in interim periods’ results to real interest cash flows:²⁷³

Table 36a: Mismatch with full margin on the loan - Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.0000	1.0000	4.00
FFV NII	3.5460	0.1772	0.1362	0.0930	0.0476	4.00

If the 1% margin was only on the deposit side, i.e. a contracted client rate of 4%, only a fair value for a period of one year would be reported. In the following periods up to year 3, every new fair value will be netted by prior years’ reversal, resulting in year 1 to 3 in fair value changes of zero. In the last year 4, the final reversal will eventually show up as fair value change. On the other hand, accrued net interest income remains the same throughout the periods.²⁷⁴

Table 37a: Mismatch with full margin on the deposit - Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.00	1.00	1.00	1.0000	4.00
FFV NII	0.9524	1.00	1.00	1.00	0.0476	4.00

FFV accounting reports different results even without any market rate changes. It is a consequence of the different time horizons between asset and liability, leading to a selective, asymmetric recognition of erroneous value changes. Very different FFV NII is reported for the same position, the same interest rate scenario (i.e. no change), the same cash flows and overall cash flow results. The only difference lies in the instrument which carries the margin.

5.3. Client Margin with Rate Change

Having covered a mismatch position with client margins under a no-rate-change scenario, the examples, now, assume a rate change of -0.5% at the end of the second year. After the change, the yield curve remains flat. Additionally, the example assumes that the mismatched position is continued until maturity.

²⁷³ The details of the example are presented in Tables (Table 36, p. 105).

²⁷⁴ The details of the example are presented in Tables (Table 37, p.105).

The resulting differences to accrued NII²⁷⁵ are, again, caused by different fair value expectations from different maturities which are brought forward. It is a combined effect from the margin as well as from the rate change. The rate change shows its largest effect on the asset side because its impact is anticipated for two years instead of one. On the deposit side, the reported FV change is clearly less significant. This is counterintuitive, because, the rate change actually impacts the real interest cash flows. The reduced impact is due to two factors:

- the limited time horizon of 1 instead of 4 years, and
- the fact that the deposit is actually priced at market (1 year maturity).

Opposite to what FFV reporting suggests, the interest cash flows actually either do not change, Y1, Y2 and Y4, or they change in the opposite direction, Y3:

Table 38a: Mismatch, equal margin on asset and deposit, but rate change - Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.5000	1.5000	5.00
FFV NII	2.2492	0.5886	1.5133	0.5844	0.0645	5.00

Obviously, the same misrepresentation by FFV accounting as before (Tables 36a, 37a) occurs when our last scenario is applied to cases where full margin happens to be either on the loan side:²⁷⁶

Table 39a: Full margin on the asset side only with rate change - Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.5000	1.5000	5.00
FFV NII	3.5460	0.1772	1.0858	0.1264	0.0646	5.00

or on the deposit side:²⁷⁷

Table 40a: Full margin on the deposit side only with rate change - Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.5000	1.5000	5.00
FFV NII	0.9524	1.0000	1.9409	1.0422	0.0645	5.00

The three tables summarise the impact of a rate change scenario for the three versions of margin distribution: Volatility of FFV results does neither reflect the risk inherent in a mismatched position nor does it report the volatility in real earnings as documented by changes in the interest cash flows. The largest factors

²⁷⁵ 0.5% margin on loan as well as on deposit; details in Tables (Table 38, p. 106).

²⁷⁶ The details of the example are presented in Tables (Table 39, p. 107).

²⁷⁷ The details of the example are presented in Tables (Table 40, p. 107).

causing the artificial volatility in FFV results are the erroneous anticipation and subsequent reversal of fair value changes, contrary to the actual volatility of real cash flows.

The Client Margin

1. under IAS 39

IAS 39 requires financial instruments to be reported at initial recognition with its fair value (IAS 39.48) to be measured by a commonly used valuation technique if there is no active market (IAS 39.48A). Under this general rule, client margins would lead inevitably to day-1-profits. Thus, as an exception²⁷⁸ to this rule, IAS 39 AG 64 defines the initial transaction price as the fair value for first time recognition. Additionally, IAS 39 AG 76 declares the transaction price to be the best evidence of a fair value. This, effectively, leads to financial reporting of identical balance sheet values for two loans that have different cash flow prospects due to different client rates, e.g. one of 5%, the other of 5.5%.

The a.m. provision, however, has the caveat that it doesn't protect from day-2 profits. The issue is addressed, once again, by application guidance to the Standard. IAS 39.76A contains the provision that what hasn't been recognised at day-1 shouldn't be recognised on day 2. In other words, if on day 1 the client margin of 0.5% hasn't been recognised, it should remain unrecognised in the future. The practical way to deal with the issue is to add the client margin of 0.5% continuously to whatever the benchmark rate may change to. The prior example (see table 5) assumed a rate change of -0.5%, resulting in a benchmark rate of 4.5%. The 'application-adjusted' discount rate would be 5%. This would result in the reporting of a fair value change limited to the extent the benchmark rate had changed (IAS 39 AG 76A, sentence 3).

This amendment of a basic principle by 'Application Guidance' raises conceptual questions. The use of benchmark rates in DCF is designed to deliver comparable fair values for different cash flow profiles. Contrary to such an objective, the use of different, i.e. entity-specific discount rates, delivers the same fair value for different cash flows. The objective of comparable information has been given 'time-out' through IAS 39 application guidance for the purpose of avoiding day-1 and day-2 profits. Effectively, the application guidance ensures accrual cash flow accounting for the part of the client margin²⁷⁹ with fair value changes reported only to the extent the benchmark rate has changed. For the latter part of this mixed fair value model, the conceptual criticism of distorting information, as developed above, applies.

²⁷⁸ IASB Information for Observers, Board meeting June 2006, Agenda Paper 9A, paragraph 10 b.

²⁷⁹ There is a small caveat in practice. Not every entity has the individual, i.e. transaction-specific, client margin available in their data bases. It is not uncommon practice, then, to apply a 'standard margin', or an 'average margin' for the purposes of valuation. To the extent that the actual contracted individual margin differs from the 'standard margin', there will be day-1-results in the P&L.

2. *under SFAS 157*

According to IASB, the transaction price (equal entry price) notion²⁸⁰ is conceptually different from an exit price notion. The exit price objective is believed to more clearly convey a single measurement objective in line with existing measurement objectives of fair value in IFRS.²⁸¹ Consistency in the measurement objective would also require the application of the exit price notion for initial recognition.

The notion of the principal or most advantageous market to determine the exit-price suggests the use of the wholesale- or interbank-rate for discounting to present value. For the hypothesis of an exchange transaction, the markets that would provide the greatest volume and level of activity²⁸² would be the interbank market or the market for securitisation.²⁸³ These markets would use the benchmark rate for calculating present value. However, could the client margin be viewed as a pricing factor commonly applied by market participants? This raises the question of the character of the client margin.

In its classic non-trading banking business, a bank acts as an intermediary between liquidity demand and liquidity offer, not as an investor. The intermediary function is possible because the bank provides a form of market place where demand can meet the offers. The various factors that a bank needs to combine for creating that intermediary function are mainly cost factors in accounting terms: providing a network for collecting and exchanging liquidity between others, e.g. a bank wholesale -, retail branch network, an internet network, the technical conditions for transaction execution and administration, etc. This requires revenue to cover the cost.

As the profit for this activity isn't planned to be generated by "exchanging" financial instruments, as SFAS 157 hypothesises, it has to be generated through other means. The common way to generate profit in the banking book is to add a "margin" (operative margin) to the benchmark interest rates received and deduct a margin from the benchmark interest rates paid. The benefit of achieving a margin lays in the symmetry of timing between (most of the) expense cash flows and revenue cash flows, as well as spreading the impact on the client over time.

The benchmark interest rate marks the start of the pricing process. As stated earlier, we exclude the credit risk margin in our examples, i.e. assume them as appropriate and stable. The operative margin intends to cover

- directly attributable cost,

²⁸⁰ IASB Discussion Paper, *Fair Value Measurements*, Part 1 (London: IASB, November 2006), paragraphe 25; IASB Information for Observers, Board meeting June 2006, Agenda Paper 9A, paragraph 1.

²⁸¹ IASB Information for Observers, Board meeting June 2006, Agenda Paper 9A, paragraph 6; IASB staff notes that the request in AG 71 of IAS 39 of looking for the most advantageous market is already an exit price notion, Agenda Paper 9A, paragraph 7.

²⁸² IASB Discussion Paper, *Fair Value Measurements*, Part 1 (London: IASB, November 2006), paragraphe 32ff.

²⁸³ The drying-up of these markets since summer 2007, unforeseen by even the most professional investors and regulators alike, raises questions about the validity of a number of assumptions required by Full Fair Value Measurement.

- indirectly attributable cost, and
- overhead cost.

Following the deliberations of IASB, it appears doubtful that any other than directly attributable cost could be considered as an attribute specific to the asset.²⁸⁴

In many banks, the client rate is priced using a formula as required by internal rules of how to calculate the margins with guidance such as “Standard Cost Margins” etc. However, the contracted client rate will depend on the individual situation, e.g. influence by competition, urgency from the clients view point, client relationship considerations which may allow for less than the standard margin etc. The data available in banks after execution of the transaction will, in many cases, only be the contractual client rate, the respective benchmark rate and the credit margin. This leaves the “client margin” as a residual, i.e. contractual rate minus benchmark rate minus credit margin = client margin. Therefore, the client margin will be not only entity-specific, but transaction-specific.

The costs that need to be covered depend on the cost base and cost structure of the individual entities in the market. It is not unrealistic to assume that an internet bank has a different cost structure to a bank with a large retail branch network. This leads to very entity-specific inputs. The need or desire to cover cost of the operations of an entity and for a profit contribution towards the capital tied up does not really seem to qualify for interpretation as an attribute specific to an asset, defining its balance sheet value.

If the single measurement objective is to provide objective information of what the price of a hypothetical exchange transaction would be, it would require market- rather than entity-specific inputs. This suggests that the client margin would have to be discounted with the benchmark rate.

It is not so much a question of entry price or exit price. It is more a question of applying the “exchange hypothesis” or not. It is a question of reporting hypothesis or reality. The consequences of the decision either way can be clearly demonstrated by examples of interest bearing financial instruments. When the instruments are not exchanged, the interest cash flows will occur in their respective periods. This represents the cash flow contribution to earnings as caused by that business activity.²⁸⁵ It is the Edwards/Bells’ profit-making activity type (1).

IASB appears adamant about the objective of full fair value accounting for financial instruments with unrealised gains and losses booked through profit and loss. On the other hand, the board seems undecided about day-1 gains and losses which entail uncertainty for day-2 as well. IASB has not yet formed a preliminary view on the issue, but decided to seek the view of respondents.

²⁸⁴ IASB Discussion Paper, *Fair Value Measurements*, Part 1 (London: IASB, November 2006), paragraphs 36ff, 38.

²⁸⁵ ... and its management (planning, decisions and executions).

Tables

Table 36

Table 36	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Revenue FV	3.5460	2.7232	1.8594	0.9524	0.00	
Expense FV	0.0000	0.0000	0.0000	0.0000	0.00	
Total FV	3.5460	2.7232	1.8594	0.9524	0.00	
Revenue FV Δ	3.5460	-0.8228	-0.8638	-0.9070	-0.9524	0.00
Expense FV Δ	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Total FV Δ	3.5460	-0.8228	-0.8638	-0.9070	-0.9524	0.00
FFV Interest Revenue	3.5460	5.1772	5.1362	5.0930	5.0476	24.0000
FFV Interest Expense	0.0000	-5.0000	-5.0000	-5.0000	-5.0000	-20.0000
FFV NII	3.5460	0.1772	0.1362	0.0930	0.0476	4.0000
Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.0000	1.0000	4.00
FFV NII	3.5460	0.1772	0.1362	0.0930	0.0476	4.00

Table 37

Table 37	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Revenue FV	0.0000	0.0000	0.0000	0.0000	0.00	
Expense FV	0.9524	0.9524	0.9524	0.9524	0.00	
Total FV	0.9524	0.9524	0.9524	0.9524	0.00	
Revenue FV Δ	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Expense FV Δ	0.9524	0.0000	0.0000	0.0000	-0.9524	0.00
Total FV Δ	0.9524	0.0000	0.0000	0.0000	-0.9524	0.00
FFV Interest Revenue	0.0000	5.0000	5.0000	5.0000	5.0000	20.00
FFV Interest Expense	0.9524	-4.0000	-4.0000	-4.0000	-4.9524	-16.00
FFV NII	0.9524	1.0000	1.0000	1.0000	0.0476	4.00
Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.0000	1.0000	4.00
FFV NII	0.9524	1.0000	1.0000	1.0000	0.0476	4.00

Table 38

- Mismatch position, loan 4y maturity, deposit 1 y maturity, interest rate change:
-0.5% at end of y2 with yield curve remaining flat afterwards;

0.5% margin on the loan as well as the deposit:

Table 38: Rate change -0.50%	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	5.50	5.50	5.50	5.50	22.00
Interest Expense	0.00	-4.50	-4.50	-4.00	-4.00	-17.00
Accrued NII	0.00	1.00	1.00	1.50	1.50	5.00
Revenue FV						
	1.7730	1.3616	1.8726	0.9570	0.0000	
Expense FV						
	0.4762	0.4762	0.4785	0.4785	0.0000	
Total FV						
	2.2492	1.8378	2.3511	1.4355	0.0000	
Revenue FV Δ						
	1.7730	-0.4114	0.5110	-0.9156	-0.9570	0.00
Expense FV Δ						
	0.4762	0.0000	0.0023	0.0000	-0.4785	0.00
Total FV Δ						
	2.2492	-0.4114	0.5133	-0.9156	-1.4355	0.00
FFV Interest Revenue						
	1.7730	5.0886	6.0110	4.5844	4.5430	22.00
FFV Interest Expense						
	0.4762	-4.5000	-4.4977	-4.0000	-4.4785	-17.00
FFV NII						
	2.2492	0.5886	1.5133	0.5844	0.0645	5.00
Summary						
	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
accrued NII	0.0000	1.0000	1.0000	1.5000	1.5000	5.00
FFV NII	2.2492	0.5886	1.5133	0.5844	0.0645	5.00

On the deposit side, the reported FV change is clearly less significant. This is counterintuitive, because, the impact of the rate change has actual consequences to the interest cash flows. The reduced impact is actually due to two factors:

- the limited time horizon of 1 instead of 4 years, but also due to
- the fact that the deposit is actually priced at market (1 year maturity).

Table 39

- Mismatch position, loan 4y maturity, deposit 1 y maturity, interest rate change:

-0.5% at end of y2 with yield curve remaining flat afterwards;

1% margin on the loan:

Table 39	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	6.00	6.00	6.00	6.00	24.00
Interest Expense	0.00	-5.00	-5.00	-4.50	-4.50	-19.00
Accrued NII	0.00	1.00	1.00	1.50	1.50	5.00
Revenue FV	3.5460	2.7232	2.8090	1.4354	0.0000	
Expense FV	0.0000	0.0000	0.0000	0.0000	0.0000	
Total FV	3.5460	2.7232	2.8090	1.4354	0.0000	
Revenue FV Δ	3.5460	-0.8228	0.0858	-1.3736	-1.4354	0.00
Expense FV Δ	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Total FV Δ	3.5460	-0.8228	0.0858	-1.3736	-1.4354	0.00
FFV Interest Revenue	3.5460	5.1772	6.0858	4.6264	4.5646	24.00
FFV Interest Expense	0.0000	-5.0000	-5.0000	-4.5000	-4.5000	-19.00
FFV NII	3.5460	0.1772	1.0858	0.1264	0.0646	5.00

Table 40

- Mismatch position, loan 4y maturity, deposit 1 y maturity, interest rate change:

-0.5% at end of y2 with yield curve remaining flat afterwards;

1% margin on the deposit:

Table 40	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	5.00	5.00	5.00	5.00	20.00
Interest Expense	0.00	-4.00	-4.00	-3.50	-3.50	-15.00
Accrued NII	0.00	1.00	1.00	1.50	1.50	5.00
Revenue FV	0.0000	0.0000	0.9363	0.4785	0.0000	
Expense FV	0.9524	0.9524	0.9570	0.9570	0.0000	
Total FV	0.9524	0.9524	1.8933	1.4355	0.0000	
Revenue FV Δ	0.0000	0.0000	0.9363	-0.4578	-0.4785	0.00
Expense FV Δ	0.9524	0.0000	0.0046	0.0000	-0.9570	0.00
Total FV Δ	0.9524	0.0000	0.9409	-0.4578	-1.4355	0.00
FFV Interest Revenue	0.0000	5.0000	5.9363	4.5422	4.5215	20.00
FFV Interest Expense	0.9524	-4.0000	-3.9954	-3.5000	-4.4570	-15.00
FFV NII	0.9524	1.0000	1.9409	1.0422	0.0645	5.00

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