Matching adjustment: A theoretical solution?

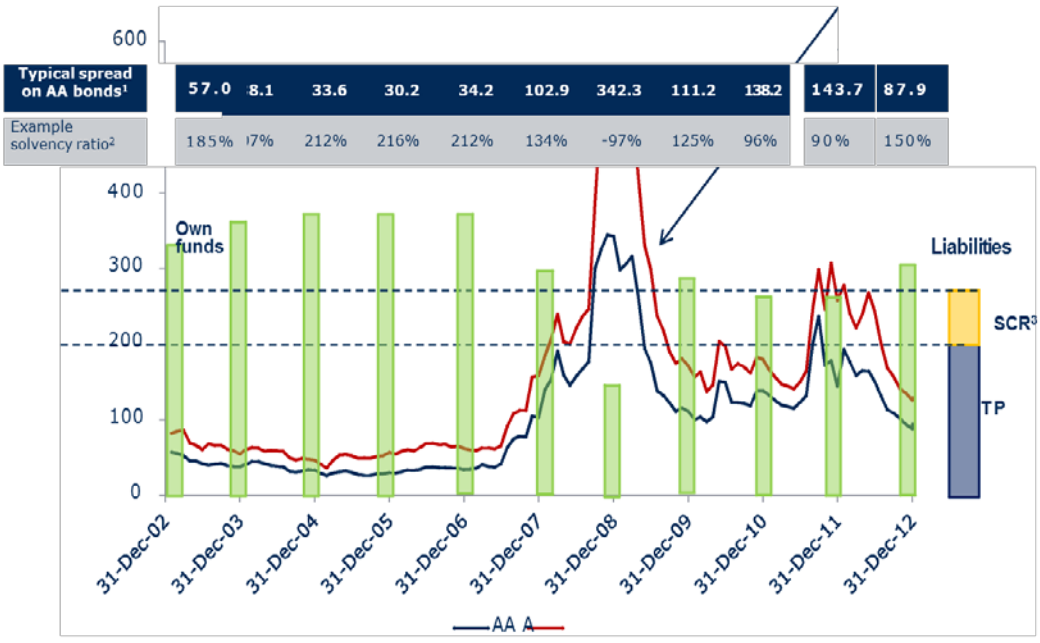
Tim Vandenabeele

The matching adjustment is depicted by European policymakers as the most important change to the Solvency II framework as it was first described in the Solvency II Directive of 2009. Although the concept of the matching adjustment is well invented, we can ask ourselves serious questions about the user-friendliness and the applicability of the measure. This article tries to give an insight into the concept and the calculation methodology of the adjustment as well as into the drawbacks of the measure.

INTRODUCTION

In a market value framework such as Solvency II, the own funds of insurance entities mainly consist of the net asset value or the difference between the market value of the assets and the technical provisions including the risk margin (European Commission, 2009). Therefore, the own funds are directly impacted by changes in the value of the assets caused by spread movements. This is shown in Figure 1 (Insurance Europe, 2013), which shows how frequent fluctuations in the credit spread of an AA-rated bond create significant volatility in the asset values and, consequently, fluctuations in the net asset value of the own funds. Enormous spreads on 31 December 2008 decreased the value of the assets toward +150. This made the undertaking virtual bankrupt as the value of the assets was too low to cover the provisions and the capital requirements. On the other hand, one year later, on 31 December 2009, spreads declined, which resulted in higher asset values rendering the undertaking solvent again.

Figure 1: Impact of Spread Movements



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This issue of artificial volatility was initially not recognised under Solvency II. To solve this problem of volatility, the Solvency II Directive first needed to recognise the very significant difference between the risks faced by a company which trades bond-like assets and one which, because of its long-term liabilities and its long-term investment strategy, holds those assets to maturity (Insurance Europe, 2013). A company that is actively trading the assets is exposed to the full market value movements of the assets. On the other hand, a company holding its fixed cash-flow assets to maturity is not exposed to the interim market value movements. At the maturity date, the company will sell the asset and basically receive the notional amount agreed upon at inception, irrespective of the interim market value fluctuations.

One of the main characteristics of Solvency II is that the solvency capital requirements and own funds appropriately reflect the underlying risks and economics the undertaking is exposed to. Therefore, according to Insurance Europe (2013), where insurance companies are holding assets to maturity, there needs to be an adjustment to reflect the economic benefits of holding to maturity and hence the non-exposure to the interim market value fluctuations. Such an adjustment was first introduced by the European Insurance and Occupational Pensions Authority (EIOPA) during the fifth quantitative impact assessment, named the matching premium or the matching adjustment (EIOPA, 2010). Meanwhile, this matching adjustment is officially recognised in the Omnibus II Directive adapting the Solvency II Directive. The matching adjustment affects both the capital requirements and the own funds calculations, and hence has a significant impact on the solvency ratio:

$$Solvency\ Ratio: \frac{Own\ Funds}{Solvency\ Capital\ Requirement\ (SCR)}$$

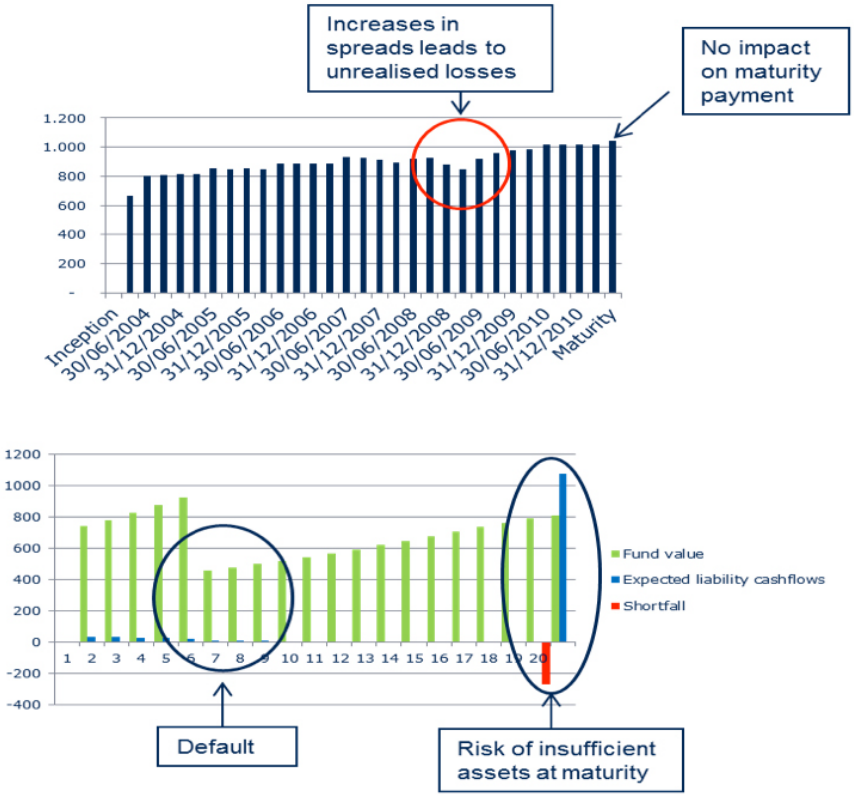
WHAT IS THE MATCHING ADJUSTMENT?

The idea is that an insurance company is not exposed to the short-term asset value fluctuations (i.e., changing market values) for portfolios where the company has fully mitigated the impact of these fluctuations. This mitigation is achieved when the liability cash flows are predictable and the timing of the asset cash flows enables the timely payment of the liability cash flows (Insurance Europe, 2013). Therefore, a mechanism is needed to prevent short-term asset value fluctuations from flowing through the companies' balance sheets (impacting the own funds and capital requirements).

Arguing that insurers are not exposed to the complete short-term asset value fluctuations is perhaps not entirely correct. Insurers are still exposed to the risk of default and the cost associated with maintaining the credit quality (risk of downgrade), embedded in the asset value fluctuations. This can be seen in Figure 2, developed by Insurance Europe (2013). Imagine a portfolio with a liability requiring a 1050 payment on maturity. The insurer can perfectly match this liability with a fixed cash-flow asset bought at inception. Unless the asset counterparty defaults, the insurance company will receive at maturity of the asset an amount of 1,050 to cover its liability payment. Falls in the asset value caused by market movements along the duration, which generate unrealised losses, won't impact the asset maturity payment. However, as we can see in the second graphic in Figure 2, companies are still exposed to the risk of assets defaulting. Because of defaults, the undertaking might end up with insufficient assets at maturity to cover the liability payments.

The matching adjustment tries to offset these short-term asset value fluctuations, caused by risks other than default and downgrade risk, by adjusting the best estimate value of the liabilities via an adjustment in the basic risk-free discount rate, used to value the predictable liabilities. It is calibrated in such a way that the market value of the liability mirrors the market changes in the asset values not related to default or downgrade.

Figure 2: Exposure to Default

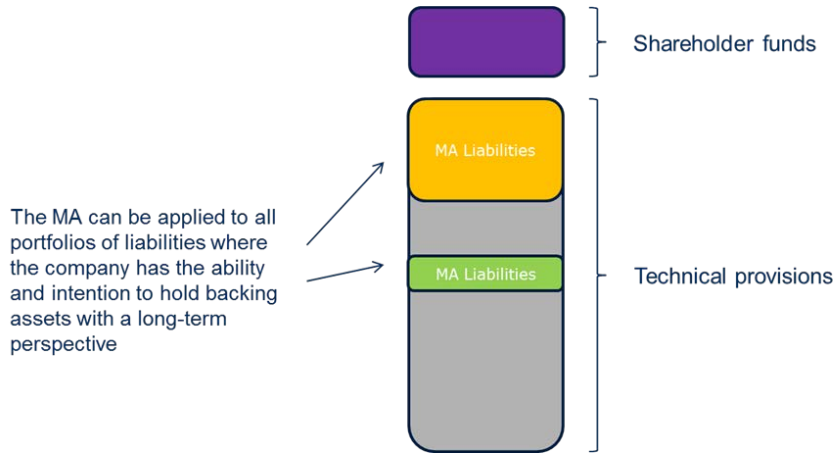


APPLICATION OF THE MATCHING ADJUSTMENT

The matching adjustment is a measure designed to prevent the insurance undertakings' own funds from being impacted by short-term market fluctuations caused by spread movements, other than default and downgrade, where the undertaking will hold the assets until maturity to cover the predictable liability cash flows. Therefore, as shown in Figure 3, undertakings can only apply the matching adjustment for long-lasting liabilities.

This means that the undertaking can only apply the adjustment to the basic risk-free interest rate term structure when calculating the best estimate of long-lasting liabilities such as life insurance obligations or annuity obligations arising from non-life contracts (e.g., workers' compensation contracts). However, prior supervisory approval is needed for the use of the matching adjustment. Many severe requirements will have to be met before an undertaking can apply the matching adjustment to the risk-free interest rate curve.

Figure 3: Liability Selection for Matching Adjustment



Source: (Insurance Europe, 2013)

Step 1: Identify the portfolio of liabilities to which the matching adjustment can be applied

Four steps should be completed in identifying the matching adjustment (Insurance Europe, 2013). As stated above, the matching adjustment can be applied to all life insurance obligations, including annuities stemming from non-life insurance obligations (European Parliament, 2014) where the undertaking has the ability and intention to hold the backing assets to maturity. It is important that the contracts underlying the portfolio of obligations do not give rise to any future premium payments (European Parliament, 2014). Furthermore, the only underwriting risks that might be linked to the portfolio of obligations are longevity risk, expense risk, revision risk and mortality risk (European Parliament, 2014). When the underlying risks connected to the portfolio of obligations include a mortality risk, this mortality risk should be immaterial. Meaning that the best estimate of the portfolio of obligations shall not increase by more than 5% under a mortality risk shock:

$$\frac{Deviation\ of\ the\ mortality\ risk}{Best\ Estimate} < 5\%$$

For this purpose, the deviation of the mortality risk is calculated by subtracting the best estimate cash flows from the best estimate cash flows after the mortality shock. Only unfavourable deviations (cash flow post-shock > cash flow pre-shock) should be taken into account. The current value of those unfavourable deviations would be calculated by using the risk-free interest rate discount curve. The best estimate is the best estimate liability in respect of the portfolio of matched obligations calculated using the basic risk interest rate curve.

According to the Delegated Acts Solvency II (2014), the mortality risk shock mentioned before shall be the more adverse of the following two shocks:

1. An instantaneous permanent increase of 15% in the mortality rates that are used for the calculation of the best estimate.

2. An instantaneous increase of 0.15 percentage points to the mortality rates which are used in the calculation of technical provisions

As mentioned before, only unfavourable deviations should be taken into account. This means that the shocked mortality rates should only apply to those insurance policies for which the increase in mortality rates leads to an increase in technical provisions, as illustrated in Figure 4.

Figure 4: Example of Mortality Shock

	$BE_{post\ shock}$	$BE_{pre\ shock}$
Contract 1	500	600
Contract 2	500	400
Contract 3	500	600
Total:	1,500	1,600
Deviation of the mortality risk		100
Best Estimate		1,500
Mortality shock		6.67% > 5%

In order to apply the matching adjustment to the insurance obligations, the contracts underlying the obligations are not allowed to include any options for the policyholder, except for limited surrender options where the surrender value does not exceed the value of the assets covering the obligations at the time the surrender option is exercised (European Parliament, 2014). This means that contracts to which the matching adjustment will be applied may not entail an option for the policyholder to lapse the contract (e.g., callable contract).

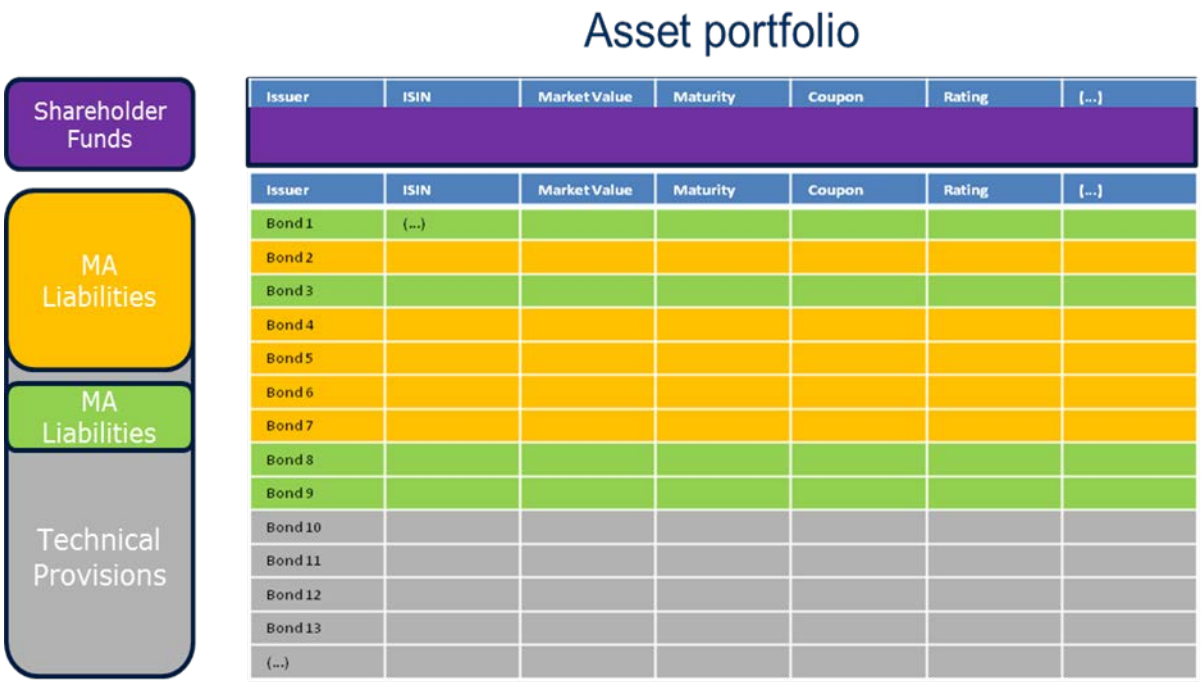
As an exception to this 'non-option' allowance, the contract may entail a limited surrender option if the surrender value does not exceed the value of the assets. To prevent the surrender value from exceeding the value of the assets, an insurance undertaking can add product features, such as the use of a market value adjustment (MVA), to the contract (Henne et al., 2011). Because of an MVA, if the policyholder decides to call the contract earlier than expected, the insurer is not liable for the possible losses caused by the current spread (Henne et al, 2011). The exposure on losses generated by forced sales are then reduced or even eliminated.

Consider an insurance company which has fully matched the cash flows of the liabilities with fixed maturity assets. In such a case, the insurer will only suffer a loss in case of default or downgrade (cfr. supra). If the policyholder decides to call the contract before maturity, the insurer should sell the assets backing the liabilities to pay out the policyholder. Suppose an MVA clause was added to the contract such that only the value of the assets is destined for the policyholder and not a predetermined amount or the composed reserves. Hence, any possible loss will be for he policyholder.

Step 2: Identify the corresponding assets

After having identified the portfolio of liabilities to which the matching adjustment can be applied, the undertaking should identify the designated pool of eligible assets to cover the best estimate of the portfolio of obligations. The assigned portfolio of assets should consist of bonds and other assets with similar cash-flow characteristics (European Parliament, 2014).This is graphically shown in Figure 5.

Figure 5: Asset Selection for the Matching Adjustment



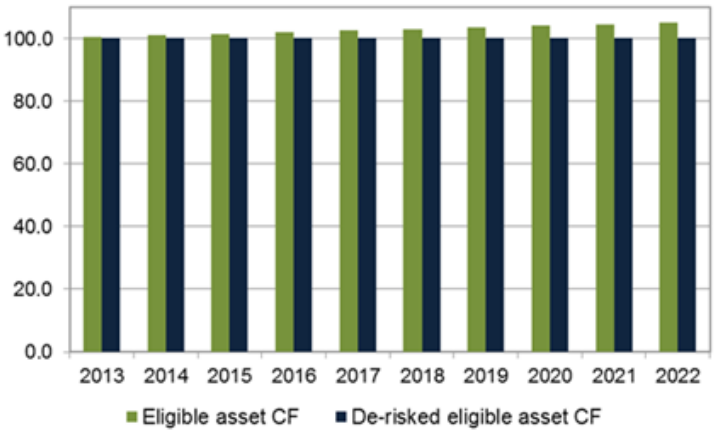
According to the requirements listed in article 77b of the Omnibus II Directive (2014), recognising the matching adjustment, the portfolio of insurance obligations to which the matching adjustment is applied and the assigned portfolio of assets should be identified, organised and managed separately from the other activities of the undertaking. Additionally, the assigned portfolio of assets may not be used to cover losses arising from other activities within the undertaking. This requirement, called the ring-fencing requirement, is one of the hardest to comply with for the Belgian life insurance companies. The ring-fenced funds known in Belgium are not ring-fenced funds under the Solvency II definition because insurers are allowed to add money or assets to their ring-fenced funds. Alternatively, one could argue that the scope of the matching adjustment should not be restricted to ring-fenced funds as long as the assets backing the liabilities can clearly be identified, monitored and reported on a periodic basis to the supervisory authority. This corresponds to the 'covering assets' principle which is currently applicable in Belgium.

Step 3: Project the risk-adjusted cash flows of the eligible assets

After assigning a portfolio of assets, the insurance undertaking should project the future contractual cash flows of the eligible assets. The contractual cash flows contain the principal as well as the coupons. The projected cash flows should be fixed without any possibility of being changed by the issuers of the assets or by any other third party (European Parliament, 2014).

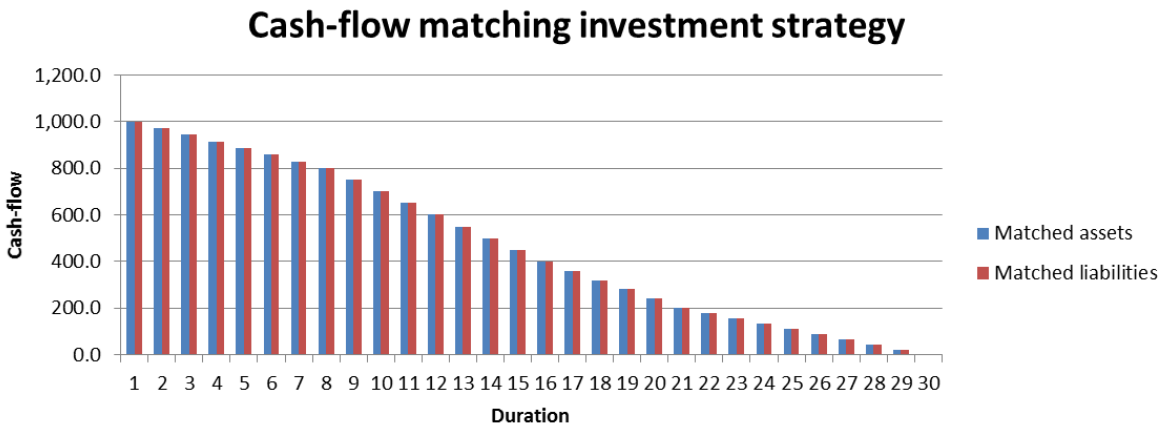
When contractual cash flows are projected, the cash flows should be adjusted to allow for the probability of default of the asset (European Commission, 2014). These cash flows are then called the risk-adjusted or de-risked cash flows of the eligible assets. For the determination of the matching adjustment, an insurance undertaking shall only consider the assigned assets whose risk-adjusted cash flows are required to replicate the cash flows of the portfolio of insurance obligations (European Parliament, 2014).

Figure 6: Projection of Risk-adjusted Cash Flows



The above-mentioned cash-flow replication requirement is another challenging requirement to meet, in addition to the ring-fencing requirement. According to requirement (c) of article 77b of the Omnibus II Directive (2014), the expected or risk-adjusted cash flows of the assigned portfolio of assets should replicate each of the expected cash flows of the portfolio of insurance obligations in the same currency. This means that the de-risked asset cash flows and the liability cash flows should be perfectly matched, as shown in Figure 7.

Figure 7: Cash Flows Matching Investment Strategy



In practice, insurers that manage long-term liabilities can't perfectly match their long-term guarantees with the bonds available on the market. Therefore, requirement (c) of article 77b of the Omnibus II Directive (2014) is further extended, suggesting that a mismatch is allowed if the mismatch does not give rise to risks which are material. For the purpose of the impact assessment on long-term guarantees (LTGs), the materiality requirement was fulfilled if the sum of the discounted cash-flow shortfalls for each future year didn't exceed 15% of the best estimate of the obligations using the basic risk-free interest rate discount curve (EIOPA, 2013). For the discounting of the shortfalls, the undertaking had to ignore any cash-flow surpluses. The degree of mismatch, calculated as the sum of the discounted cash-flow shortfalls divided by the best estimate, had to be reported by the undertaking.

Figure 8: Example of Cash-flow Mismatch

Year	Liability cash flow	Asset cash flow	Cash-flow shortfall	Discount factor	Best estimate
0	700.46	1,260.00	-	1.00	13,714.69
1	697.72	744.80	-	0.99	13,014.23
2	693.88	729.60	-	0.98	12,323.87
3	689.29	714.40	-	0.97	11,643.15
4	683.36	699.20	-	0.95	10,974.25
5	677.03	684.00	-	0.93	10,322.45
6	670.40	668.80	1.60	0.91	9,690.34
7	662.65	653.60	9.05	0.89	9,079.84
8	654.01	638.40	15.61	0.86	8,492.49
9	644.70	623.20	21.50	0.84	7,928.49
10	634.80	608.00	26.80	0.81	7,387.98
11	624.41	592.80	31.61	0.79	6,871.02
12	612.84	577.60	35.24	0.77	6,377.76
13	600.19	562.40	37.79	0.74	5,908.45
14	586.52	547.20	39.32	0.72	5,462.32
15	571.85	532.00	39.85	0.70	5,038.76
16	556.11	516.80	39.31	0.68	4,636.99
17	539.27	501.60	37.67	0.67	4,256.40
18	521.44	486.40	35.04	0.65	3,896.37
19	502.55	471.20	31.35	0.64	3,556.39
20	482.72	456.00	26.72	0.62	3,236.14
21	462.03	440.80	21.23	0.61	2,935.30
22	440.50	425.60	14.90	0.60	2,653.38
23	418.32	410.40	7.92	0.59	2,389.94
24	395.59	395.20	0.39	0.58	2,144.48
25	372.40	380.00	-	0.57	1,916.48
26	348.96	364.80	-	0.56	1,705.44
27	325.46	349.60	-	0.55	1,510.81
28	302.01	334.40	-	0.54	1,332.15
29	278.83	319.20	-	0.53	1,169.07
30	256.13	304.00	-	0.52	1,021.16
31	234.11	288.80	-	0.51	887.95
32	212.94	273.60	-	0.50	768.85
33	192.79	258.40	-	0.48	663.12
34	173.80	243.20	-	0.47	569.86
35	156.04	228.00	-	0.46	488.11
36	139.60	212.80	-	0.44	416.83
37	124.51	197.60	-	0.43	354.98
38	110.75	182.40	-	0.42	301.54
39	98.30	167.20	-	0.40	255.54
40	87.10	152.00	-	0.39	216.05
41	77.07	136.80	-	0.37	182.26
42	68.13	121.60	-	0.36	153.38
43	60.18	106.40	-	0.35	128.75
44	53.11	91.20	-	0.34	107.77
45	46.84	76.00	-	0.32	89.93
46	41.28	60.80	-	0.31	74.76
47	36.33	45.60	-	0.30	61.89
48	31.94	30.40	1.54	0.29	50.99
49	28.04	15.20	12.84	0.28	41.76
50	24.56	-	24.56	0.27	33.97
51	21.46	-	21.46	0.26	27.40
52	18.70	-	18.70	0.25	21.89
53	16.24	-	16.24	0.24	17.26
54	14.05	-	14.05	0.23	13.41
55	12.09	-	12.09	0.22	10.20
56	10.36	-	10.36	0.21	7.54
57	8.83	-	8.83	0.20	5.36
58	7.47	-	7.47	0.19	3.57
59	6.28	-	6.28	0.19	2.12
60	5.25	-	5.25	0.18	0.94

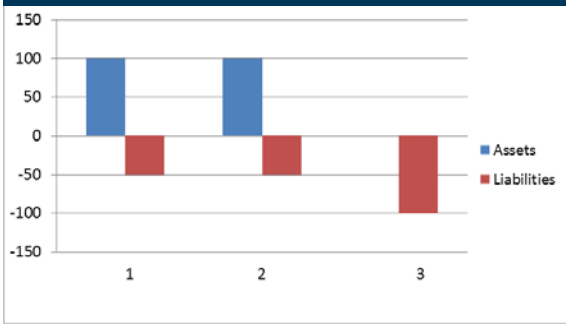
In the example shown in Figure 8, the cash-flow mismatch equals 3%—

$$Cash - flow\ mismatch: \frac{375.48}{13{,}714.69} = 3\%$$

—where 375.48 is the present or discounted value of the future cash-flow shortfalls. It should, however, be noted that proposal of a maximum acceptable mismatch of 15% was only for the purpose of the LTG assessment (LTGA). The final mismatch allowance is not defined yet.

Additionally, the proposal of a maximum mismatch of 15% in the LTGA suffered from serious drawbacks. The example in Figure 9 illustrates these drawbacks. Over a period of three years, an insurer has liabilities of 50, 50 and 100 in years 1, 2 and 3, respectively. Asset cash flows are 100, 100 and 0 in years 1, 2 and 3, respectively.

Figure 9: Example of Mismatch Problem



According to the LTGA methodology for the matching adjustment, the discounted value of cash-flow shortfalls would give a mismatch that is way larger than the 15% limit. In practice, however, the insurer would keep the bonds to maturity in years 1 and 2, and use the total surplus of 100 to finance the liabilities at year 3. Hence, although the use of the matching adjustment is prohibited in this simple example by the a priori 15% restriction, there is no reason why the matching adjustment should not be applicable in this case. Secondly, the 15% limit is arbitrary. Insurers could easily find themselves below or beyond this limit, which is due to fluctuations in the risk-free curve. Also depending on the bucketing rules for assets and liabilities, one might find completely different results with respect to the 15% rule. Consider, for example, an asset cash flow of 100 in December this year and a liability cash flow of 100 in January next year. Bucketing by calendar year would mean there is no cash-flow matching at all, whereas it is clear that an insurer will keep the cash obtained in December to cover the liability falling in January.

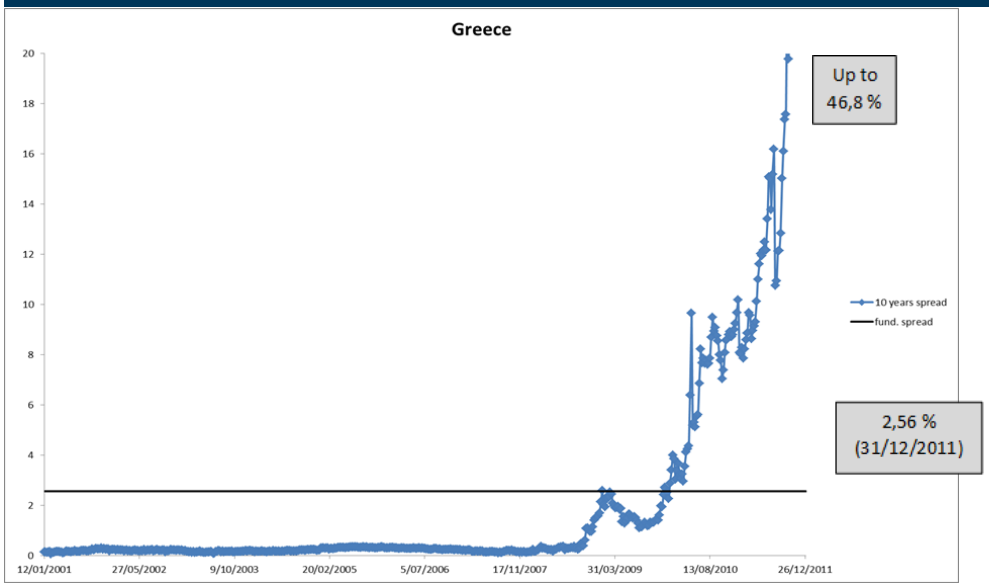
According to article 77c(1)(b) of the Omnibus II Directive (2014), the final matching adjustment should not only exclude the credit spread corresponding to the probability of default of the assets, but also the credit spread corresponding to the expected loss resulting from downgrade. Remember that the credit spread corresponding to the probability of default is already taken into account when projecting the asset cash flows. The credit spread corresponding to the expected loss resulting from downgrading will be subtracted at the end from the calculated matching adjustment. The sum of these two credit spreads is called the fundamental spread (European Parliament, 2014).

For exposures to central governments and central banks, this entire fundamental spread should not be lower than 30% of the long-term average of the spread over the risk-free interest rate of assets of the same duration (European Commission, 2014), credit quality and asset class, as observed in financial markets. For assets other than exposures to central governments and central banks, the fundamental spread should be no lower than 35% of the long-term average of the spread over the risk-free interest rate of assets of the same duration (European Commission, 2014), credit quality and asset class, as observed in financial markets

Going back to the de-risking of our asset cash flows, in the case of exposures to sovereign debt, there is little historical evidence available to calculate the credit spread corresponding to the probability of default of the assets. Hence, it is hardly feasible to adjust the project cash flows for this type of credit spread. Therefore, it is assumed that if no reliable credit spread can be derived from the default statistics, the future cash-flow adjustment shall be equal to the portion of the long-term average of the spread over the risk-free interest. This long-term average includes both the credit spread corresponding to the probability of default and the credit spread corresponding to the expected loss resulting from downgrading (EIOPA, 2014).

However, by taking the long-term average, a potential risk is created. Suppose that we have some Greek bonds (10-year duration) in our portfolio. Based on EIOPA figures, a long-term average fundamental spread of 2.56% per 31 December 2011 was achieved. This is shown in Figure 10.

Figure 10: Long-term Average Fundamental Spread



Because of the large increase in the spread over the last years of the projection, the average amounts 2.56% as at the end of December 2011. Spreads will have to be very low (below the average) for multiple years in the future in order to get the average down again. This means that in the coming years, when spreads are likely to go down, the fundamental spread will be above the actual spread for many years, resulting in a zero matching adjustment. On the other hand, spreads were really high in 2010 and 2011, while the fundamental spread, being an average over a longer period, would only increase slightly. This seems to be contradictive, as we would expect the probability of default, and hence the fundamental spread, to rise with the spreads when spreads are sharply rising.

Finally, it should be noted (EIOPA, 2014) that the matching adjustment of an assigned portfolio of assets with a credit quality less than investment grade can never exceed the matching adjustment of an assigned portfolio of assets with an investment-grade credit quality. If this is the case, the undertaking has to increase the fundamental spread consistently.

Step 4: Calculation of the matching adjustment

Once the undertaking has identified the portfolio of insurance obligations and the assigned portfolio of assets, and if the required conditions are met, the undertaking can start the calculations of the matching adjustment. First, the undertaking should project the risk-adjusted cash flows of the assigned portfolio of assets. Next, the matching adjustment can be calculated for each currency and per matched portfolio of liabilities. According to the Omnibus II Directive (2014), the matching adjustment equals the difference of the:

- Annual effective interest rate, calculated as the single discount rate, that, if applied to the cash flows of the portfolio of insurance obligations, would equal the value of these discounted obligation cash flows to the market value of the assigned portfolio of assets (IRR [Market value Assets; CF Liabilities])

- Annual effective rate, calculated as the single discount rate that, where applied to the cash flows of the portfolio of insurance or reinsurance obligations, results in a value that is equal to the value of the best estimate of the portfolio of insurance or reinsurance obligations where the time value of money is taken into account using the basic risk-free interest rate term structure (IRR [Best Estimate Liabilities; CF Liabilities]).

After determining the matching adjustment following the above-mentioned principles, the undertaking should deduct the fundamental spread, as the matching adjustment shall not include the risks retained by the insurance undertaking. The deduction of the fundamental spread shall, however, include only the portion of the fundamental spread that has not already been allowed for by adjusting the projected cash flows of the assigned portfolio of assets, as set out above under step 3. Concretely, if the eligible asset cash flows were already adjusted to allow for the probability of default of the asset, the undertaking should only deduct the credit spread resulting from downgrading from the calculated matching adjustment.

Figure 11: Example of a Ring-fenced Portfolio

Year	Risk-free rate	Risk-free discount curve	Eligible asset CF	De-risked eligible asset CF	Liability CF (best estimate)
2011	1.00%	99.01%	€ 110.70	€ 110.35	€ 110.35
2012	2.00%	97.07%	€ 102.40	€ 101.79	€ 101.79
2013	3.00%	94.24%	€ 100.30	€ 99.40	€ 99.40
2014	3.00%	91.50%	€ 108.20	€ 106.91	€ 106.91
2015	3.00%	88.83%	€ 85.80	€ 84.52	€ 84.52
2016	3.00%	86.24%	€ 104.00	€ 102.15	€ 102.15
2017	3.00%	83.73%	€ 101.60	€ 99.49	€ 99.49
2018	3.00%	81.29%	€ 99.20	€ 96.85	€ 96.85
2019	3.00%	78.93%	€ 96.80	€ 94.23	€ 94.23
2020	3.00%	76.63%	€ 95.00	€ 92.20	€ 92.20

Example

In the following section, the calculation of the matching adjustment is illustrated with an example. The table in Figure 11 shows a ring-fenced portfolio of assets and liabilities with distinct cash-flow (CF) features.

The de-risked asset cash flows equal the eligible cash flows adjusted for the probability of default. Notice that the de-risked asset cash flows perfectly replicate the eligible liability cash flows and that the matching requirement is hence met. From Figure 11, we can easily see that the best estimate of liabilities, being the sum product of the liability cash flows and the risk-free discount curve, equals EUR 869.79. Suppose that:

Credit spread corresponding to the probability of default	0.30%
Credit spread corresponding to the expected loss resulting from downgrading	0.20%
Maket value of the elegible assets	€ 820.15

The fundamental spread is thus 0.50%. The market value of the eligible assets is available in the market and amounts to EUR 820.15. By using the Solver function in Excel, we can now find a single discount rate that, if applied to the cash flows of the portfolio of insurance obligations, would equal the value of these discounted obligation cash flows to the market value of the assigned portfolio of assets. This single discount rate, or internal rate of return, is 2.44%. Again, by using the Solver function, we can also find the annual effective rate, calculated as the single discount rate that, where applied to the cash flows of the portfolio of insurance or reinsurance obligations, results in a value that is equal to the value of the best estimate liabilities. This second internal rate of return is 3.64%.

The difference between these two internal rates is 1.20% (= 3.64% - 2.44%). Finally, the portion of the fundamental spread that has not already been allowed for by adjusting the cash flows of the assigned portfolio of assets, being the credit spread resulting from downgrade (0.2%), should be deducted. This leaves us with a matching adjustment of 1%.

CONCLUSION

Where insurance undertakings intend to hold their assets until maturity to cover their predictable liability cash flows, they are not exposed to all the short-term asset value fluctuations across the duration of the asset. To prevent these fluctuations from entirely floating through the economic balance sheet of an undertaking, generating artificial volatility in the own funds, the initial Solvency II Directive of 2009 had to be adjusted. Such an adjustment was introduced in the Omnibus II Directive of 2013, amending the Solvency II Directive, via the so-called matching adjustment. The matching adjustment tries to offset these short-term asset value fluctuations by adjusting the best estimate value of the liabilities via an adjustment in the basic risk-free discount rate, used to determine the present value of the liabilities. It is calibrated in such a way that the market value of the liability intends to move in the same direction as the market value of the asset. Despite its shortcomings, the matching adjustment could be the perfect resolution for life insurance undertakings with long lasting liabilities. However, because of the severe requirements for the application of the matching adjustment, its use will be very limited in Belgium. This leads us to the conclusion that the matching adjustment in practice could be considered only as a 'theoretical solution.'

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CONTACT

For more information, please contact:

Kurt Lambrechts
kurt.lambrechts@milliman.com
+32 499 22 16 36

Tim Vandenabeele
tim.vandenabeele@milliman.com
+32 474 66 64 38

milliman.com