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Did Insurers Become Risk-Loving During “Low-for-Long”?

The Role of Returns, Ratings, and Regulation

Jeroen Brinkhoff and Juan Solé

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WORKING PAPER

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The Role of Returns, Ratings, and Regulation****Prepared by Jeroen Brinkhoff and Juan Solé***Authorized for distribution by Ranjit Singh
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ABSTRACT: European life insurance companies are important bond investors and had traditionally played a stabilizing role in financial markets by pursuing “buy-and-hold” investment strategies. However, since the onset of the ultra-low interest rates era in 2008, observers noted a decline in the credit quality of insurers’ bond portfolios. The commonly-held explanation for this deterioration is that low returns pushed insurers to become more risk-taking. We argue that other factors—such as surging rating downgrades, bond revaluations, and regulatory changes—also played a key role. We estimate that rating changes, revaluations, and search for yield each account for about one-third each of the total deterioration in credit quality. This result has important policy implications as it reestablishes the view that insurers’ investment behavior tends to be passive through the cycle—rather than risk-seeking.

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WORKING PAPERS

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Prepared by Jeroen Brinkhoff and Juan Solé¹

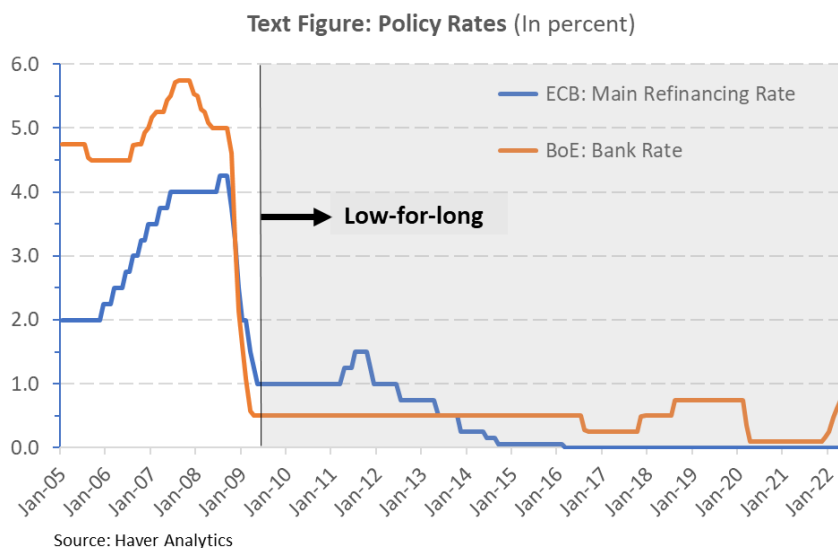
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Contents

I. Motivation	3
II. The Changing Credit Quality of Insurers’ Bond Portfolios, 2005-2021	4
III. Quantification of the Portfolio Drivers	8
IV. Data	9
V. Results	9
VI. Robustness Checks	12
VII. Assumption on Corporate vs. Sovereign Bonds Split	12
VIII. Assumption on the Duration of Corporate and Sovereign Bonds	14
IX. Concluding Remarks	16
References	17

I. Motivation

European policy rates were dramatically slashed in late 2008 in response to the unfolding *global financial crisis* of 2008-09, and then again between 2011 and 2014 on the back of the *European debt crisis*. The severity of these crises meant, however, that even these historically ultra-low policy rates of less than 1 percent proved insufficient to spur economic and credit growth, forcing central banks to usher in a period of unconventional monetary policies: Most notably via large acquisitions of sovereign and corporate bonds. These purchase programs compressed interest rates even further and for a long time, giving rise to the period now known as the “low-for-long” era (text figure).



Confronted with anemic returns, institutional investors sought to boost their profits by venturing into increasingly riskier and less liquid asset classes. At the time, such behavior was suspected among all types of investors, including traditionally conservative ones like life insurance firms and pension funds. In fact, several observers documented an increase in insurers’ investments into less liquid assets and riskier bonds—*hunting for yield* (IMF, 2015 and 2017)—and a lengthening of the duration of these investments—*hunting for duration* (Domanski *et al.* 2017).¹

And so, it became commonly accepted that the principal reason behind the worsening quality of insurers’ bond portfolios during the low-for-long was a more aggressive search for yield. On the back of this perception, life insurers ceased to be viewed as a stable investor class and became the focus of sector-wide stress tests (e.g., EIOPA 2014 and 2016), quantifications of the potential impact that their distress could have on financial stability (Joyce *et al.*, 2014, and ESRB 2015, among others), as well as studies on insurers’ trading behavior (EIOPA, 2020).

However, there were other developments during this period that could also explain the changes in insurers’ portfolios. First, the *global financial* and *European debt crises* led to a multi-year surge in the number of corporate and sovereign rating downgrades, which would, in turn, worsen the overall credit quality of existing portfolios even if insurers had not acquired more lower-quality assets. Second, falling interest rates would

¹ It is important to remark here that, to our knowledge, evidence of *hunt for duration* has only been provided for German life insurers in Domanski *et al.* (2017). EIOPA (2014 and 2018) show that on average, between 2014 and 2018, European insurers slightly *decreased* the duration of sovereign bond investments while slightly *increasing* the duration of corporate bond investments (see Section IV.B for a further discussion). Therefore, we believe it is not possible to claim that the *hunt for duration* was an industry-wide trend. On the other hand, this paper provides evidence that the deterioration in the credit quality of insurers’ bond portfolios has been an industry-wide phenomenon.

mechanically lead to an upwards revaluation of bond holdings (again without the need to acquire new bonds). And third, the regulatory framework and its incentives were fundamentally transformed around 2014 when preparations began for the introduction of Solvency II in 2016. The forthcoming regulatory changes may have affected portfolio decisions even if insurers did not intend to alter their risk profile.²

Considering the elements above, it becomes plain that what is missing in the literature is an analysis that tracks insurers’ bond investments through the entire period (from before the low-for-long until recently) and allows for factors besides the hunt for yield to affect insurers’ bond portfolios. Only with such longer timespan and quantification of the impact of each element—rating migrations, bond revaluations, and hunt for yield/regulatory incentives—can one assess whether life insurers did become more risk seeking. This is the main contribution of this paper.³

The rest of the paper is organized as follows: Section II documents changes to the credit quality of bond portfolios of European life insurers. Section III checks the robustness of our analysis by considering alternative assumptions underlying our estimations. Section IV concludes. For ease of exposition, throughout the paper we often refer to “life insurance companies” as “insurers”, except when the term may lead to confusion.

II. The Changing Credit Quality of Insurers’ Bond Portfolios, 2005-2021

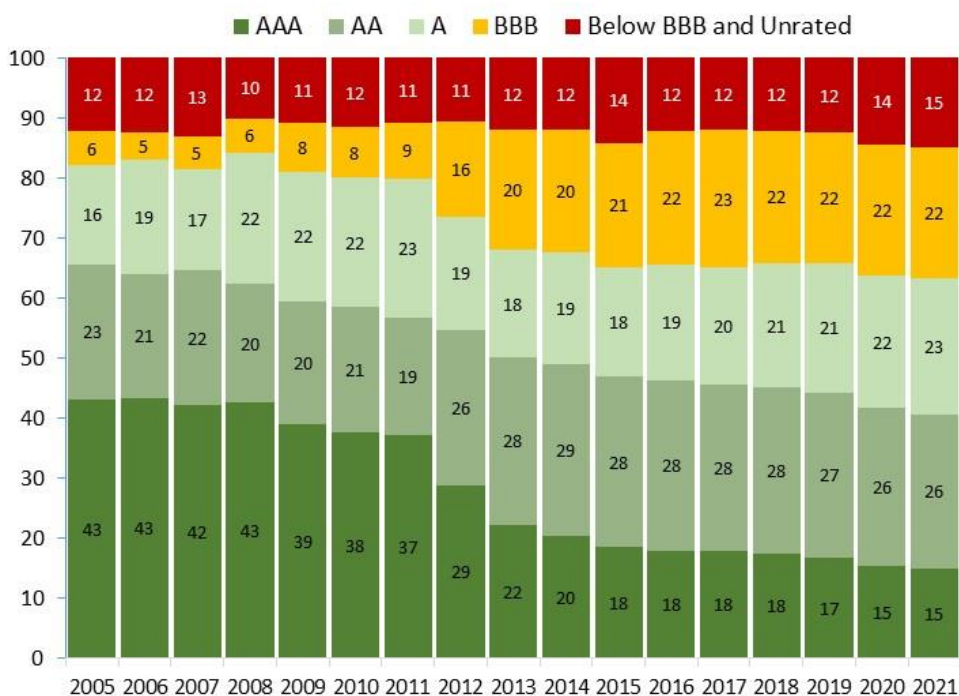
The first step in our inquiry is to quantify the changes to the credit quality of insurers’ bond portfolios between 2005 and 2021. To do this, we collected data on 56 European life insurance firms from Belgium (1), Finland (1), France (3), Germany (9), Italy (4), Netherlands (2), Norway (5), Portugal (2), Spain (2), Sweden (5), Switzerland (6), and the United Kingdom (15). Our sample covers around $\frac{3}{4}$ of the total European life insurance sector.

Figure 1 shows that the credit quality of insurers portfolios has been on a steady decline since 2005, mostly driven by the replacement of top-rated AAA bonds with BBB paper. The share of AAA bonds dropped from 43 percent of total bond holdings in 2005 to 15 percent in 2021, while holdings of BBB paper ballooned from around 5 to 6 percent in 2005-08 to 22 percent of the entire bond portfolio in recent years. Although this deterioration in credit quality proceeded slowly in 2006-2011, it accelerated markedly in 2012 and 2013, and stabilized thereafter. Interestingly, the variation of AA, A, and sub-BBB and unrated bonds has been much smaller.

² Although Solvency II came into effect on 1 January 2016, this date had been pushed back many times, and its rules and requirements started to be prospectively applied by European insurers, rating agencies, and industry analysts well before 2016. For instance, the 2011 EIOPA stress test was based on the draft Solvency II framework. See also Domanski *et al.*, (2017, p. 8) on this point, who argue that “the forthcoming introduction of the Solvency II regulatory framework might already have made the portfolio decisions of insurance firms more sensitive to the lower long-term interest rates.”

³ EIOPA (2021) is a useful step in this direction, looking at insurers trading activities in response to bond downgrades. However, their analysis is limited to the period Q1 2019 to Q2 2020, thus excluding the period over which most of the deterioration in credit quality occurred: 2008 to 2015 (as will be documented in the next section).

Figure 1: European Life Insurers’ Bond Rating Allocation
(In percent of total bond holdings)



Source: S&P Capital IQ and authors’ calculation.

So, what has driven the large substitution of triple-A for triple-B bonds?

As discussed above, a widely accepted explanation is that ultra-low policy rates implemented since 2008 pushed insurers to hunt for higher returns in riskier assets.⁴ This explanation is often accepted as the single—or at least the most important—driver of the changes in credit quality through this period.

However, three other factors may have also contributed to the decline in portfolio quality. Namely, rating downgrades, bond revaluations (as interest rates fell), and changes to regulatory incentives due to the introduction of Solvency II in 2016. We discuss each of these factors below:

⁴ IMF (2017) argued that insurers have taken on more credit risk—mostly by accumulating BBB assets—as a strategy to adapt to the low-interest-rate environment.

Rating downgrades increased in the aftermath of the *global financial* and *European debt crises* in the years 2009 to 2012.⁵ Mechanically, downgrades would lead to an increase in BBB holdings for any buy-and-hold investor—such as life insurers—as higher-rated bonds would migrate down the rating scale.⁶

Table 1 shows that rating downgrades for AAA to A rated bonds increased during 2010-14 compared to the long-term average for 1981-2009: Downgrades from AAA to BBB were non-existent during 1981-2009 but amounted, on average, to 1.0 percent of all AAA-rated bonds per year for the years 2010-2014. Downgrades from AA to BBB were 0.8 p.p. higher in 2010-2014 than in 1981-2009; downgrades from A to BBB were 2.5 p.p. higher in 2010-2014 compared to 1981-2009. A priori, these percentage changes could be large enough to explain some of the changes in insurers’ portfolios. We quantify by how much in the next subsection.

Table 1: Average One-Year Corporate Rating Transition Rates, 1981-2009 (In percent)

From \ To:	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
AAA	88.5	7.9	0.5	-	-	-	0.1	-	2.9
AA	0.3	86.1	9.8	0.5	-	-	-	-	3.4
A	-	2.5	87.2	5.1	0.2	0.1	-	0.1	5.0
BBB	-	0.2	4.8	82.7	3.6	0.5	0.2	0.1	8.0
BB	-	-	0.2	4.7	70.7	8.4	0.5	0.7	14.9
B	-	-	0.1	0.4	6.6	64.3	4.8	4.6	19.2
CCC/C	-	-	-	-	-	5.4	31.1	43.2	20.3

Average One-Year Corporate Rating Transition Rates, 2010-2014 (In percent)

From \ To:	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
AAA	69.2	28.3	-	1.0	-	-	-	-	1.5
AA	0.1	84.3	10.8	1.3	-	-	-	-	3.5
A	-	1.0	86.9	7.6	0.3	-	-	-	4.2
BBB	-	0.1	3.4	85.1	4.8	0.5	-	-	6.2
BB	-	-	-	6.1	76.6	6.1	0.9	0.1	10.2
B	-	-	-	0.5	8.7	74.3	4.6	1.5	10.5
CCC/C	-	-	-	-	-	23.8	42.3	16.0	17.9

⁵ See Standard & Poor’s *Annual Global Corporate Default Study and Rating Transitions* (years 2008 onwards) for detailed data on corporate downgrades. Fitch’s *Annual Sovereign Transition and Default Studies* (years 2008 onwards) provide data on sovereign downgrades. The data show that, between 2009 and 2013, 50 to 75 percent of global sovereign downgrades were of European nations. Downgrades to BBB included Greece (in 2009), Ireland (in 2011), Cyprus (in 2011), Portugal (in 2011), Italy (in 2012), and Spain (in 2012).

⁶ Given their long-dated liabilities, most life insurance companies have traditionally relied on buy-and-hold investment strategies. A 2019 survey by EIOPA found that almost 80 percent of European life insurers self-declared as buy-and-hold investors. Moreover, EIOPA (2017) found that 40 percent of survey respondents claimed that the decrease in the average investment grade of their investments stemmed from rating changes. EIOPA (2020), in turn, found that, although insurers sold some downgraded bonds throughout 2016Q1 to 2020Q2, these sales “remained largely contained” and amounted to a quarterly average of 3.7% of the downgraded bonds. This finding is further evidence of insurers’ predominant buy-and-hold behavior.

Table 1 (continued):**Average One-Year Corporate Rating Transition Rates, 2015-2020** (In percent)

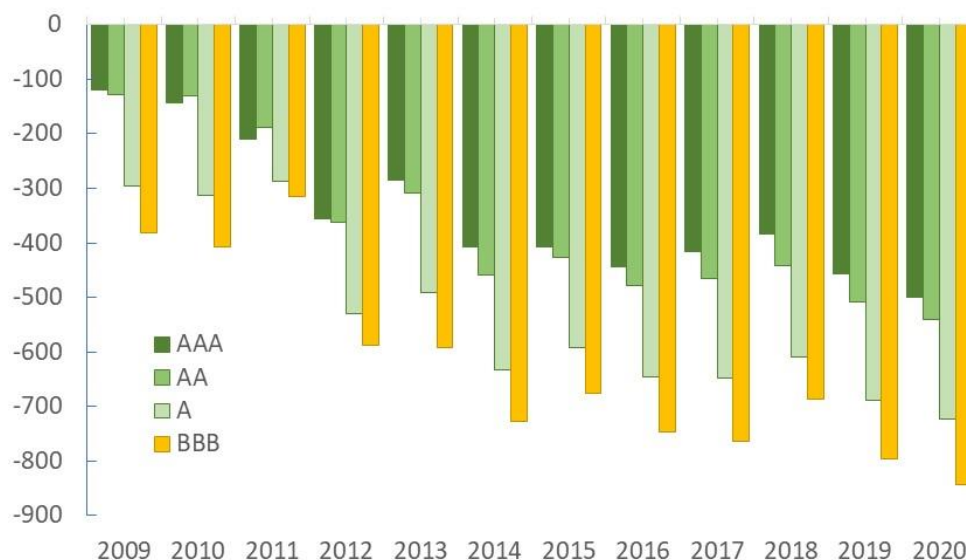
From \ To:	AAA	AA	A	BBB	BB	B	CCC/C	D	NR
AAA	94.4	0.0	0.0	-	-	-	-	-	5.6
AA	0.2	91.2	4.4	-	-	-	-	-	4.3
A	-	1.1	91.1	3.5	-	-	-	-	4.4
BBB	-	-	3.1	89.4	2.0	-	-	-	5.5
BB	-	-	-	4.9	77.7	5.5	0.2	0.2	11.5
B	-	-	-	-	3.2	75.1	5.6	1.4	14.6
CCC/C	-	-	-	0.3	-	9.9	42.9	28.8	18.1

Source: Standard & Poor’s and authors’ calculation.

Note: ‘-’ stands for 0.0 percent. D stands for ‘default’ and NR for ‘non-rated’.

Bond revaluations due to falling yields could also lead to a mechanical increase in the value of bond holdings.⁷ The increase in bond values would be greater the larger the drop in yields, which was indeed bigger for BBB bonds than for AAA, AA, and A for the entire 2009-2020 period (Figure 2).

Figure 2: Cumulative Change in Bond Yields Since end-2008
(In basis points, by bond rating)



Source: Bloomberg LP, and authors’ calculations.

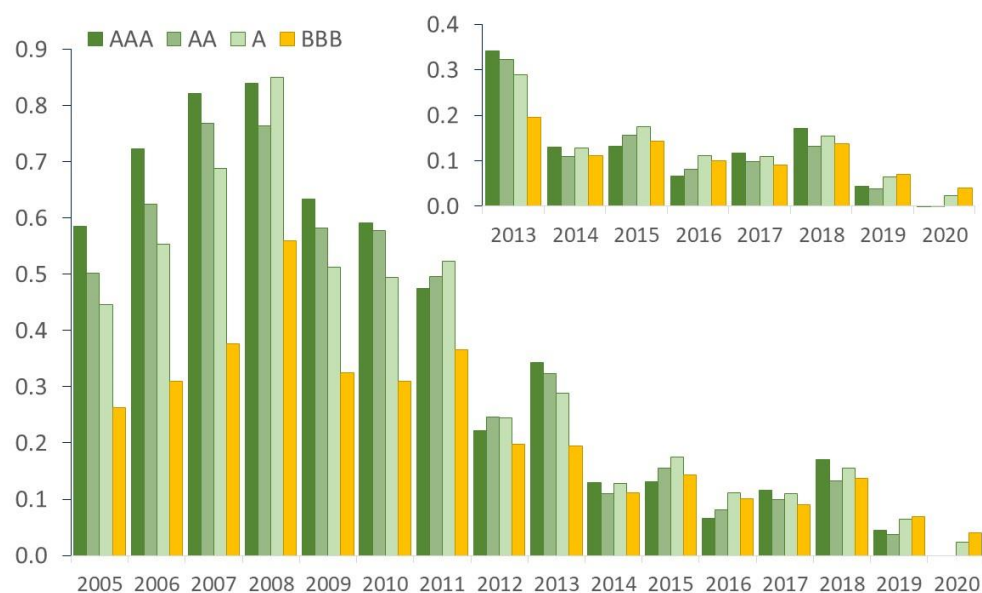
Note: Bond yields are yield-to-maturity of the euro-denominated Bank of America/Merrill Lynch bond index of each corresponding rating.

⁷ Recall that as interest rates steadily dropped starting in late 2008, portfolio bond holdings would have begun to revalue higher.

Regulatory incentives changed from 2014 onwards, as the industry started preparations for the introduction of Solvency II on January 1st, 2016. Under the new regime, capital charges for bond investments depend mainly on the bond’s rating and duration. Therefore, when deciding on whether to hold a specific bond, insurers would compare the bond’s yield with its capital cost.

An intuitive way to make such comparison is to look at the ratio of bond yields to capital surcharges.⁸ Figure 3 shows that before 2014, the ratio ‘yield/capital cost’ was notably larger—and hence more favorable—for highly rated bonds than for BBB-rated bonds. From 2014, the difference effectively disappeared (Figure 3 insert). This suggests that, under an environment of ultra-low interest rates, the capital savings from holding higher-rated bonds did not compensate for the lower yields that safer assets carry.

Figure 3: Ratio of Corporate Bond Yields to Solvency II Capital Charges



Sources: Bloomberg and authors’ calculations.

Notes: Bond yields are the yield-to-maturity of the euro-denominated Bank of America/Merrill Lynch corporate bond index for bonds with 5 to 10 year maturity. We focus on the 5-10 year maturity bucket as this matches the average maturity in insurers’ bond portfolios. Solvency II capital charges are calculated as the average for bonds with maturities between of 5 to 10 years, for each rating class.

III. Quantification of the Portfolio Drivers

To quantify the impact of rating and valuation changes on insurers’ portfolios, consider the equation that describes the evolution of bond investments. Namely, bond holdings at time t are the result of (i) rating

⁸ We reiterate here that although Solvency II came into effect finally in January 2016; this date had been pushed back several times. The years before 2016 were crucial for the calibration of the Solvency II parameters, and insurance firms started adjusting their behavior well ahead of the implementation of the new regime.

migrations at time $t-1$, plus (ii) bond valuation changes between $t-1$ and t , plus (iii) net purchases of bonds at t . A formal specification for this law of motion is presented below:

$$H_t = \underbrace{T'_{t-1} \cdot H_{t-1}}_{\substack{\text{Bonds} \\ \text{Upgraded/} \\ \text{Downgraded}}} + \underbrace{D_t \cdot \Delta i_t \cdot H_{t-1}}_{\substack{\text{Valuation} \\ \text{Change}}} + \underbrace{P_t}_{\substack{\text{New} \\ \text{Purchases}}}$$

where H_t is the $(N \times 1)$ vector of holdings of bonds at time t with generic element h_t^a denoting the amount of bonds h rated a at time t ; T_t is the $(N \times N)$ matrix of rating transitions with generic element $\tau_{b,t-1}^a$ denoting the percent of bonds rated a at time $t-1$ migrating (i.e., upgraded or downgraded) to bonds rated b ; D_{t-1} is an identity $(N \times N)$ matrix with diagonal element, δ_{t-1}^a , denoting the duration of bonds rated a at time $t-1$; Δi_t is the identity $(N \times N)$ matrix with diagonal element, $(i_t^a - i_{t-1}^a)$, denoting the change in interest rates for bonds rated a between period t and $t-1$; and P_t is the $(N \times 1)$ vector of new bond purchases at time t .

IV. Data

We collected data on each variable of the equation above from the following sources:

- Insurers' bond investments by rating are from S&P Global Capital IQ. Since this database does not provide the breakdown of corporate vs. sovereign bonds, we rely on EIOPA data to estimate such split. However, EIOPA data is only available for 2016-2020. These data show that the share of sovereign to corporate bonds held by insurers from the countries in our sample oscillated within a narrow band of 51-54 percent for sovereign and 49-46 percent for corporate bonds. Discussions with industry participants confirmed that this split has been constant through time. Lacking other data on the sovereign/corporate split, we extrapolate the average split for 2016-2020 to 2005-2015. Section V presents several robustness tests to show that our main conclusions are not altered by this assumption.
- Annual rating transition matrices for corporate bonds are available from Standard & Poor's; and annual sovereign transitions are from Fitch Ratings (see References section).
- Data on duration is very limited. The only available sources of corporate and sovereign bond durations are EIOPA (2014) and EIOPA (2018). Thus, we calculated the average of the two years: corporate and sovereign bond durations are 5.7 years and 8.0 years, respectively. We assume this same duration for all the years in the sample. Section V presents a robustness check for this assumption.
- The change in interest rates for each rating category of corporate bonds was calculated from ICE's corporate bond indices and the change in sovereign yields was calculated from the iBoxx euro-denominated sovereign indices. For each of these indices we chose the relevant maturity bucket corresponding to the bonds' durations discussed in the previous bullet.

V. Results

The results of our decomposition cast new light on the dynamics of life insurers' bond portfolios (Table 2 and Figures 4 and 5). Several important points can be made:

- Portfolio dynamics are the result of a combination of drivers of which net bond purchases are only one element and sometimes not even a dominant one (e.g., years 2009, 2011, 2014, 2015, or 2020). Moreover, even in years when net purchases were relatively large, there were other factors equally large (and sometimes even acting in the opposite direction): For instance, in 2010, life insurers actively sold BBB bonds equivalent to 1.8 percentage points (p.p.) of their bond portfolio. However, rating migrations added around 2.1 p.p. worth of BBB bonds, leaving the overall balance almost unchanged (+0.5 p.p., Table 2).

Table 2: Decomposition of Annual Change of BBB Bond Holdings

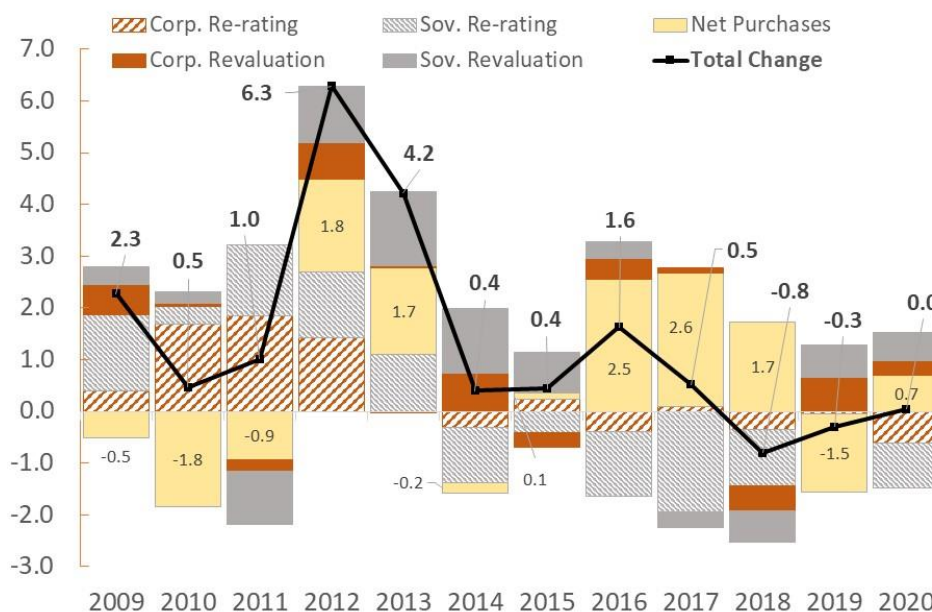
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	(in percentage points of life insurers' total credit assets)											
Annual Change	2.3	0.5	1.0	6.3	4.2	0.4	0.4	1.6	0.5	-0.8	-0.3	0.0
<i>of which due to:</i>												
Corporate re-rating	0.4	1.7	1.8	1.4	0.0	-0.3	0.2	-0.4	0.1	-0.4	0.0	-0.6
Sovereign re-rating	1.5	0.3	1.4	1.3	1.1	-1.1	-0.4	-1.2	-1.9	-1.1	0.0	-0.9
Corporate revaluation	0.6	0.1	-0.2	0.7	0.0	0.7	-0.3	0.4	0.1	-0.5	0.7	0.3
Sovereign revaluation	0.3	0.2	-1.0	1.1	1.4	1.2	0.8	0.3	-0.3	-0.6	0.6	0.5
Net purchases	-0.5	-1.8	-0.9	1.8	1.7	-0.2	0.1	2.5	2.6	1.7	-1.5	0.7

Sources: Standard & Poor's, Bloomberg, EIOPA and authors' calculations

- Rating downgrades added about 2 to 3 p.p. of BBB paper per year during 2009-2012, leading to a net accumulation of 10.9 p.p. due to downgrades by 2013 (Figure 5). Insurers reacted by selling some of these bonds in an effort to maintain their overall portfolio allocations in 2009-2011.
- From 2014 onwards, the rating cycle turned, as the impact of upgrades overcompensated downgrades, especially concerning sovereigns. Thus, the cumulative impact of re-ratings on the BBB portfolio started to reverse from 2014 (Figure 4). In fact, the sovereign rating cycle was fully closed by 2018, whereas the corporate cycle was still unwinding in 2020 (Figure 5). Insurers responded by net-buying BBB-bonds, especially in 2016-2018.
- Our decomposition also reveals that net purchases of BBB bonds took place from 2012 onwards, after it became apparent to market observers that global interest rates would remain low for the foreseeable future—the so-called “low-for-long” phenomenon (IMF 2012). Throughout 2012-2018, insurers annual net purchases of BBB bonds have oscillated considerably (between -1.5 and 1.8 p.p.) although resulting in a cumulative net acquisition of 6.9 p.p. of the bond portfolio by 2018.
- Upward bond revaluations were an important driver of portfolio changes in 2012-15, especially for sovereign bonds as yields on BBB paper came down significantly from their heights in 2011 (Table 2 and figure 4).
- The peak of accumulation of BBB bonds was in 2017 (Figure 5). Looking at the cumulative effect of each driver by that year, one can see a roughly equal impact from net purchases, re-ratings, and revaluations. That is, net purchases represented 30 percent of the total cumulative increase in BBB paper (5.2 p.p. out of a total of 17.2 p.p.), while rating migrations accounted for 34 percent of the

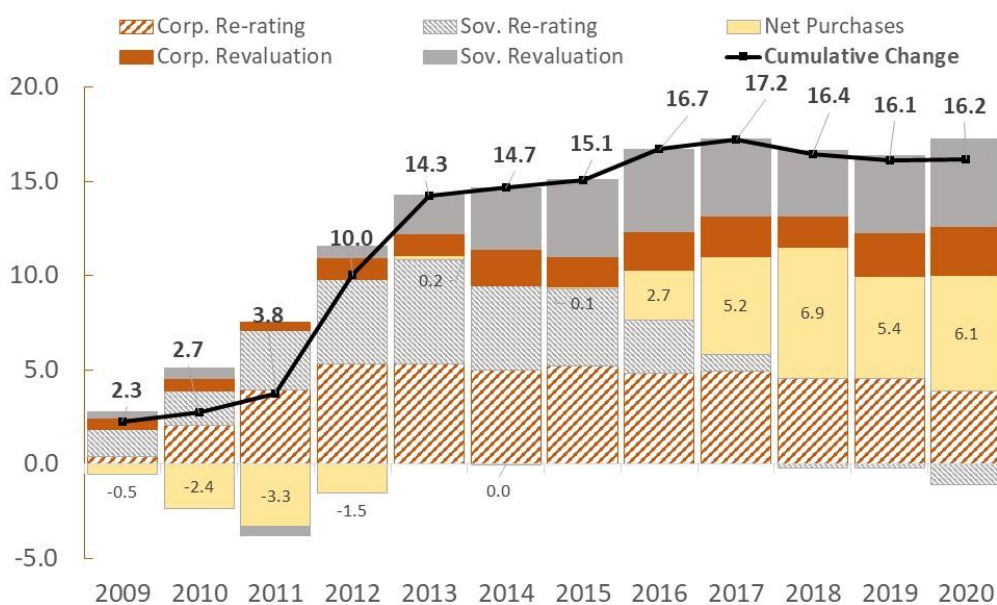
change (5.8 p.p. out of 17.2 p.p.) and revaluations for 36 percent (6.2 p.p. out of 17.2 p.p.), respectively (Table 2).

Figure 4: Decomposition of Change in BBB Bond Holdings, 2009-2020
(In percentage points of total credit risk assets)



Source: Standard & Poor’s, Bloomberg, EIOPA and authors’ calculations.

Figure 5: Cumulative Changes to BBB Bond Holdings, by factor 2009-2020
(In percentage points of total credit risk assets)



Source: Standard & Poor’s, Bloomberg, EIOPA and authors’ calculations.

VI. Robustness Checks

VII. Assumption on Corporate vs. Sovereign Bonds Split

One of our assumptions is about the split between insurers’ investments in corporate vs. government bonds. As discussed, the only data available indicates that insurers allocated around 52 percent of their bond portfolio to sovereigns throughout 2016-2020. Due to lack of data, we assumed the same allocation for 2005-2015.

In this subsection we explore whether other distributions of bond holdings would yield very different results. Most importantly we want to confirm that *net purchases of BBB bonds were an important—although not the only—driver in the accumulation of BBB bonds*.

For this, we first consider two extreme distributions. A *sovereign bias* distribution assumes that during 2005-2015, insurers favored sovereign over corporate bonds with an allocation of 70-30 percent, respectively. The *corporate bias* distribution assumes the mirror 30-70 percent distribution. The results from these extreme distributions are presented in Figures 6 and 7.

Figure 6 (a) shows that the *stronger* the bias towards government paper, the *larger* the impact of sovereign downgrades and revaluations on BBB holdings compared to Figure 5. Bond purchases, on the other hand, play a much smaller role and account for only one-fifth of the cumulative change by 2017—the year in which BBB accumulation peaked.

Under the corporate bias assumption, net purchases are responsible for slightly over two-fifths of the cumulative change by 2017, while the next most important drivers are corporate re-ratings and revaluations (Figure 6 (b)).

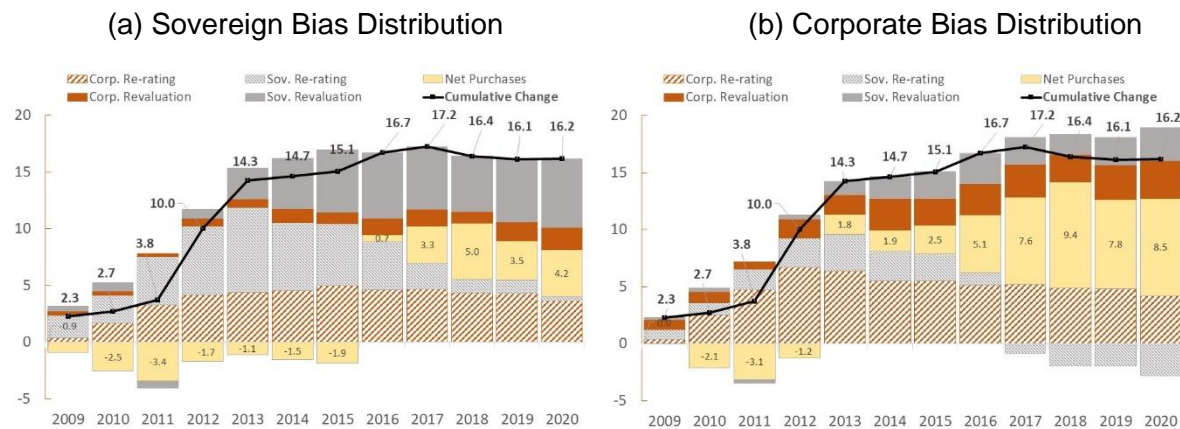
An additional scenario to consider is one where the corporate/sovereign split is not the same across rating buckets—that is, a *non-uniform distribution*. Instead, we assume that sovereign bond investments are highly concentrated in the higher ratings, while lower-rated bond holdings are largely comprised of corporate paper (Table 3). The results of such a distribution are presented in Figure 6 (c) and show again that net purchases of BBB bonds would be an important driver of portfolio dynamics but not the dominant one. Under this scenario net purchases account for 38 percent of the total accumulation until 2017 (i.e., 6.5 p.p. out of 17.2 p.p.).

Table 3: Non-uniform Sovereign-Corporate Split Across Rating Buckets

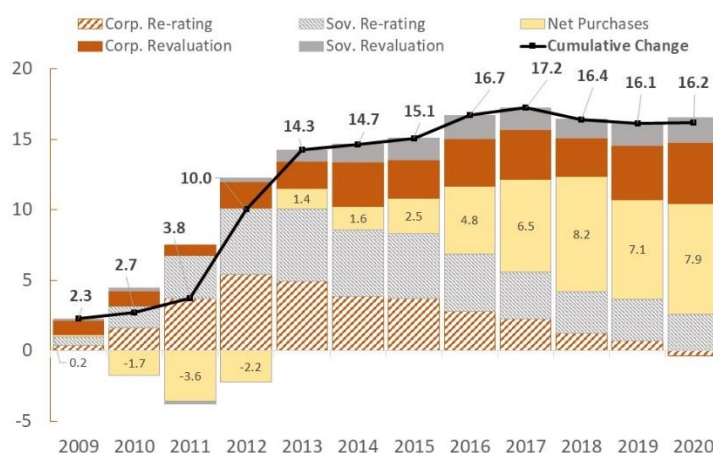
(Sov % / Corp %)

AAA	AA	A	BBB	NR
80% / 20%	80% / 20%	20% / 80%	20% / 80%	0% / 100%

Figure 6: Cumulative Changes to BBB Bond Holdings, by factor 2009-2020
(In percentage points of total credit risk assets)



(c) Non-Uniform Distribution:
Sovereign Bias in High Ratings, Corporate Bias in Low Ratings



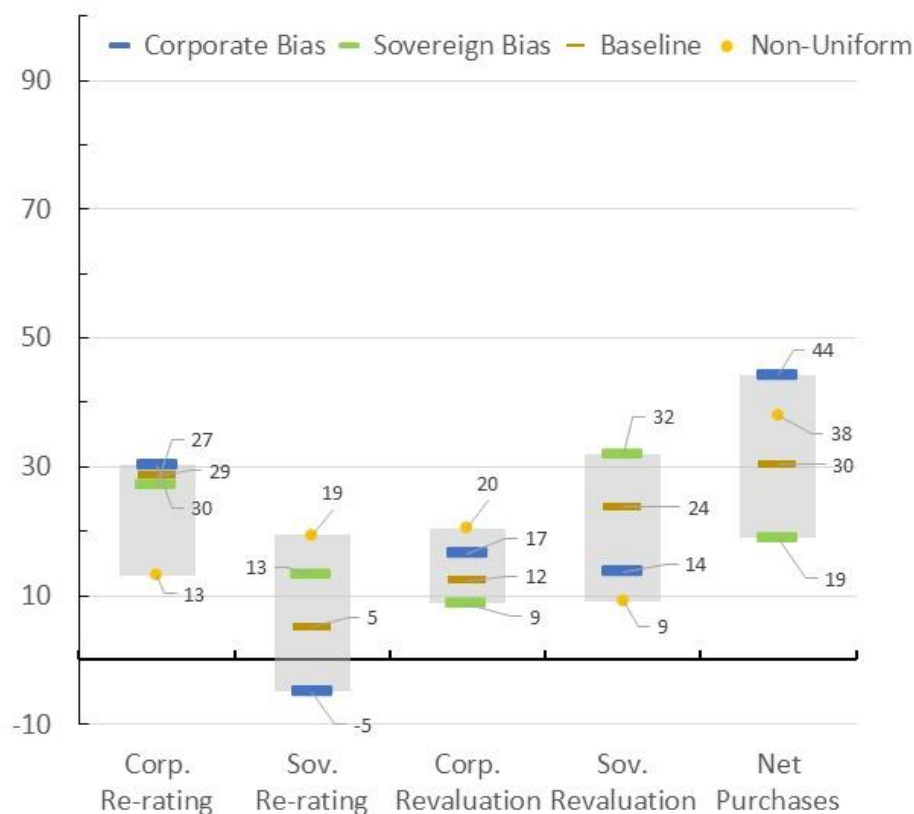
Source: Standard & Poor’s, Bloomberg, EIOPA and authors’ calculations.

For ease of comparison across the different robustness checks, Figure 7 depicts the range of variation of each driver in percent of the total cumulative change of BBB holdings by 2017. That is, of the 17.2 p. p. increase in BBB holdings, how much corresponds to each factor? Figure 7 shows that, the maximum effect of purchases would be under the corporate bias distribution (net purchases would explain 44 percent of the total change).

Taken together, these robustness checks confirm the conclusion that the accumulation of BBB bonds by insurers is the result of a combination of factors, of which *active* buying of BBB paper was only one element and would account for at most one-half of the total change even when assuming a very biased bond

allocation.⁹ The other drivers, which collectively account for one-half or more of the change, are *passive* drivers, as would be expected of “buy-and-hold” investors.

Figure 7: Robustness Analysis of the Drivers of Changes to BBB Bond Holdings
(In percent of the total cumulative impact between 2005-2017)



Sources: Standard & Poor’s, Bloomberg, EIOPA and authors’ calculations.

Notes: Grey vertical bars denote the range of values for each driver across distributions.

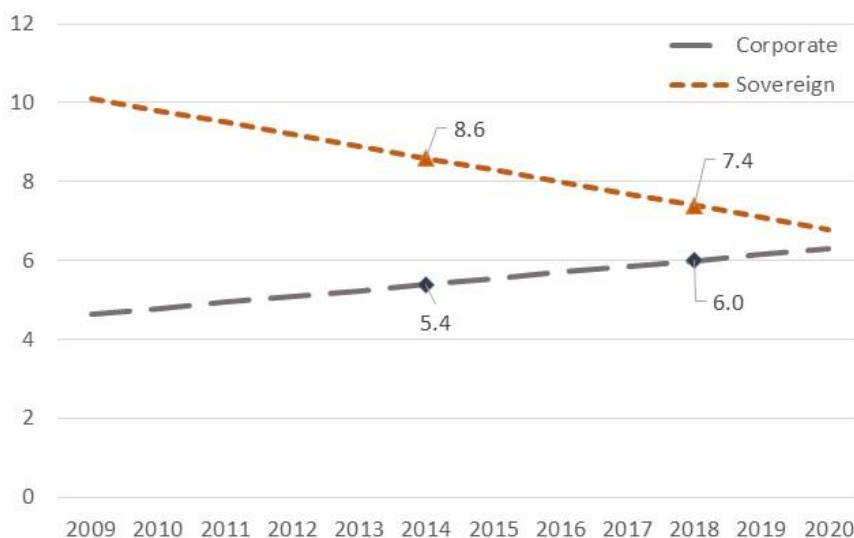
VIII. Assumption on the Duration of Corporate and Sovereign Bonds

Another assumption we were forced to make due to data unavailability concerns the duration of insurers’ corporate and sovereign bond portfolios. Recall that our solution was to compute the average of the two data points available (2014 and 2018) and apply that average to each year in the sample.

Alternatively, we consider here a linear extrapolation from those two years to the rest of the sample (Figure 8). The results obtained are very close to the ones obtained in Section III, and thus deserve no further comment (Figure 9).

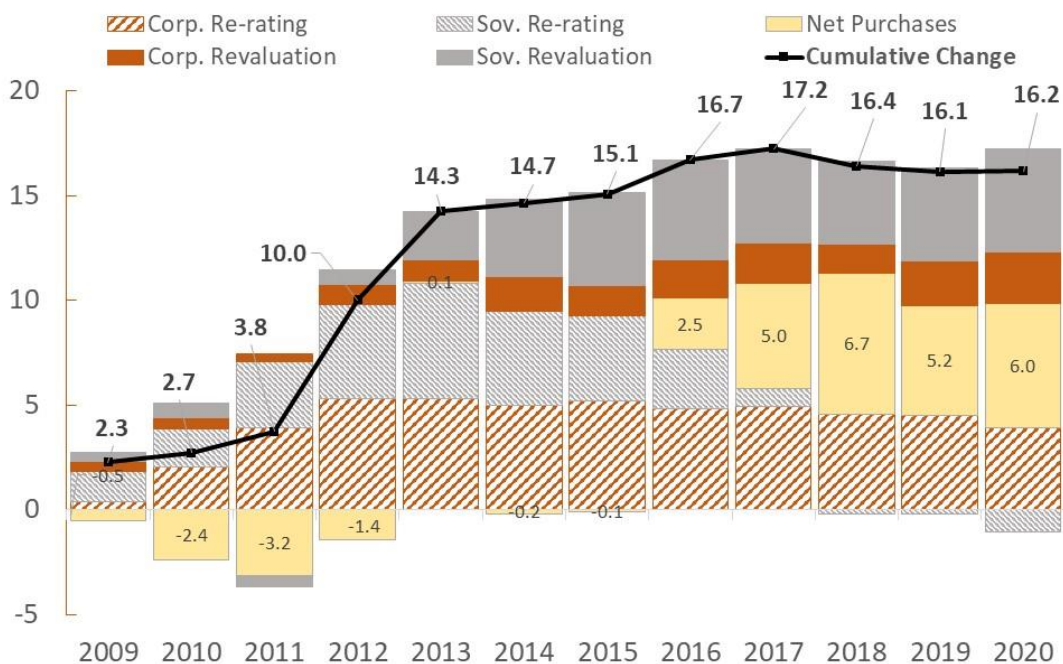
⁹ We also considered an unrealistic distribution where 100 percent of the portfolio is allocated to corporate bonds during 2005-2015. Even under this extreme assumption, corporate rating migrations and revaluations account for 55 percent of the cumulative change in BBB holdings.

Figure 8: Linear Extrapolation of Bond Duration from years 2014 and 2018



Sources; EIOPA and Authors' calculations.

Figure 9: Cumulative Changes to BBB Bond Holdings, by factor 2009-2020
Duration Extrapolation
 (In percentage points of total credit risk assets)



Source: Standard & Poor's, Bloomberg, EIOPA and authors' calculations.

IX. Concluding Remarks

To sum up, between 2005 and 2017, life insurers rebalanced their portfolios from a substantial share of AAA (43 percent) and about 5 percent of BBB bonds, to about 18 percent of AAA paper and 23 percent of BBB bonds. The rebalancing has remained largely constant since 2017. This change has obviously worsened the credit quality of insurers’ bond portfolios, raising the question of whether life insurers became more active risk-takers from 2011 onwards as they intensified their search for yield. The commonly accepted view in policy circles is that insurers have actively gone “outside of their traditional risk habitats as they searched for yield” (IMF 2017).

Our decomposition of the evolution of bond portfolios has showed that this explanation needs qualification (and quantification): While it is true that insurers actively sought to increase their BBB holdings via net purchases starting in 2012, the impact of rating migrations and bond revaluations is equally important and of similar magnitude—each element accounting for around 1/3 of the cumulative change between 2008 and 2017. Given some uncertainties in our estimation, we conducted some robustness checks. Overall, even in the most extreme scenario, net purchases would account for at most two-fifths of the total deterioration in credit quality during this period. Passive drivers, like rating migrations and bond revaluations, were equally responsible for insurers’ changing portfolio allocation.

These findings shed critical light on the role of insurers in financial markets over the last two decades and should be taken into account by financial authorities. We presented evidence that insurers have largely retained their traditional “buy-and-hold” investment stance, even when faced with ultra-low yields and widespread sovereign and corporate rating downgrades. By not actively rebalancing their portfolios, insurers avoided aggravating market-wide fire-sale dynamics and additional stress for borrowing firms and sovereigns. Thus, from a financial stability perspective, life insurers continued to be a rather stable investor class. This conclusion has been further confirmed by insurers’ contained net-selling of downgraded bonds during the COVID-19 crisis (EIOPA, 2021).

It is important to remark here, that we are not suggesting that insurers are uninterested in obtaining higher yields. Indeed, insurers are not forced to hold bonds to maturity and thus can reoptimize their portfolio by buying safer assets after downgrades. Inertia, i.e. the buy-and-hold-strategy, is a choice. In fact, insurers have long term liabilities which leave them with more discretion to buy in downturns than other financial intermediaries (Timmer 2018). The point is that by managing their portfolios passively, insurers have been countercyclical investors and not actively contributed to a pro-cyclical market dynamic.

Looking ahead, it is reasonable to expect that as central banks raise policy rates these portfolio dynamics will be (partially) reversed. Moreover, insurers may become active buyers of the highly rated paper that will come back to markets as central banks embark in quantitative tightening (QT) programs.

Finally, our analysis also raises a question for the design of insurance regulation. Are the capital costs embedded in Solvency II strong enough to promote safer investment allocations through the cycle? Our findings suggest that before 2014 the relationship between yields and capital charges would indeed have favored investments in higher-quality assets. From 2014 on, however, the return/capital-cost trade-off was not different across ratings, and so insurers naturally chose the higher-yielding assets.

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