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Market Briefing

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Subject: Market Recap for 2022 and Potential Impacts on Insurer Investments

Introduction

To say that 2022 was an eventful year for investments would be a significant understatement. Interest rates rose across the entire yield curve. Market spreads varied. Equity markets jumped up and down. Oil prices spiked and then settled back down. Commercial real estate values rallied before dropping. This market briefing will focus on changes since year-end 2021 and how those changes very likely impacted U.S. insurance company investments and investment practices. *[The data for insurance company investments was all based on Financial Statement Data submitted to the NAIC and acquired via SNL, which is a unit of S&P Global. Market data was acquired via the Federal Reserve Bank of St. Louis.]*

U.S. Insurer Invested Assets

	Combined		Life		P&C		Health	
	2020	2021	2020	2021	2020	2021	2020	2021
Bonds as percent of ULT	77.42	75.38	80.48	79.42	67.86	64.01	82.30	82.17
Corporate (plus Loans)	44.09	43.26	51.40	51.34	26.52	25.07	33.34	33.93
Governments	14.41	13.98	9.78	9.52	24.66	23.07	21.90	21.99
Structured	18.35	17.58	18.78	18.14	16.16	15.24	25.02	24.00
Mortgages and Real Estate as % of ULT	10.88	10.75	15.02	15.14	1.74	1.71	0.17	0.23
Equities as percent of ULT	8.90	10.43	1.31	1.55	26.89	30.35	13.65	13.24
Schedule BA as percent of ULT	3.32	3.93	3.19	3.88	3.51	3.93	3.88	4.36
Equities as percent of Surplus	33.09	37.65	11.98	13.87	47.15	53.23	13.80	13.65
Schedule BA as percent of Surplus	12.34	14.19	29.13	34.63	6.15	6.89	3.92	4.49

Before diving into the specific market details, a quick review of U.S. insurance company investments is useful. Investment portfolios consist primarily of fixed income investments, with about 75% of unaffiliated long-term assets in bonds and roughly another 11% in mortgage loans. Equities are also significant, though the exposure as a percent of assets is not that material for Life companies. Less transparent in terms of their market risk are those investments reported on Schedule BA. These tend to lean heavily to equity-type risk, but also include some fixed income like instruments.

	Combined		Life		P&C		Health	
	2020Y	2021Y	2020Y	2021Y	2020Y	2021Y	2020Y	2021Y
Bond Portfolio Maturity Score	12.19	12.49	13.95	14.38	7.95	8.02	7.36	7.74
1 or less	10.45%	9.72%	7.75%	6.89%	16.76%	16.67%	19.19%	15.16%
1 to 5	30.48%	30.12%	25.83%	25.29%	41.54%	41.07%	44.43%	45.56%
5 to 10	28.60%	28.18%	28.08%	27.33%	30.18%	30.29%	27.70%	29.69%
10 to 20	14.37%	15.24%	17.29%	18.35%	7.65%	8.17%	4.29%	5.34%
greater than 20	16.10%	16.75%	21.05%	22.15%	3.87%	3.80%	4.40%	4.25%
Greater than 10 year	30.47%	31.99%	38.33%	40.50%	11.52%	11.97%	8.68%	9.59%

A key consideration for bond portfolios is the duration, and therefore interest rate risk, of the holdings. Duration is not reported on the investment schedules, but expected maturity dates are. While different variables impact the actual duration of individual holdings, maturity can be a reasonable indicator of when there are likely to be exposure to longer duration assets. The average maturity score for Life insurers has been increasing in recent years and was at just over 14 years as of year-end 2021. Property & Casualty (“P&C”) insurers and Health insurers maintained considerably shorter portfolios.

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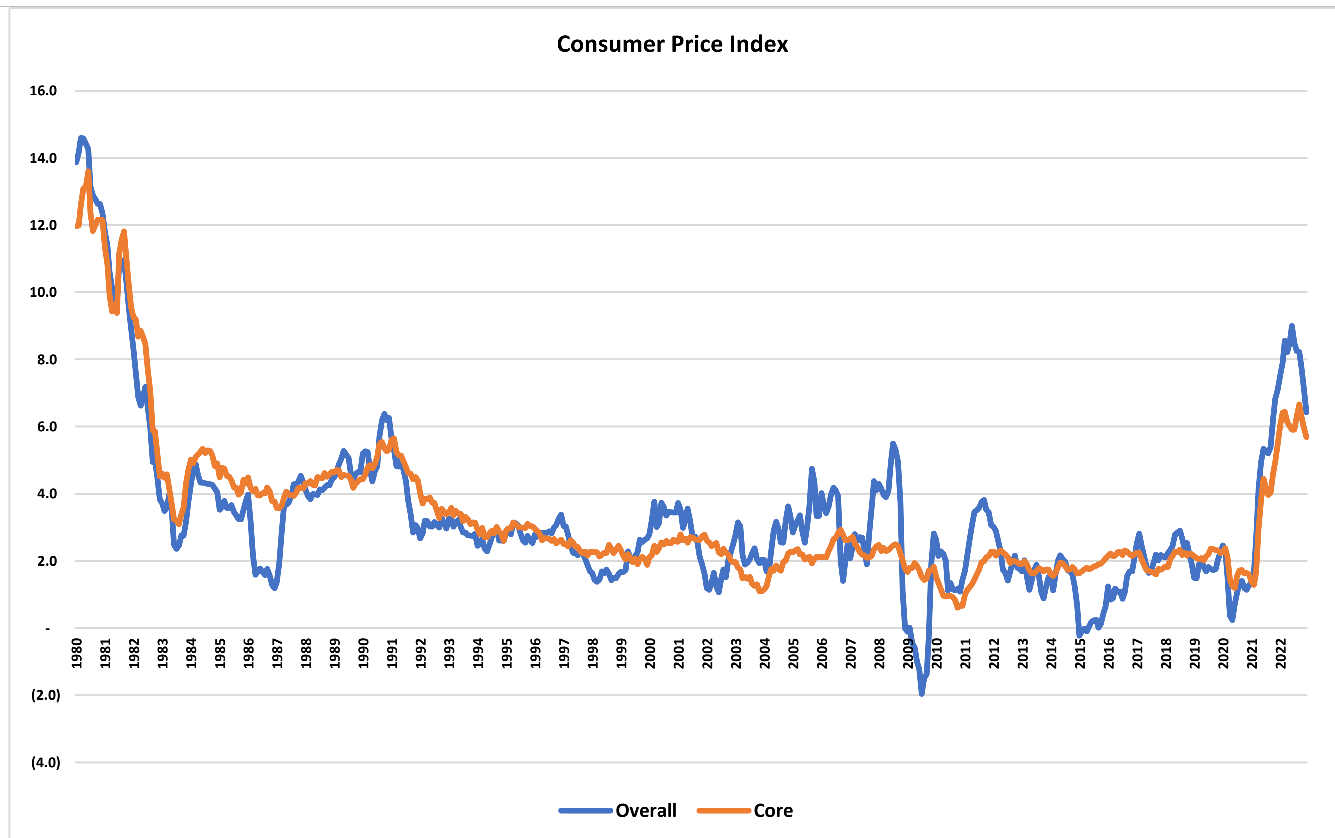
	Combined		Life		P&C		Health	
	2020Y	2021Y	2020Y	2021Y	2020Y	2021Y	2020Y	2021Y
Bond Portfolio Credit Sore	1.46	1.46	1.52	1.52	1.31	1.32	1.34	1.38
NAIC 1	63.01%	62.58%	57.33%	56.79%	77.25%	76.88%	74.43%	72.31%
NAIC 2	31.09%	31.64%	36.49%	37.33%	17.60%	17.77%	19.69%	20.66%
NAIC 3	3.65%	3.53%	4.02%	3.78%	2.64%	2.73%	3.46%	4.21%
NAIC 4	1.68%	1.70%	1.57%	1.52%	1.91%	2.08%	2.09%	2.51%
NAIC 5	0.49%	0.41%	0.51%	0.42%	0.47%	0.43%	0.24%	0.20%
NAIC 6	0.09%	0.14%	0.07%	0.15%	0.13%	0.12%	0.09%	0.11%
Below Investment Grade	5.90%	5.79%	6.18%	5.88%	5.14%	5.35%	5.88%	7.03%

Based on the distribution of bond holdings across the broad categories of NAIC Designations, credit quality in the bond portfolios has remained relatively stable. While holdings of below investment grade bonds are significant and have increased as percent of total for P&C and Health insurers, the U.S. insurance industry as a whole remains generally underweighted to the more volatile category. Holdings of bonds in the triple-B category have also grown over time as that part of the market has grown. Of potential interest, and perhaps deserving of special focus, would be those with a BBB-minus rating since those would be most at risk of downgrade to below investment grade.

Inflation

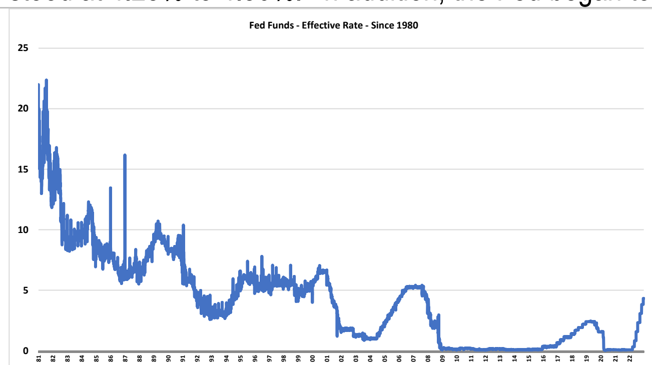
A main driver of economic volatility in 2022 was undoubtedly inflation, as indicated by year over year percentage changes in the Consumer Price Index ("CPI"). There are two metrics – the Overall CPI and the Core CPI. The Core CPI excludes food and energy as those two contributors to CPI can be very volatile from month to month. Oil prices jumped from $75 per barrel to a high of $130 per barrel in March, before settling back down to $80 per barrel at year-end 2022. Both of the CPI metrics started increasing at the end of 2021, largely driven by supply chain issues that are a continuing holdover from the COVID-19 Pandemic in 2020. This was exacerbated by various factors – especially a spike in oil prices – that were related to the Russian invasion of Ukraine. Overall CPI peaked in June of 2022 at 9.1%. Core CPI peaked a few months later, in September, at 6.6%. Inflation had not been at these levels since the early 1980's. Since then, both of the metrics have moderated. Overall CPI came down to 6.5% and Core CPI to 5.7% in December.

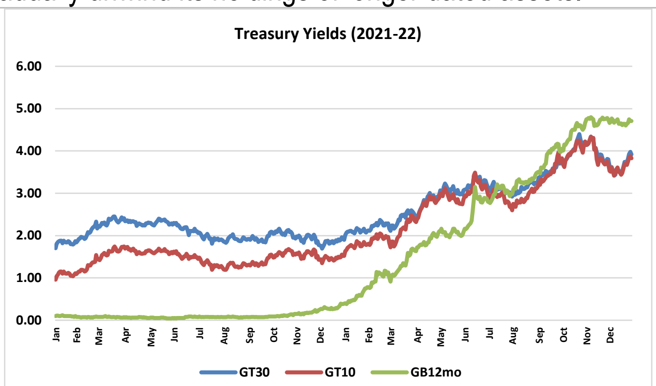


With inflation being an area of focus for state insurance regulators, RRC has conducted several webinars on the topic focusing on the impact on U.S. insurance companies. [RRC Webinar Series – Inflation and the Impact on Insurance Companies (June 29, 2022) (link: Inflation and the Impact on Insurance Companies - Risk & Regulatory Consulting (riskreg.com))]

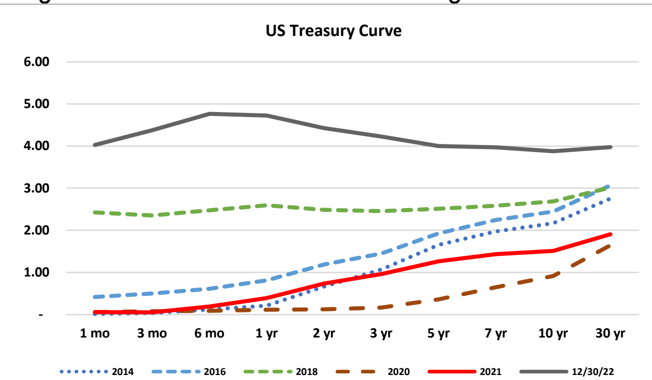
Interest Rates

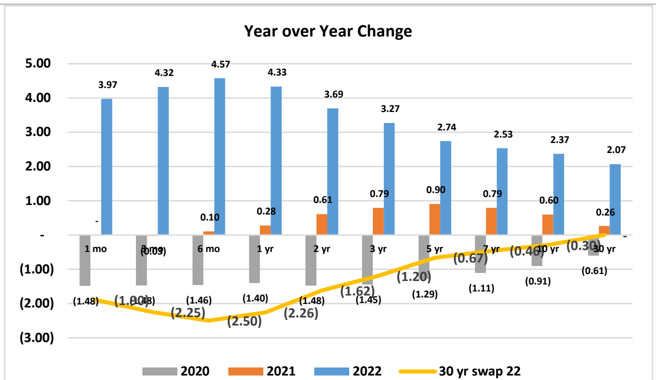
While inflation may have been a driver of economic volatility in 2022, the impact on investments came from the policies enacted by the Federal Reserve Board (the "Fed"). Fed policies had generally kept interest rates relatively low since 2008. With the COVID-19 Pandemic in 2020, the Fed took drastic action to revive the economy. This included lowering the target range for Fed Funds to zero and increasing the Fed balance sheet through asset purchases to almost $10 trillion. While the Fed did not take immediate action at the end of 2021, it began to aggressively increase the Fed Funds target range, increasing short-term interest rates at every meeting of the Federal Open Market Committee meeting in 2022. With the last increase in December 2022, the Fed Funds target stood at 4.25% to 4.50%. In addition, the Fed began to gradually unwind its holdings of longer dated assets.





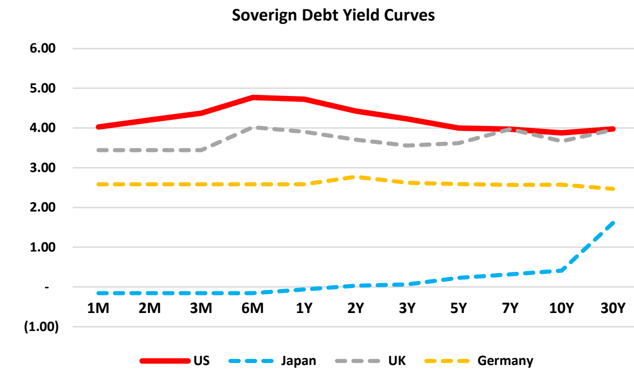
As a result, the effective Fed Funds rates neared 5.0%, a level not seen since 2007. Yields on short-term Treasuries also rose by over 400 basis points. Yields on longer dated Treasuries also rose, but not to the same degree. By the end of the year, the 10-year Treasury yield was at 3.88% (up 237 basis points) and the 30-year Treasury yield was at 3.98% (up 207 basis points). This is compared with the 1-year Treasury yield of 4.72% (up 433 basis points). The lower yield on longer dated Treasuries is largely attributed to market concerns that the Fed would overshoot its goals and drive the U.S. economy into a recession, which would then precipitate a need to lower interest rates in the future. The net result of short-term interest rates that are higher than long-term rates is an inverted yield curve. At various times, short-term rates were more than 100 basis points higher than long-term rates and closed the year with the highest point of 4.77% on the 6-month Treasury versus a low point of 3.88% on the 10-year Treasury. This degree of inversion is also the most significant since the 1980's.





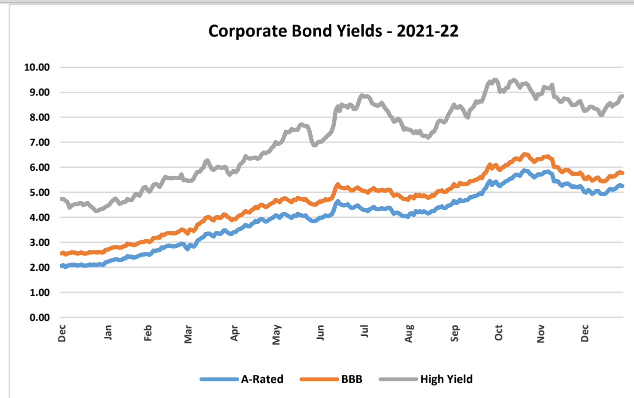
This rapid and dramatic curve inversion of 250 basis points (between the 1-year Treasury and the 30-year Treasury yields) has the potential for creating significant anomalies in the fair market value of different instruments. One area for special focus is interest rate related derivatives used in hedging. Different interest rate hedging strategies may be impacted in different ways as the value of longer dated swaps will differ from shorter dated ones, and derivatives

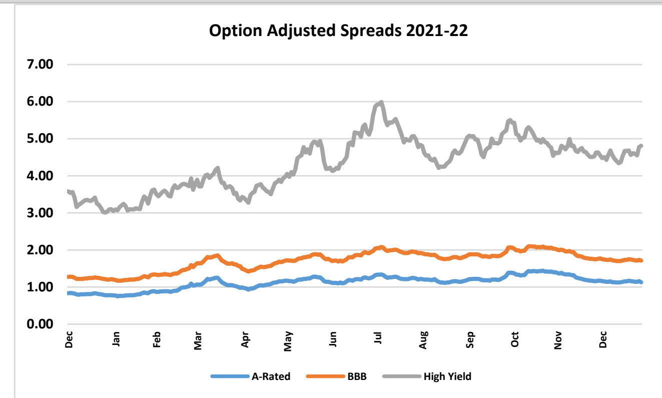
that use shorter duration risk to offset longer duration risk may be affected in unusual ways. Dramatic curve inversions such as this may impact determinations of hedge effectiveness for Statutory Accounting purposes.



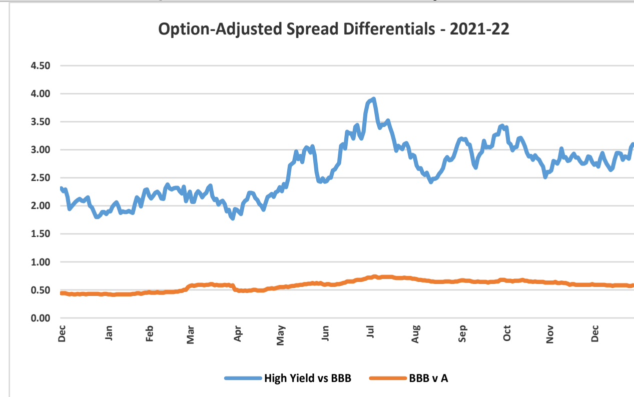
U.S. insurer holdings of bonds issued by non-U.S. entities are not that significant, but investments in those will be impacted differently and to different degrees. Different interest rate markets have also impacted foreign currency exchange rates. Any non-U.S. dollar investment that has not been hedged will see material differences in valuations.

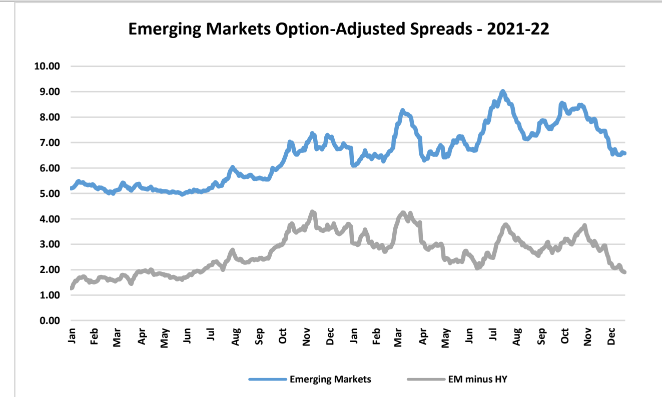
Investment Yields





The rapid and significant rise in interest rates also translated into higher investment yields in the bond market. Broadly speaking, the change year over year differed depending on the credit quality. Corporate bond yields for single-A rated issuers rose from 2.20% to 5.25%, while triple-B rated bonds rose from 2.70% to 5.75%. More significant was the broad category of high yield bonds, or those rated below investment grade. Closing the year at 8.85% versus 4.35% at year-end 2021, this category experienced additional volatility during the course of the year as market sentiment continued to evolve. While most of the increase in corporate bond yields was driven by rising Treasury yields, another component was changes in option-adjusted spreads. Investment grade corporate bonds saw a gradual increase in option-adjusted spreads during the year as concerns about a weakening economy in the future did impact concerns over downgrades. Much more significant was the volatility in option-adjusted spreads for high yield bonds which began the year at 310 basis points and peaked at 600 basis points in July, before settling at 480 basis points at the end of the year.





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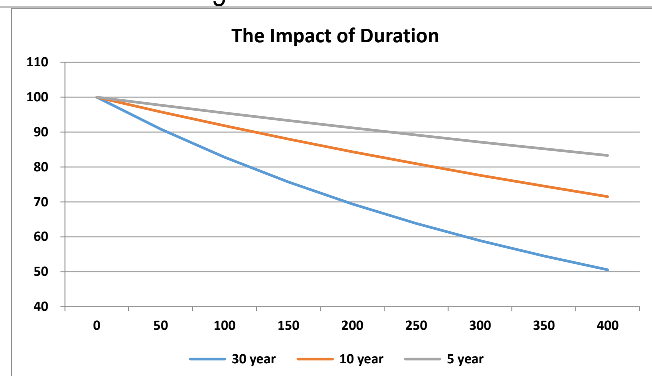
An additional indication of market volatility is the differential in option-adjusted spreads between different credit quality bonds. The differential between single-A rated corporate bonds and triple-B rated corporate bonds experienced a modest increase over the year. On the other hand, the differential between high yield corporate bonds and triple-B rated corporate bonds varied significantly, beginning the year at 190 basis points, increasing to 390 basis points in July, before settling at the end of the year at 310 basis points. Similar volatility was seen in the differential in option-adjusted spreads between emerging markets bonds and high yield corporate bonds in the U.S. This reached levels of 400 basis points before finishing at 160 basis points, which was actually lower than where the differential began in 2022.



CPR	Average Life: Short	Average Life: Intermediate	Average Life: Long
0.0%	6.60	15.96	25.46
2.5%	3.38	8.76	16.11
5.0%	2.38	6.17	12.18
7.5%	1.90	4.78	9.92
10.0%	1.61	3.95	8.39
20.0%	1.13	2.40	5.25
25.0%	0.93	2.08	4.45

A simple illustration of interest rate related risk is what happens to different bond maturities (30-year, 10-year and 5-year) with different levels of interest rate changes, in 50 basis point increments up to 400 basis points. At the extreme end, a 30-year bond would lose half of its fair market value with a 400 basis points increase, while the 10-year and 5-year bonds would lose 30% and 15%, respectively. Further complicating this calculation is the impact of rising interest rates on Residential Mortgage-Backed Securities (RMBS), both Agency-Backed and Non-Agency Securities. RMBS investments are typically modeled at time of purchase with a certain Constant Prepayment Rate (CPR). In the illustration above, a 10% CPR would mean an expected average life of 1.61, 3.95 and 8.39 years, respectively, for the different tranches. As interest rates rise and actual prepayment experience declines, perhaps to zero, those bonds extend to 6.60, 15.96 and 25.46 years, respectively. Cash flows decline dramatically, and valuation is on the longer end of the interest rate curve, further impacting liquidity issues.

Duration Category	Weighted Avg Duration	% of FV	% of CV	FV/CV	Revised FV/CV
< 2 years	0.90	10%	11%	102%	99%
2 - 5 years	3.66	19%	20%	104%	95%
5 - 10 years	7.07	26%	27%	107%	92%
10-20 years	14.45	38%	36%	115%	85%
20+ years	24.40	7%	7%	111%	67%
Grand Total	9.55	100%	100%	109%	89%

The table to the left is an illustration of how the increase in interest rates and investment yields may impact a typical Life insurance company bond portfolio. With a distribution across different duration buckets and fair value estimates as of year-end 2021 in comparison with carrying value, the portfolio had a fair market value equal to roughly 109% of carrying value. With the change by year-end 2022, that relationship would have declined to 89% with the most significant change in the longest duration category, declining from 111% to 67%.

Under general considerations, a decline in fair market value of the bond portfolio does not have a direct impact on an insurance company as long as it can continue to hold those bonds until they mature. Nonetheless, this shift does impact liquidity considerations and any liquidity stress testing that the insurer does. A more direct and immediate impact is on any bonds that are pledged as collateral where the collateral requirements rely on fair market values. Two significant areas are those assets pledged to Federal Home Loan Banks and to derivatives counterparties. A material decline in fair market value of those assets could lead to a need to add additional assets, further impacting the insurer's liquidity profile.

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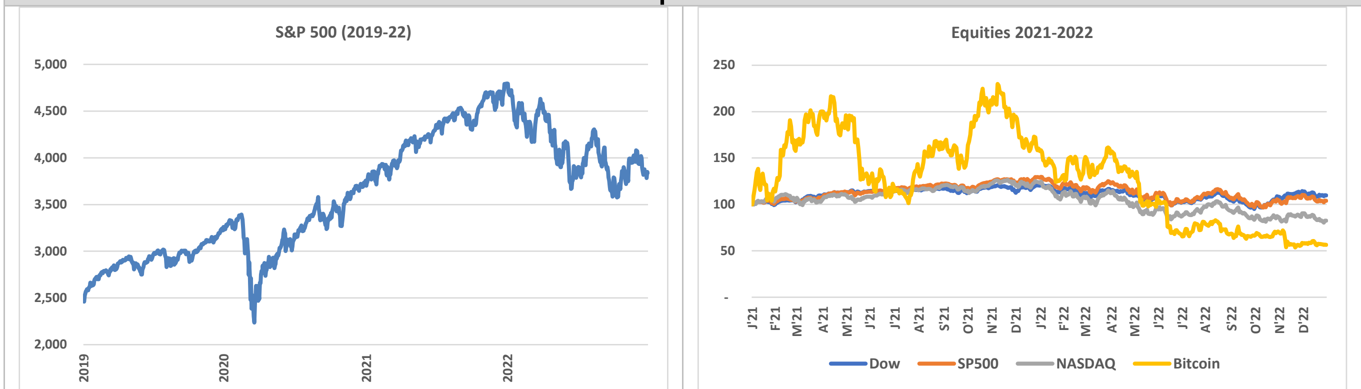
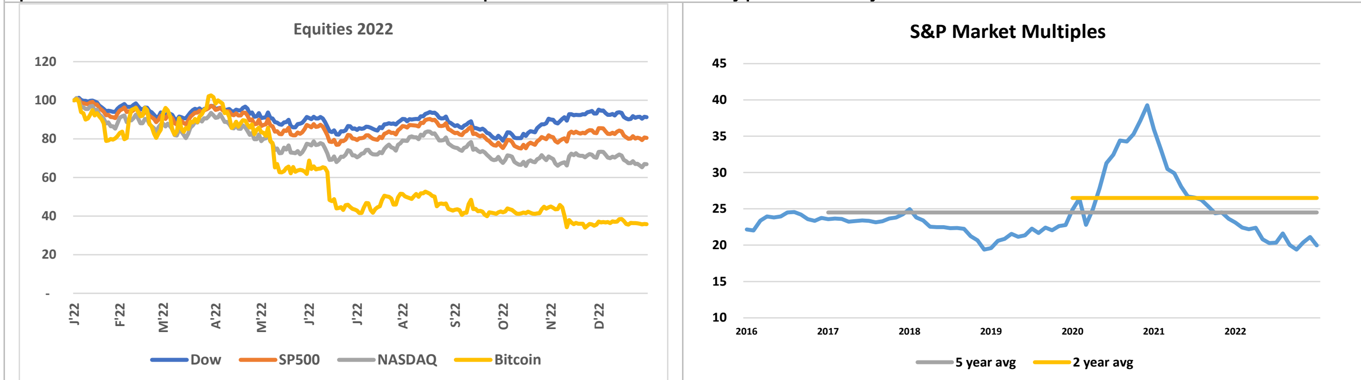
Equities

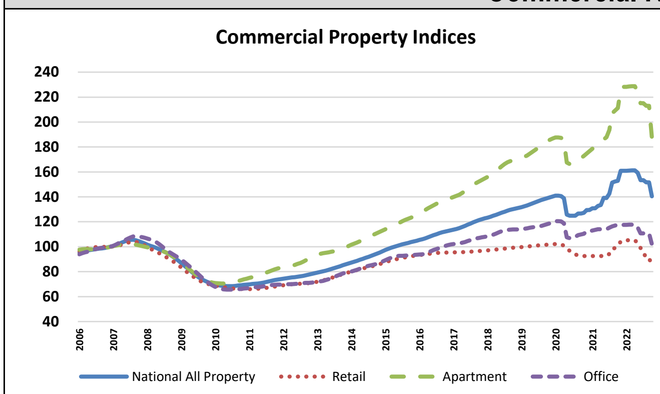


While equity holdings are less significant as an asset class for U.S. insurance companies, fair market values are more volatile. Carrying values are also at fair market value, which therefore has a more immediate impact on an insurer's capital and surplus. Nothwithstanding the substantial drop in equity markets in the spring of 2020, valuations had generally been strong through the end of 2021. In 2022, however, the S&P 500 declined 19.4% and at one point was down 25% from year-end 2021. In the above illustration to the right, equity markets were indexed at 100 at the beginning of 2021 for the Dow Industrials, S&P 500 and NASDAQ. The Dow Industrials and S&P 500 largely mirrored each other and ended the two year period up 9.7% and 3.8%, respectively. The NASDAQ, which is more technology heavy and also has smaller capitalized companies, was down 17.6% over the same two year period. For additional color, the market performance of the cryptocurrency, Bitcoin, was added.



The graph above left focuses on just the year-over-year change from 2021; the three market indices were down 8.8%, 19.4% and 33.1%, respectively. One important factor in assessing equity markets is the price-earnings multiples. This is always a bit of an inexact calculation as earnings are reported and as earnings expectations change. However, the market multiple for the S&P 500 ended the year at roughly 20 times, which is well below the running two and five year averages.

Commercial Real Estate Values



As U.S. insurance company investments in real estate related assets have increased over time, albeit mostly in the form of mortgage loans, commercial real estate valuations have become a more material consideration. While national index values declined in the first half of 2020, they recovered quickly and continued into 2022. That latter trend shifted significantly in the second half of the year. Higher interest rates impacted valuations, but there were also increasing concerns about prospects going forward.

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The All Property Type National Index declined more than 13% from the peak in the spring.The retail sector has continued to struggle. As long-term leases begin to expire on tenant space in office buildings, this is expected to be materially impacted by companies that have grown more comfortable with work-from-home programs. This is more likely to be the case for properties in central busines districts. The national index value for apartment properties did extremely well over several years, but that sector also dropped significantly in the last few months of 2022.

Closing Thoughts and a Few More Questions to Consider

Economic uncertainty, high inflation, and a sharp rise in interest rates came together in 2022 to negatively impact virtually every asset class and investment practice. This led to both realized and unrealized losses. There may also be yet to be recognized losses as insurers carry many assets at amortized cost.

With higher interest rates, insurers will be able to invest in new bonds and mortgage loans with higher yields. However, existing holdings of bonds and mortgages loans will see their fair market values decline. Those declines will be significant for longer dated investments. Some investments may see those value estimates also decline even more with the increased risk of downgrades and/or defaults. In addition, RMBS valuations will be under further pressure because of lower prepayment rates.

Though we typically focus on the impact on fixed income instruments when interest rates fluctuate, this also affects the valuations of other invested assets, including equities and private equity funds. Subject to other variables, higher interest rates also negatively impact the valuations of equities and equity-related investments. One of those other variables is the longer term prospects for earnings for companies that have been invested in, which will also be negatively impacted if they carry a material amount of debt.

The actual impact on some other asset types will be more difficult to discern. Two asset types that may be of special interest are collateral loans and bond mutual funds, including exchange traded funds. Collateral loans are typically considered fixed income instruments and so would be subject to those same pressures. However, an additional consideration is what effect higher interest rates may have on the assets that are pledged as collateral. Statutory Accounting and individual state investment regulations limit admissability of collateral loans depending on the underlying value of those assets. Bond mutual funds obviously have bonds as the dominant holdings within their portfolios and would therefore be subject the pressures already described. But an additional layer of complexity is the management of those portfolio, whether active or passive, and how that may impact the net asset values of the fund.

When markets are more volatile, it is not uncommon for insurance companies to more actively manage their portfolios with the goal of addressing different market dynamics. Insurance companies do not typically try to time the market. As insurance companies increase their trading activity, beyond what may have been the norm, there should be adequate controls in place to monitor and manage increased level of trading to avoid unexpected consequences.

One potentially high priority issue noted is the impact of lower fair market values on assets pledged as collateral. Typically, assets pledged as collateral are subject to mark-to-market requirements. The main areas to focus on are likely those assets pledged to derivatives counterparties and to Federal Home Loan Banks.

After what has been an extended period of low interest rates, insurance companies may be reconsidering their strategic asset allocations. Will those insurers make fundamental changes to their investment policies and guidelines, or will their investment managers engage in other activitites? Are those changes appropriate for an insurance company?

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With the extended period of low interest rates, insurers also generally enjoyed an investment porfolio that had a fair market value in excess of carrying value. That dynamic very likely changed in 2022. How has that impacted liquidity planning and the liquidity stress testing that companies should be doing?

Finally, what can we expect in 2023? If companies (over)-adjusted in 2022, will there be a price to pay in 2023?

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