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Do Life Insurers' Investment Decisions Contribute to Systemic Risk?

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◆ Introduction

Some economists agree insurance holding companies can contribute to systemic risk through their nontraditional insurance activities, such as selling credit protection via credit default swaps.[2] However, there continues to be debate as to whether traditional insurance activities (writing insurance against property, liability, mortality and morbidity exposures) can create systemic risk. Recently, Schwarcz and Schwarcz (2014) argued traditional life insurance activities do create systemic risk. Their conclusion is based on life insurers being large investors in financial securities (especially bonds) and that life insurers' buying and selling "decisions are, in many cases, deeply correlated with one another."[3] A priori, one may expect correlation in trading activities across life insurers given they face similar liability structures and common accounting rules and capital regulations. If, indeed, security buying and selling behavior is correlated across life insurers, then the life industry could have a destabilizing impact on capital markets and contribute to systemic risk. Schwarcz and Schwarcz (2014) called for federal regulation to mitigate the systemic risk.

On the other side of the spectrum, Vaughan (2012) argued the life insurance industry provides a stabilizing force in financial markets during times of crisis. This would occur, for example, if during liquidity shocks that induce fire sales from other institutions, insurers maintain their positions and could even potentially step in on the buy side and help stabilize markets.[4] These polar opposite views on the impact of life insurer investment decisions lead to two questions: 1) What is the empirical evidence on life insurers' investment decisions? and 2) Does this evidence increase or decrease concerns about systemic risk? This article's purpose is to summarize recent academic literature related to these questions.

This article will focus on two institutional features of the life insurance industry that could influence insurer investment decisions. These institutional features are the risk-based capital (RBC) rules and the statutory accounting rules. Particular emphasis will be placed on whether these rules affect investment decisions in ways that would raise concerns about the life insurance industry contributing to systemic risk. More specifically, this article will examine whether RBC rules and accounting rules provide an incentive for life insurers to increase asset risk, which, in turn, can increase in the likelihood of an individual insurer becoming insolvent. Concerns about the insolvency of one insurer can conceivably reduce confidence in the ability of insurers in general to make good on their promises, which in turn could cause policyholder runs on insurers and insurers to liquidate assets quickly and at fire sale prices.[5]

This article will also focus on whether the impact of the RBC and accounting rules provide an incentive for insurers to trade in a pro-cyclical manner, which is defined as selling securities (buying) when their prices are declining (increasing.)[6] If insurers trade in a pro-cyclical manner, then they can exacerbate security price declines (increases) to the point prices do not reflect fundamental values. While it is difficult to identify when prices are out of line with underlying fundamentals, one indication is if prices decline while a set of institutions (e.g., insurers) are selling and then subsequently revert back to the original level.

The review of the evidence is organized in two sections. First, evidence relating to life insurers' security purchases is discussed, and then evidence on life insurers' security selling behavior is presented. A short summary concludes the article.

◆ RBC Requirements and Insurers' Decisions to Purchase Securities

One objective of RBC is to impose additional capital requirements on insurers when they take additional risk on the asset side of the balance sheet and thereby discourage, at the margin, investments in risky assets. Because it would be nearly impossible to have RBC requirements that reflect perfectly all of the variation in risk of individual securities, any RBC system will have variation in risk among the securities within a given RBC category. Nevertheless, when this

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[1] Niehaus appreciates the helpful comments from Chia-Chun Chang, Jean Helwege, Todd Sells and Edward Toy.

[2] For example, see Acharya et al. (2009), Harrington (2009), Cummins and Weiss (2014), and AIAS (2011).

[3] Even though life insurers are significant investors in securities (especially bonds), most of the securities are purchased and held for long periods of time, i.e., life insurers' trading activity is much lower than their holdings.

[4] See Shliefer and Vishny (2010) and Duffie (2010) for overviews of the theory and evidence on fire sales and price disruptions in financial markets .

[5] There is debate regarding the extent to which life insurers are subject to policyholder runs. Certainly, state guarantee funds mitigate the risk of policyholder runs, as does the long-term payout structure of annuity contracts. Nevertheless, there is evidence of policyholder runs in the early 1990s. See e.g., Fenn and Cole (1994).

[6] See Bank of England (2014).

occurs, insurers have an opportunity to take additional risk without being required to hold additional capital.

Reaching for Yield

There are two papers that provide evidence insurers sometimes have an incentive to "reach for yield," i.e., purchase securities that have higher yields within a rating category. Merrill, et al. (2014) provided evidence that the largest life insurers shifted assets from AAA-rated corporate bonds to AAA-rated asset-backed securities (ABS) from 2003–2007 because the latter securities had higher yields.[7] This behavior was concentrated among insurers that had: 1) lower reported capital; and 2) a higher proportion of liabilities from deferred annuities with interest rate guarantees relative to total liabilities on their books. As a result of interest rate declines in the early 2000s, these insurers were more likely to have suffered economic losses. Although these losses did not necessarily affect reported capital at the time, the losses would gradually lower reported capital over time and would move the insurers closer to regulatory capital constraints. The interpretation is these insurers had incentives to take greater investment risk in an effort to offset the economic losses they suffered.

Using data from 2004–2007, Becker and Ivashina (2013) showed life insurers, especially those with relatively low capital, were more likely to purchase corporate bonds that had higher promised yields within their NAIC rating category relative to mutual funds and pension funds. Given mutual funds and pension funds are not subject to RBC requirements, they attributed the difference between the institution types, at least in part, as being due to RBC requirements of life insurers. They explained the behavior is consistent with insurers trying to boost reported earnings (which are based on promised yields) and, thus, capital, without increasing RBC requirements. Interestingly, they did not find this behavior during the 2007–2008 financial crisis, which they suggested might be due to: 1) the greater volatility in ratings; 2) the larger number of high-yield securities available; and 3) reduced incentives for risk taking during the financial crisis.

Whether "reaching for yield" is a concern for regulators depends in part on whether the behavior is associated with higher risk and/or higher returns. If, by reaching for yield, insurers are taking on more risk, but also generating additional returns that are, on average, greater than comparable securities with similar risk, then reaching for yield would reflect better bond security selection ability by life insurers. However, Becker and Ivashina (2013) showed the bonds that insurers select when they reach for yield have greater return volatility and higher sensitivities to market risk returns, but no evidence of higher average returns compared to other comparable bonds.

Changes in RBC and Security Purchase Decisions

There is also evidence when RBC requirements for a particular type of security are changed, insurers change their investment decisions. Becker and Opp (2014) and Hanley and Nikolova (2014) examined insurers' investment decisions following the NAIC change in the RBC rules for non-agency residential mortgage-backed securities (RMBS) in 2009 and for non-agency commercial mortgage-backed securities (CMBS) in 2010.[8]

RBC requirements based on ratings can be criticized for being too harsh when insurers report securities at market value. To illustrate, suppose an insurer purchases an AAA-rated security at par, and then this security is subsequently downgraded to non-investment-grade, which causes its price to drop significantly. Further, suppose the insurer reports the value of the security at its new price. Then, the insurer has essentially recognized the loss that is now expected on the security as reduction in its capital.[9]

For sure, there is still uncertainty about the future value of the security, and, therefore, it is reasonable to expect the insurer to hold some capital for the possibility the security price will go down further in the future. In contrast to this scenario, suppose the insurer continues to report the security at par, i.e., the insurer does not recognize the expected loss on the security. In this case, it is reasonable to expect the insurer to be required to report a larger amount of capital than in the first scenario in which the insurer recognized the expected loss. The change in RBC rules for mortgage-backed securities (MBS) addressed this issue.[10]

Becker and Opp (2014) estimated the rule changes significantly lowered reported capital requirements for insurers relative to what they would have been under the old rules. In addition, they examined whether the rule changes influenced insurers' decisions to buy MBS. Hanley and Nikolova (2014) examined whether the rule changes influenced in-

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[7] Between 2002–2007, the largest insurers increased the percentage of their fixed income holdings held in ABS securities from 11.9% to 17.4 %. The authors document that the ABS securities had yields of about 40 basis points higher than AAA-rated corporate bonds.

[8] The rule changes occurred after many MBS were downgraded, which, in the absence of a change in the RBC rules for these securities, would have caused an increase in the capital requirements for the insurers that held these securities.

[9] For simplicity, this discussion assumes risk-neutral pricing.

[10] Becker and Opp (2012) argue that the new rules reduce capital requirements too much.

surers' decisions to continue to hold MBS that had been downgraded.

Becker and Opp (2014) found that following the rule changes, insurers' purchases of newly issued CMBS shifted to CMBS with lower ratings. Specifically, 92.5% of CMBS purchases were investment-grade in the two years prior to the change, whereas only 47% of CMBS purchases were investment-grade in the two years after the change. In addition, Hanley and Nikolova (2014) find insurers had a lower probability of selling downgraded MBS after the rule change. The increased purchases and the decreased selling of MBS during a period when the prices of MBS were declining is an example of insurers trading counter-cyclically, which could have helped stabilize the market for MBS.

◆ INSURER DECISIONS TO SELL SECURITIES

Sales of Corporate Bonds Following Downgrades

Life insurers hold a substantial share of their assets in corporate bonds. As a consequence, researchers have examined the factors affecting the selling decisions of corporate bonds by insurers and the impact of these decisions on bond markets. Several papers have examined insurers' incentives to sell corporate bonds that have been downgraded from investment-grade to speculative-grade (fallen angels).

Because these bonds were downgraded to non-investment-grade, an insurer's assets would reflect the market value of the bonds regardless of whether the insurer sold the bonds or held the bonds. However, if an insurer continued to hold a bond that has been downgraded, then the insurer's RBC ratio would decline, all else equal. Consistent with the downgrade imposing regulatory costs on insurers, Ambrose, Cai and Helwege (2008) presented evidence insurers are more likely to sell downgraded bonds than other bonds during the 1995–2006 period. However, they noted the trading activity of fallen angels by insurance companies is relatively low compared to their overall holdings of these bonds.

The negative effect on RBC ratios is likely to be a greater concern for insurers that already have relatively low RBC ratios. Consistent with this reasoning, Ellul et al., (2011) found insurers with relatively low capital ratios were more likely to sell corporate bonds that were downgraded to non-investment-grade during the 2001–2005 period than insurers with higher capital ratios.

More importantly, Ellul et al., (2011) found the downgraded bonds insurers sold exhibited temporary price declines, i.e., prices declined around the time of the downgrade, but the prices reverted back to their original levels over the subsequent nine months. The price pattern is consistent with the hypothesis that insurers' trading activity in the downgraded bonds generated price pressure effects due to limited demand for these securities by other institutions, including other insurers. Another explanation for the price drop observed by Ellul et al., (2011) for downgraded bonds is the downgrade provided information to the market of a lower fundamental value for the bond.

In support of the price pressure explanation, Ellul et al., (2011) provided evidence the price pressure effects are greater during time periods when capital from other insurers and other high-yield bond investors (mutual funds and hedge funds) is relatively scarce. They also provided cross-sectional evidence the price effects are greater for bonds disproportionately held by insurers with low RBC ratios. However, Ambrose, Cai and Helwege (2011) also examined the price effects on bonds downgraded and sold by insurers for regulatory reasons over the 1995–2008 time period and reach a different conclusion.

The key aspect of Ambrose et al., (2011) was they examined a subset of bonds for which the stock of the bond issuer does not exhibit a significant price decline at the time of the bond downgrade. They restricted their sample to these securities because the lack of a stock price drop at the time of the downgrade indicates that the downgrade provided little information to the market. Consequently, the price pattern observed for these bonds cannot be attributed to information provided by the downgrade. For these bonds, Ambrose, et al. (2011) did not find price drops followed by a reversal, which suggests the bond price drop followed by a reversal pattern observed by Ellul et al. (2011) is due to new information about the fundamental value of the bond, not due to insurers' trading causing price pressure effects.[11]

It is also useful to note that Ellul et al., (2011) observed evidence of price reversals is for a relatively small set of bonds. To illustrate, Ellul et al., (2011) started with almost 120,000 different bonds held by insurers from 2001–2005, but once they eliminated observations due to data errors, no rating information available and no insurance company data available, they had a sample 14,074 bonds. Of those, 1,179 bonds experienced a downgrade from investment-grade to speculative-grade. For these downgraded bonds, the issuer experienced an abnormal stock return insignificantly different from zero at the time of the downgrade in 584 cases. Of

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[11] Ellul et al. (2011) also performed a similar analysis and found similar results.

these cases, only 237 bonds had data for the price pressure tests. When those bonds were divided into two groups based on whether the insurers holding the bonds were capital constrained or not, there was no evidence of price pressure for the unconstrained group, but there was evidence of price pressure for the constrained group.

Sales of Asset-Backed Securities Following Downgrades

During the financial crisis, several asset-backed securities (ABS) were downgraded, which, as we have already discussed, increased the capital insurers needed to hold if insurers continued to hold the downgraded ABS. Consequently, one might expect insurers to sell these securities and put the proceeds in investment-grade securities. There is, however, an additional consideration arising because of the accounting for these securities. Whereas P/C insurers are required to report securities with NAIC designations 3, 4, 5 or 6 at lower of amortized cost and fair value, life insurers are only required to report securities with an NAIC designation of 6 at lower of amortized cost and fair value.

Consequently, following a downgrade that pushes an ABS into a lower NAIC designation (other than category 6), life insurers face a tradeoff: If they hold the ABS, then RBC requirements increase, but the reported value of their assets and, thus, capital remains constant. If they sell the ABS at a loss and reinvest the proceeds in AAA-rated securities, then RBC requirements decline, but the life insurer will report lower assets and, therefore, lower capital.

Ellul et al., (2014) examined the trading of life insurers compared to P/C insurers during the financial crisis and showed that life insurers with relatively low capital ratios tended to hold the downgraded ABS compared to P/C insurers, which tended to sell these securities. In addition, life insurers were more likely to sell corporate bonds with capital gains, which bolstered their capital ratios because these bonds were previously reported at historical cost or amortized value.

Ellul et al., (2014) evidence indicated the interaction of RBC rules and accounting rules influence insurer asset choices. For life insurers, their evidence suggests countercyclical trading, i.e., holding securities that are decreasing in value and selling securities that have not declined in value.[12] P/C insurers exhibit the opposite pattern. Interestingly, Ellul et al. (2014) also provided evidence the corporate bonds with capital gains sold by life insurers underperformed relative to comparable bonds, which is consistent with life insurers' trading activities impacting prices.[13]

Merrill, Nadauld, Stulz, and Sherlund (2014) also provided evidence RBC rules and accounting rules influence investment decisions of insurers. They examined the prices at which insurers transacted in RMBS that were downgraded sufficiently to cross an NAIC rating category between 2007–2009. They compared the transactions of insurers that experienced operating losses in the prior year and were subject to fair value statutory accounting (call this the treatment group) to the transactions of insurers that did not experience operating losses in the prior year and/or were not subject to fair value accounting (call this the control group.)

Their evidence indicates the sales of downgraded RMBS by the treatment group were at lower prices on average than the control group (controlling for other factors), which is consistent with insurers that experienced operating losses and subject to fair value accounting having an incentive to sell downgraded RMBS at fire sale prices. Moreover, they showed the RMBS sold at lower prices experienced the largest price reversals following the crisis, after controlling for fundamentals.

◆ CONCLUSION

This article has focused on how RBC rules and accounting rules influence life insurers' investment decisions in a way that could contribute to concerns about systemic risk. The evidence clearly indicates life insurers with relatively low statutory capital respond to incentives created by RBC rules. For example, these insurers sell securities that have been downgraded and purchase securities with high yields within their rating category. Statutory accounting rules also influence investment decisions, as insurers sometimes have held securities that have been downgraded to avoid reporting lower statutory capital and instead sell securities that have increased in value.

Regarding whether life insurer's investment decisions contribute to systemic risk, the evidence is mixed. In some cases, the incentives created by RBC rules and accounting rules lead some insurers (typically those with relatively low capital ratios) to trade pro-cyclically and in other cases countercyclically. In some cases, these rules lead insurers to increase asset risk and in other cases decrease asset risk. Finally, while there is evidence insurers' trading decisions in-

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[12] The asset valuation reserve and interest maintenance reserve also promote counter-cyclical trading.

[13] Note, however, that life insurers were selling securities that experienced holding period capital gains, and, therefore, their actions were unlikely to be contributing to a cascade of selling securities whose prices were falling.

fluence security prices, this evidence is limited to the trading of recently downgraded securities by insurers with relatively low capital.

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