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On the Role of the Liquidity Premium  
in the Regulation of Insurers

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for the  
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Conceptual and Measurement Issues,"  
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# On the role of the liquidity premium in the regulation of insurers

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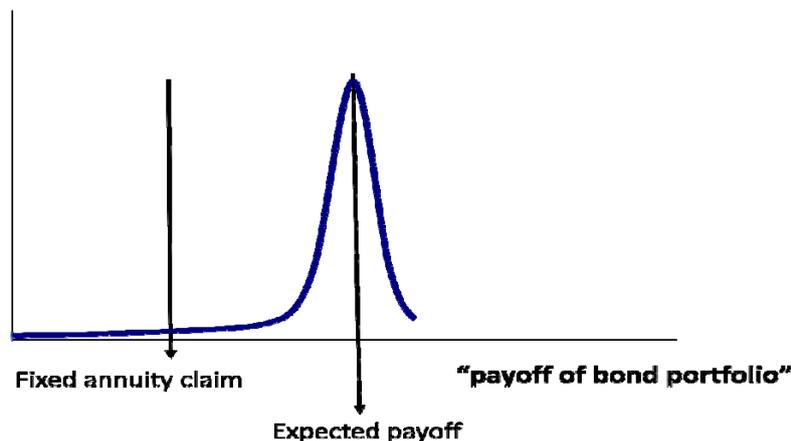
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The insurance industry and the Committee of European Insurance and Occupational Pension Supervisors (CEIOPS) propose to add a liquidity premium to the risk-free rate when discounting liabilities in times of financial turmoil. The objective is to counterbalance adverse effects on regulatory capital due to a decrease in asset values caused by illiquidity in a crisis. As I argue in this note, although the motive might be sensible, the proposal to add a liquidity premium when discounting liabilities is not the right approach to tackle the problem.

## Setting

Insurers invest insurance premiums and risk capital in assets to cover policyholders’ claims. Regulation and prudence requires insurers to assure that they can repay the claims at least with probability  $q$ .

Assume that the insurer sold a fixed annuity policy and holds illiquid corporate bonds with the *same* maturity as the fixed annuity claim. The corporate bonds may default, but the level of investment is chosen so that the insurer is solvent with probability  $q$ .



Now, assume that there is a liquidity shock. Because of the liquidity shock the value of the insurer’s assets decreases. However, to separate the issue of changes in the liquidity premium from changes in credit risk, I assume that the bonds’ default risk does not change. Of course, in practice, this assumption is not satisfied, and it will be difficult to disentangle the effects of changes in liquidity, risk premiums, and credit risk on asset values. But this problem is well known. The focus of this note is how to deal with a liquidity shock (assuming it can be identified); this question in itself is interesting and challenging.

The case for a liquidity premium (based on CEIOPS Task Force Report on the Liquidity Premium):

- a) Because the maturities of the bonds and the claims of the policyholders are matched, the insurer can hold the assets until maturity to cover the policyholders' claims. Indeed, the picture above does not change and the liquidity shock and the corresponding decrease in asset values do *not* affect the solvency of the insurer. However, if the decrease in asset values is reported as a loss in the income statement, it decreases the insurer's equity and thus regulatory capital if no adjustments are made.
- b) To avoid the negative effect on regulatory capital, which, in the underlying scenario, can be misleading and contribute to procyclicality in a crisis, it is proposed to also discount liabilities with a higher liquidity premium in a crisis. The adjustment of the discount rate by a liquidity premium reduces the present value of liabilities and the corresponding gain offsets the decrease due to the loss on the asset side.

Caveat 1: It is argued that "the risk free reference rate applicable to the valuation of a liability should be the sum of a basic risk free reference rate and a liquidity premium depending on the nature of the liability." (Principle #1 underlying the use of liquidity premiums in the CEIOPS report)

A justification for applying a liquidity premium is often seen in the fact that the policyholders' annuity claims are also illiquid (as policyholders usually cannot trade them). However, for the argument above, the maturity match of assets and liabilities is relevant, not the liquidity of liabilities. Indeed, the line of reasoning above carries forward to liquid liabilities with the same maturity.

Many of the reasons for why annuity claims are considered to be illiquid matter for the policyholder, not directly for the issuer (insurer); i.e., it does not directly affect the value of the liability to the insurer (but certainly how much the policyholder is willing to pay). Put differently, the insurer could not increase solvency by restricting trading of the liabilities or making them more opaque.

Of course, limiting early withdrawal rights is a different issue. In the argument above it is assumed that early withdrawal or cancellation of the policy is not possible. (Otherwise the assumption that maturities are matched would be violated in the first place.) It is important to distinguish illiquidity of a claim and the maturity of the liability or the possibility to withdraw funds early. For example, if a firm issues a long term bond, the liquidity may depend on the transparency of the firm. The liquidity affects how "easy" it is for bond holders to sell the bond to other investors, not whether they can demand the issuer to repay before the bond matures.

Caveat 2: It is argued that "the liquidity premium should be independent of the investment strategy adopted by the company." (principle #2 underlying the use of liquidity premiums in the CEIOPS report)

This conclusion is wrong – if the liquidity premium is to be justified for the reasons outlined in the CEIOPS report.

Assume that the insurer holds an asset portfolio of liquid government bonds, which do not decrease in value after a liquidity shock. Given the proposal, liabilities would still decrease in value, increasing the insurer's regulatory capital and creating the false impression that solvency increased – and allowing insurers to increase dividends or risks. However, solvency did not change in the scenario, and paying a dividend or taking on additional risk would increase the risk of insolvency.

Caveat 3: It is assumed that maturities are matched and that a loss in asset values due to changes in liquidity premiums is irrelevant because assets are held until maturity.

There are many reasons why this assumption might be violated. First, although early withdrawal is limited, it is possible. Thus, there is uncertainty about when a claim is due, which limits the possibility to perfectly match maturities. Second, and possibly more importantly, the insurer may invest in longer term illiquid assets with a maturity exceeding the maturity of liabilities, e.g., to increase the expected return of the assets. In this case, the insurer might have to sell some assets to satisfy the claims of policyholders and liquidity risk can affect solvency risk.

Two objections are conceivable. First, "in the scenario above, it is optimal for insurers to invest in illiquid assets" so that caveat 2 is not relevant. Second, "insurers should and do match maturities" so that caveat 3 is not relevant. However, as the current crisis has shown, regulation has to be robust to "mistakes" and "excessive risk taking incentives". Otherwise it is unclear why regulation is needed in the first place.

#### Recommendations:

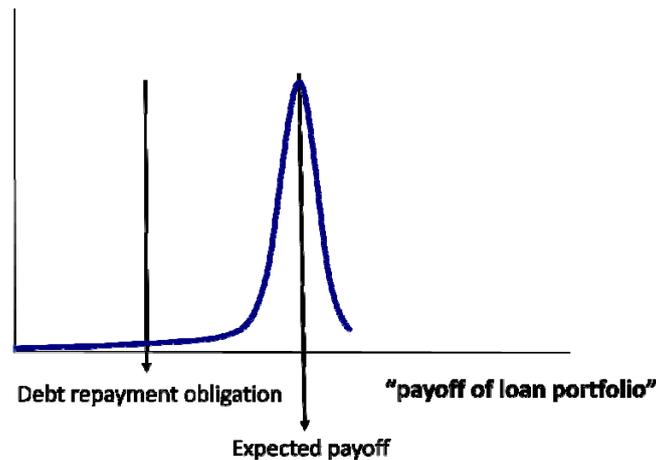
Regulators might be concerned that a liquidity shock can reduce regulatory capital even when solvency is not affected (as in the stylized case above). This could increase insurers' cost of selling long term insurance policies and, more critically, contribute to procyclicality. However, in this case, regulators should deal with this problem directly by not deducting the corresponding value change from regulatory capital or by introducing countercyclical capital buffers. Both alternatives are more transparent and reduce the risk of potential mistakes. (Although a liquidity premium for liabilities could, in theory, be designed to achieve the same effect, the approach is indirect and artificial.)

For example, if the accounting treatment of (unrealized) losses of asset values (due to a liquidity shock) reduces equity, it can be added back to regulatory capital. A similar approach is followed in banking regulation in many countries, including the U.S., where unrealized losses of available for sale debt securities (which are reported in other comprehensive income) are added back to regulatory capital.

However, regulators have to carefully consider whether maturities are indeed matched and whether a liquidity shock really does not affect solvency. In the current crisis, many financial institutions encountered problems not because of regulatory capital problems, but because of refinancing problems, which were affected by the liquidity shock.

## A look at banks

Assume that a bank grants loans (or holds a bond portfolio) with a face value of  $B$ . The loan repayment  $R$  is uncertain and the bank needs the amount  $B$  to finance the loan portfolio. How much debt can the bank use to finance the loan portfolio if the bank should be solvent with probability  $q$ ?



The maximum debt repayment obligation  $D$  is chosen such that  $Pr(R < D) = 1 - q$ , and the required equity to finance the loan portfolio is  $B - PV(D)$ . Thus, for a given debt repayment obligation, the required equity increases in the risk of default  $1 - q$  and the illiquidity of the liability claim (e.g., if a more opaque bank issues a bond).

How should regulators deal with changes in

- A) Credit risk of assets (and its impact on the risk of outstanding liabilities)
- B) Liquidity of assets
- C) Liquidity of liabilities

### Ad A: Increase in credit risk of assets

Ceteris paribus, if the value of assets (loan portfolio) decreases because of an increase in credit risk, the default risk increases. To maintain the solvency probability  $q$ , the bank needs additional equity (increase assets or reduce debt). Unless more equity is taken on, the value of liabilities also decreases since the probability of default increases.

Under fair-value accounting of liabilities, a gain due to the increase in own credit risk may be recognized. This gain can actually be relevant for calculating the value of equity as the burden of increased credit risk of assets is shared between debt and equity. However, the gain does not increase regulatory capital. Indeed, the "burden sharing" does not make the bank safer. On the contrary, it reflects an increased probability of financial distress.

It is sometimes argued that banks could repurchase their liabilities at a lower price. However, solvency is only affected if the bank repurchases the liabilities; it does not change if the bank holds on to the debt. Moreover, once the bank announces or starts a repurchase, the price of the bonds

might increase. Thus, it is not clear whether and, if at all, to what extent potential cost savings from the repurchase possibility should reduce regulatory capital.

Note 1: An increase in the value of equity does not automatically imply that the bank has more risk bearing capacity or that it becomes safer. (This statement is obvious if the increase in equity value is due to risk shifting.)

Note 2: It can be necessary to distinguish between factors that affect the value of equity and the level of regulatory capital. For example, considering value changes of liabilities due to changes in own credit risk makes sense if the objective is to calculate the value of equity (possible accounting objective); but this does not necessarily imply that the associated gains should increase regulatory capital.

#### Ad B: Liquidity shock to assets

If the value of assets (loan or bond portfolio) decreases after a liquidity shock, the effect on the default probability of the bank depends on the maturity match of assets and liabilities. Two cases can be distinguished. First, if maturities are matched, the default probability may not change. In this case, the increased illiquidity is of no concern because the bank can hold on to the assets. Second, if maturities are not matched (e.g., long-term assets on the one hand and deposits or short-term liabilities on the other), default risk (including the risk of a bank run) increases.

Note 3: The effect of a liquidity shock of assets on a bank's solvency risk depends on the maturity match of assets and liabilities. In the first case, it is not necessary to reduce the regulatory capital by the unrealized loss of the assets. In the U.S. and many European countries, fair-value losses of available-for-sale debt securities do not affect a bank's regulatory capital unless the asset is sold or other than temporarily impaired. The underlying justification is that a bank can hold on the asset until maturity.

Note 4: The line of reasoning relies on two crucial assumptions: maturity matching and that there are no other possible reasons for why the bank may have to sell the assets early. These assumptions might be violated when a bank holds a portfolio of assets with different maturities and finances it with a portfolio of liabilities with different maturities.

#### Ad C: Changes in the liquidity premium of liabilities

The present value of liabilities can decrease if the bank becomes more opaque (reduced transparency). It is obvious that increased opacity does not increase solvency.

The present value of liabilities can also decrease if the liquidity premium in the market decreases. However, unless the bank does not adjust its debt, its solvency is also not affected. It might again be argued that it could repurchase the debt at a lower price. But the same objections as discussed for a decrease in the value of liabilities due to an increase in the value of the bank's own credit risk apply.

Note 5: The argument that a decrease in the value of liabilities (after an increase of credit risk or liquidity premium) should increase regulatory capital because the liabilities can now be repurchased at a lower price is questionable for banks. It is even more questionable when the claims are held by policyholders as in the case of insurers.

### **Reference**

CEIOPS: Task Force Report on the Liquidity Premium, CEIOPS-SEC-34/10, 2010.