



# AMERICAN ACADEMY *of* ACTUARIES

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To: Elise Liebers Chair, NAIC P&C RBC Working Group  
From: Ralph Blanchard, Chair, AAA P&C RBC Task Force  
Date: June 9, 1998  
Subject: Report on the effectiveness of the NAIC P&C RBC formula -  
1994 through 1996.

The following is the American Academy of Actuaries report on the NAIC P&C RBC formula effectiveness from 1994 to 1996. The study focused on:

**False Positives** (RBC ratio below 2.0, but company rated secure by rating agencies). **False Negatives** (RBC ratio above 2.0, but company rated vulnerable by rating agencies). **Ratio Stability** (RBC ratio unstable over time).

This report also includes an analysis of liquidity risk for P&C companies.

## SUMMARY RESULTS

In general, the study results were in line with expectations. False positives were rare, while false negatives were more common. This is consistent with the idea that the RBC formula should not over-flag companies, so that when the formula authorizes or mandates takeover of a company it is nearly certain (absent any significant change in company capitalization) that the prescribed regulatory action is prudent. RBC results are also relatively stable over time, making the formula result more predictable for both regulators and insurers.

The only recommendation for change from the study came from the liquidity risk analysis. Based on our findings, we would recommend that a liquidity ratio (the same as or similar to the one described in attachment 4) be used to identify companies requiring further attention. Our task force saw this ratio as being used similar to the way the IRIS or FAST ratios are used, such that additional manual analysis (including possibly a dialog between regulators and the flagged company) be performed before mandating any action from the flagged company. The hope is that this "liquidity / cash flow ratio test" (after manual review) will identify companies requiring regulatory intervention that might not be picked up by RBC.

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## INDIVIDUAL ANALYSES

The analysis and recommendations for the the **False Positives, False Negatives, and Ratio Stability** projects can be found in attachments 1, 2 and 3 respectively. Hopefully they will need no other explanation.

### Liquidity risk

#### Project background

The analysis concerning **Liquidity Risk** is included in attachment 4. This analysis had begun as a search for liquidity risk tests, i.e., the creation of a test ratio or financial measure that would identify P&C insurers facing significant liquidity risk. Liquidity risk was defined for the purpose of this study as follows:

*Liquidity risk - the risk that a company with an adequate amount of total assets will not be able to meet current cash needs through ongoing cash flow and the sale of readily marketable assets. It is believed that the inability of such a company to quickly convert its remaining illiquid assets to cash could lead to insolvency.*

The initial analysis (reported on at the March 1998 NAIC meeting) indicated that a liquidity / cash flow test ratio could be created that would identify future insolvencies that the RBC ratio didn't flag. This was based on comparing test ratio results against a list of 1997 insolvencies.

While potentially useful as an indicator of possible future insolvencies, the AAA P&C RBC Task Force didn't believe that the companies in question faced liquidity risk. The AAA Task Force felt that the test ratio was identifying companies in danger of running out of total assets, not just liquid assets. In fact, the AAA Task Force was not aware of any insolvency whereby actual forced sale of illiquid assets contributed to the insolvency.

At the request of the NAIC P&C RBC Working Group', the AAA Task Force investigated this issue further. Specifically, the AAA Task Force investigated a specific insolvency which some believed was at least partially caused or exacerbated by liquidity problems. The AAA Task Force also added ratios of liquid to total assets in their analysis.

#### Subsequent findings

After performing this additional analysis, the AAA Task Force is still not convinced that pure liquidity risk has been a factor in recent P&C insolvencies. Some companies that subsequently went insolvent were found to have low ratios of liquid to total assets, but these companies also had test ratios greater than one for the latest year-end before insolvency'. As such, a repeat of the prior year cash flows might have left them in a precarious situation, but would not have forced a sale of illiquid assets.

Companies with declining ratios typically had multiple problems besides liquidity. Hopefully these other problems would trigger regulatory take-over before the liquidity problems would necessitate asset "fire sales". As support for this statement, none of the companies that went insolvent had liquidity ratios less than one for their last year-end statement.

This request was made at the March 1998 NAIC meeting.

The test ratio used (explained more fully in attachment 4) was the sum of liquid assets plus prior year cash inflow, all divided by the prior year cash outflow.

Another difficulty the AAA Task Force faced is limited access to non-public data'. If a company was about to run out of cash, it would probably be so close to insolvency that it probably wouldn't file an annual statement. The only data available for such companies (with a valuation date capturing the liquidity crisis) would probably be that obtained by the state regulator investigating the company, and this data is probably confidential. As such, the AAA Task Force believed it was doubtful that public data detailing an imminent liquidity crisis would be available. Further research into this matter may require direct action of the NAIC or its members, who are more likely to have access to such confidential data.

The AAA Task Force does believe, however, that the test ratio described in attachment 4 (or one like it) would be a useful addition to the NAIC regulatory tool box. This is because several past insolvencies not flagged by the NAIC P&C RBC ratio would have been flagged by the test ratio.

### **Recommendations**

The initial idea was that companies flagged by the initial test ratio might then be required to perform a more extensive test, such as development of a cash flow projection or even dynamic cash flow testing. The AAA Task Force discovered, however, that the initial liquidity / cash flow test ratio produced a high level of false positives. None of the companies with initial test ratios less than 1.0 went insolvent in the following year, and many were even rated "secure" by two major rating agencies. In addition, the test ratio cutoff required to identify all past insolvencies (a ratio of 2.0) would have flagged about 10% of the industry, thereby flagging hundreds of companies. As a result, **the AAA Task Force recommends against mandating a second, more intensive, test based solely on the results of the initial test ratio.**

Several of the initial test ratio's false positives were triggered by a restructuring of the intra-pool reinsurance arrangements, such as the reduction that year in a company's share of its group's quota share pool'. In such a situation, the simplest way of explaining the initial test ratio result is probably an oral dialog or an explanatory letter from the company to the regulator. Therefore **we recommend that the initial consequence of an abnormally low liquidity test ratio be a general query from a regulator.**

Some of the companies with low test ratio scores did become insolvent the subsequent year. Therefore **some regulatory action is called for when the cause of the abnormal test ratio result cannot be satisfactorily explained (as an aberration). Our task force does not have a specific recommendation as to what would happen next**, although dynamic cash flow testing might be an alternative. Any regulatory action would probably depend on the individual facts and circumstances.

### **CONCLUSIONS**

The existing RBC formula appears to be working as intended, although it might benefit from the addition of an additional regulatory tool such as a liquidity / cash flow test ratio. This liquidity / cash flow test ratio is probably best implemented in a manner similar to IRIS or FAST ratios, in that an abnormal result would trigger an initial dialog, with further action dependent on the result of that dialog.

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<sup>3</sup>Most of the data used by the AAA Task Force is public data, available from sources such as A.M. Best or One-Source. On occasion, limited non-public data has been obtained from NAIC staff, but such data requests are limited. ' The year that a company's share in such a pool is reduced, it faces a reduction in liquid assets (due to paying other pool members to take on its prior share of the pool), a large outflow (again resulting from paying other pool members to take on its prior liabilities) and a reduced inflow (due to now having a smaller share of the pool. This causes a drastic one-time drop in the ratio of liquid assets plus inflow, all divided by outflow. The following year, the liquidity / cash flow ratio should return to more normal levels.