



AMERICAN ACADEMY *of* ACTUARIES

August 26, 2008

To: Mr. Dennis Julnes, Chair of NAIC Health RBC (E) Working Group

From: Karl Madrecki, Chair, American Academy of Actuaries¹ Health Trend Test Work Group

Re: Report on Proposed Health RBC Trend Tests

Dear Mr. Julnes,

The American Academy of Actuaries' Health Trend Test Work Group wishes to present the attached as our report on proposed health RBC trend tests. This report was written by our Work Group in response to your request in March 2008 that we revisit the 2007 Health RBC Trend Test Report.

We appreciate the opportunity to provide this report and look forward to your feedback. If there are any questions regarding this report, I invite you to contact Dianna Pell, staff liaison to the Work Group, at (202) 785-6924 or pell@actuary.org.

Sincerely,

Karl Madrecki
Chair, Health RBC Trend Test Work Group
State Health and Health Practice Financial Reporting Committees
American Academy of Actuaries

CC: Crystal Brown, NAIC Staff Liaison
Shari Westerfield, Chair, State Health Committee
Darrell Knapp, Chair, Health Practice Financial Reporting Committee
John Schubert, Vice President, Health Practice Council

Attachments: Report on Health RBC Trend Test

¹ The American Academy of Actuaries is a professional association with over 16,000 members, whose mission is to assist public policymakers by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

American Academy of Actuaries
Health Risk-Based Capital Trend Test Work Group
Report to NAIC Health RBC (E) Working Group
August 26, 2008

Academy Charges:

1. To determine if a leading indicator based on annual financial statement information can be developed to identify those companies with reported Health Risk-Based Capital ratios above 200 percent, the company action level (CAL), that face a significant risk of subsequently falling below 200 percent in the following year or near term. For these purposes, the indicator is referred to as a “trend test” and companies reporting above 200 percent in one year but falling below 200 percent in the next are referred to as the “target group.”
2. To examine in particular whether the following, referred to as the “straw man benchmark” (Trend Test 1), is a suitable candidate for the desired indicator: companies with an HRBC ratio between 200 percent and 300 percent and a combined ratio greater than 105 percent.

Approach:

The Academy HRBC Trend Test Work Group requested two sets of health company data from NAIC staff. The data sets provided were blinded for company name. Both data sets encompassed annual statement and HRBC data for calendar years ending from 2004 through 2007, with the second data set being more comprehensive and superseding the initial data.

For each company in the data set, the company was flagged if it met the trend-test criteria. After observing the results of the straw man benchmark trend test on the original data set, the work group developed two alternative trend tests as defined below:

Trend Test 1: If $200 \text{ percent} < \text{HRBC}_{\text{base year}} \leq 300 \text{ percent}$ and $\text{combined ratio}_{\text{base year}} > 105 \text{ percent}$
(straw man benchmark trend test)

Trend Test 2: If $\text{net income before FIT}/(\text{TAC} - 2 \cdot \text{ACL}) \leq -1$, where
TAC = total adjusted capital in the base year
ACL = authorized control level (100 percent RBC)

Trend Test 3: If $\text{net income before FIT}/(\text{TAC} - 1.5 \cdot \text{ACL}) \leq -1$

The rationale for trend tests 2 and 3 were arrived at based on observations of running trend test 1 on the initial NAIC data set. The benchmark trend test assumes a significant underwriting loss (over 5 percent of premium) and an unrelated ratio of TAC and ACL (less than three times ACL). Trend tests 2 and 3 combine these two issues by focusing on the impact of losses on the dollar difference of TAC over some level of adequate capital. These trend tests also take into account any impact of investment income strategies, which would be excluded from an indicator based solely on the combined ratio.

In the testing process:

Correctly identified = Company flagged by indicator and belongs to the target group

False positive = Company flagged by indicator but does not belong to the target group

False negative = Company not flagged by indicator but belongs to the target group

Correctly unidentified = Company not flagged by indicator and does not belong to the target group

An ideal trend test would maximize correctly identified and correctly unidentified, while minimizing false positives and false negatives.

Key Observations:

1. Contrary to our original hypothesis, trend tests 2 and 3 essentially flagged the same minimal number of correctly identified companies as trend test 1, but generated substantially more false positives. Trend test 2 (the stricter of trend tests 2 and 3) flagged the most false positives.
2. We observed that the false positives largely consisted of companies with material paid-in capital and surplus that intercepted a fall in HRBC below 200 percent. Often, there were recurring sequences of paid-in capital amounts observed.
3. The testing process isolated two other groups of companies for the NAIC to consider that did fall below 200 percent, but for other reasons would not have a valid result under any trend test:
 - a) Apparent start-up companies in the first year of operation, and
 - b) Companies that in prior years either did not file HRBC or were granted waivers.
4. In looking at Appendix 1, there were 24 companies at YE2004 below 200 percent HRBC. At YE2005, seven of those companies remained under 200 percent and 13 reported above 200 percent. This means four companies were no longer reporting at YE2005. Between YE2005 and YE2006, four companies dropped off. For YE2006 to YE2007, 10 companies dropped off. The specific blinded companies in these situations could be reviewed by the NAIC in addition to those in observation 3 for status (e.g. failure, merger/sale, etc.)

Next Steps:

While a trend test was not uncovered that clearly identified the target group as currently defined, the tests suggest further NAIC examination in areas outlined below:

1. The manner in which additions to capital/surplus are included in total regulatory oversight following such additions may be a significant detail. Further discussion by the NAIC is encouraged to consider whether the definition of “target group” should be determined before or after continuing capital and surplus contributions to a company.
2. The Academy HRBC Trend Test Work Group had considerable discussions of how to utilize annual statement balance sheet and income statement data to predict the target group as defined. It is the observation of the work group that static accounting does not appear to contain sufficient information to predict or anticipate management actions, growth strategies, etc., that may positively flag the target group health companies as defined.

Although some of the false negatives (companies in target group but not flagged by trend test) may result from a sudden switch from profits to losses, it appears that some result from growth in CAL that outpaced growth in TAC. Many seem to have resulted from large changes in non-admitted assets. It may or may not be possible to identify those situations by a trend test; however, the inapplicability of any trend test in those situations is itself an important piece of information, which may suggest a further course of analysis (e.g., What types of assets did companies have to non-admit?). Since we operated with blinded data, we would recommend the NAIC review the actual target group situations to determine if there were more positive regulatory observations outside the annual statement.

3. Finally, we recommend that the NAIC review the company situations of new companies falling below 200 percent HRBC and companies not filing HRBC or granted waivers.

Academy HRBC Trend Test Work Group:

Karl Madrecki

James Braue

Jinn-Feng Lin

Peter Howard

Rowen Bell

D. Joeff Williams

William Weller, Interested Party

Appendix 1
Control Totals
NAIC Data Dated June 11, 2008

Action Level Companies

- Companies with $RBC_{base} \leq 200\%$ and $RBC_{base+1} \leq 200\%$
- Companies with $RBC_{base} > 200\%$ and $RBC_{base+1} \leq 200\%$
- $RBC_{base} = \text{N/A}$ and $RBC_{base+1} \leq 200\%*$

Companies with $RBC_{base+1} \leq 200\%$

Non-Action Level Companies

- Companies with $RBC_{base} \leq 200\%$ and $RBC_{base+1} > 200\%$
- Companies with $RBC_{base} > 200\%$ and $RBC_{base+1} > 200\%$
- $RBC_{base} = \text{N/A}$ and $RBC_{base+1} > 200\%$

Companies with $RBC_{base+1} > 200\%$

Companies with RBC

N/A's

Duplicates

GRAND TOTAL

Year End			
2004	2005	2006	2007
X	7	12	10
X	12	14	15
X	9	9	9
24	28	35	34
X	13	12	15
X	626	679	698
X	85	66	48
678	724	757	761
702	752	792	795
213	163	123	120
0	0	0	0
915	915	915	915

Note: N/A = Blank

***Action Level Companies with $RBC_{base} = \text{N/A}$ and $RBC_{base+1} \leq 200\%$**

- **Year end 2005:** 9 companies
(10, 13, 57, 126, 174, 183, 356, 797 and 826)
- **Year end 2006:** 9 companies
(56, 60, 135, 194, 198, 206, 212, 228 and 534)
- **Year end 2007:** 9 companies
(29, 214, 218, 243, 251, 496, 569, 622 and 796)

Appendix 2

Naic Data Adjusted for Companies Previously Filing Life RBC

Action Level Companies

- Companies with $RBC_{base} \leq 200\%$ and $RBC_{base+1} \leq 200\%$
- Companies with $RBC_{base} > 200\%$ and $RBC_{base+1} \leq 200\%$
- $RBC_{base} = N/A$ and $RBC_{base+1} \leq 200\%*$

Companies with $RBC_{base+1} \leq 200\%$

Non-Action Level Companies

- Companies with $RBC_{base} \leq 200\%$ and $RBC_{base+1} > 200\%$
- Companies with $RBC_{base} > 200\%$ and $RBC_{base+1} > 200\%$
- $RBC_{base} = N/A$ and $RBC_{base+1} > 200\%$

Companies with $RBC_{base+1} > 200\%$

Companies with RBC

N/A's

Duplicates

GRAND TOTAL

Year End			
2004	2005	2006	2007
X	8	12	10
X	12	15	16
X	8	8	8
25	28	35	34
X	13	12	15
X	628	680	698
X	85	66	48
680	726	758	761
705	754	793	795
210	161	122	120
0	0	0	0
915	915	915	915

* 24 N/A Companies

- **Apparent first year companies falling below 200%:**
13 Companies (10,13,29,174,183,194,198,212,214,218,228,243,251)
- **Companies not filing or granted waivers:**
11 Companies (56,57,60,126,206,356,569,622,796,797,826)

Appendix 3 Trend Test Results

Target Group

Companies with RBCbase > 200%

Health RBC Trend Test 1

if $200\% < RBCbase \leq 300\%$ and $CRbase > 105\%$

- **Correctly Identified:**
Flagged and belongs to the Target Group
- **False Positive:**
Flagged but does not belong to the Target Group
- **False Negative:**
Not flagged but belongs to the Target Group
- **Correctly Unidentified:**
Not flagged and does not belong to the Target Group
- **N/A's**

Health RBC Trend Test 2

if $Net\ Income\ before\ FIT/(TAC - 2*ACL) \leq -1$

- **Correctly Identified:**
Flagged and belongs to the Target Group
- **False Positive:**
Flagged but does not belong to the Target Group
- **False Negative:**
Not flagged but belongs to the Target Group
- **Correctly Unidentified:**
Not flagged and does not belong to the Target Group
- **N/A's**

Health RBC Trend Test 3

if $Net\ Income\ before\ FIT/(TAC - 1.5*ACL) \leq -1$

- **Correctly Identified:**
Flagged and belongs to the Target Group
- **False Positive:**
Flagged but does not belong to the Target Group
- **False Negative:**
Not flagged but belongs to the Target Group
- **Correctly Unidentified:**
Not flagged and does not belong to the Target Group
- **N/A's**

Time Period			
2004-2005	2005-2006	2006-2007	2007-2008
12	15	16	X
680	726	758	761
0	2	2	test flagged
10	19	21	17
12	13	14	744
658	692	721	0
0	0	0	0
680	726	758	761
2	2	3	test flagged
26	43	41	44
10	12	12	717
640	667	701	0
2	2	1	0
680	726	758	761
1	2	2	test flagged
13	33	29	36
11	12	13	725
653	677	713	0
2	2	1	0
680	726	758	761