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Health Watch

Is There Currently an Underwriting Cycle?

By Mark E. Shaw

Several actuarial models exist for determining appropriate levels of capital and surplus (collectively “surplus” herein) for Blue Cross & Blue Shield (Blues) affiliate companies. These models have as an outcome a range of risk-based capital (RBC) ratios that purport to establish a surplus level consistent with a 99 percent probability of maintaining the company surplus level above a 200 percent RBC ratio and at least a 90 percent probability of maintaining the company surplus level above a 375 percent RBC ratio (the level at which the BCBS Association becomes concerned about, and begins monitoring, company surplus).

Each of the models has a foundational assumption of an underwriting cycle—an alternating period of underwriting gains and losses—which significantly drives the results of the model. The existence of an underwriting cycle was demonstrably true from the late 1970s to the early 1990s, but it has received very little analytic attention in the actuarial literature in at least a decade. The underwriting cycle theory adopts the view that competitors cyclically adjust prices based on industry profitability (or the lack thereof) so as to produce approximately a sine-wave pattern of profitability, with several years of industry profitability followed by several years of industry losses before returning again to a period of profitability. Many cycle theorists use underwriting gain or loss as their profitability measure, but some use net income, which ultimately correlates better with changes in surplus and is arguably the better measure.

Underwriting cycles are a market-level concept, not a company-level concept. The typical explanation for an underwriting cycle is that, when industry profitability rises to a level such

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In total, more than 200 total years of data are analyzed and presented in this paper.

that some competitors are willing to take a lower profit to gain market share, they begin cutting prices. To retain market share, competitor companies cut their prices until market prices spiral down to where companies begin losing money. When losses exceed a company's comfort level, it begins raising prices to recover profitability, allowing competitor companies to also begin raising prices, and a reverse spiral occurs until once again industry profits reach a point where some competitors become willing to accept lower margins to gain market share, lower their prices, and the cycle restarts.

In recent years, actual company operating results do not seem consistent with an underwriting cycle. As an example, in a presentation made at the June 2012 Society of Actuaries meeting, Ed Cymerys, the chief actuary for Blue Shield of California, indicated that his company had consistently achieved an annual net income of between 2 and 7 percent in each year since 2000. He went on to explain an approach his company has adopted to limit the company's annual net income to 2 percent of revenue, an income level at which his company's RBC ratio would be stable over time.

There are a number of reasons that the underwriting cycle may no longer exist:

- In the late 1980s and early 1990s, state insurance regulators, through the National Association of Insurance Commissioners (NAIC), developed a uniform solvency system, introducing "risk-focused" processes into the supervisory system and creating the RBC tool to replace fixed capital requirements that did not vary by company size or risk exposure.
- Companies developed better risk management processes. Most well-run medical insurers monitor actual-to-expected claims on a number of rating variables on a monthly basis and are quick to make changes if unfavorable trends begin to emerge. Data warehouses have allowed carriers to drill into a much finer level of detail to identify problems as they first develop, rather than waiting until they are evident and worse. Administrative systems now allow for expeditious and versatile implementation of rate

increases within a couple of months of decision and approval; in general, rate increases can be completed in virtually all policies within 18 months of the first emergence of a negative trend.

- U.S. regulators have made continuous improvements to the financial regulatory system over the past two decades, with many enhancements such as the model audit rule, risk-focused financial analysis and examination, and uniform statutory accounting practices and procedures. Today, an enhanced risk-focused surveillance process in every state focuses on the insurer's risks, the mitigation of those risks, and prospective risk analysis.
- The NAIC conducts additional regulatory monitoring through surveillance processes such as the Financial Analysis Solvency Tools (FAST) and the Financial Analysis Working Group.
- Regulators are processing rate increases more quickly. Many insurance departments have received substantial federal grants under the Affordable Care Act (ACA) to enhance their rate review procedures. States are changing their laws and regulations to reflect best practices, and developing more sophisticated technology and expertise for reviewing rates. The net effect of these enhancements is to reduce the time required for regulatory approvals.
- Many health insurance markets have become oligopolistic. Market share is more concentrated among a few insurers with more disciplined reactions to competitor pricing, and there are fewer aggressive newcomers to pressure the prices of more established insurers.

While there are many reasons to believe that the historic underwriting cycle is no longer today's reality, the purpose of this paper is to look for empirical evidence of an underwriting cycle in the statutory results of Blues affiliates of a certain size over the last decade-plus. Related to the purposes of a separate project, evaluating the surplus of a particular Blues plan with a little less than \$3 billion in net premiums written in 2010, this paper examines the experience of all Blues affiliates with \$1.8 to \$3.8 billion of net premiums written in 2010. There were 17 such Blues affiliates in this premium range, as follows:

BlueCross BlueShield of TN Inc.
 Group Hospitalization & Medical Svcs.
 Blue Cross Blue Shield of MN
 BCBS of GA Inc.
 HealthNow NY Inc.
 Premera Blue Cross
 BCBS of MA Inc.
 Regence BlueShield
 Horizon Healthcare of New Jersey, Inc.
 QCC Insurance Co.
 Anthem Health Plans Inc.
 Wellmark Inc.
 Anthem Health of VA
 BCBS of SC
 Regence BlueCross BlueShield of OR
 CareFirst of MD Inc.
 LA Health Service & Indemnity Co.

Exhibit 1
Comparison of 17 Blues Plans - Profit by Calendar Year

Year	Total Co	# w/ Pos	% w/ Pos	Net Inc as		# w/ Pos	% w/ Pos	U/W G/L as	
		Net Inc	Net Inc	% of Tot	Std Dev Net	U/W	U/W	% of Tot	Std Dev
				Rev	Inc			Rev	U/W G/L
2011	17	16	94%	3.1%	2.4%	12	71%	2.5%	3.5%
2010	17	16	94%	4.3%	2.8%	14	82%	3.1%	4.0%
2009	17	13	76%	2.2%	2.5%	9	53%	1.6%	4.2%
2008	17	12	71%	2.2%	4.4%	13	76%	2.6%	4.3%
2007	17	16	94%	4.3%	2.9%	13	76%	3.0%	4.4%
2006	17	17	100%	4.9%	2.9%	16	94%	4.1%	4.1%
2005	17	17	100%	5.3%	2.2%	16	94%	5.0%	3.3%
2004	16	16	100%	4.1%	3.1%	14	88%	4.1%	3.5%
2003	16	15	94%	3.6%	2.8%	14	88%	3.5%	2.7%
2002	15	14	93%	3.5%	2.9%	12	80%	3.3%	3.1%
2001	15	13	87%	3.3%	3.2%	14	93%	2.0%	2.0%
2000	15	15	100%	3.2%	2.1%	10	67%	1.3%	2.6%
1999	15	13	87%	2.3%	2.1%	8	53%	0.2%	2.3%
All	211	193				165			
Unweighted Averages Across Years:			91%	3.6%	1.0%		78%	2.8%	1.3%

I obtained the five-year history pages of these 17 plans' annual statement filings in 2011, 2007 and 2003 from the NAIC. Thirteen years of data were obtained on each company, from 1999 to 2011, as they were available; data were available for all companies from 2005 forward. In total, more than 200 total years of data are analyzed and presented in this paper.

Experience by Calendar Year

Exhibit 1 summarizes the data by calendar year, probing for evidence of an alternating pattern of industry profitability. Two common profitability measures are used: net income and underwriting gain/loss, both expressed as a percentage of the companies' total revenue.

Measured as the companies' net income experience, at least 12 of the 17 companies (71 percent to 100 percent, and 91 percent on average) were profitable in any given year. Moreover, there was little variability in average annual profitability: the companies' net income averaged 3.6 percent of total revenue, with a standard deviation on average annual profitability of 1.0 percent. There were no years

in which average profitability was negative, and there does not appear to be anything approaching a traditional underwriting cycle defined as a repeating series of several years of industry gains followed by several years of industry losses. Instead, seven years of increasing gains in net income were followed by six years of significant but fluctuating gains. There is no hint of an industry loss period: based on the annual average net income and standard deviation observed over the past decade-plus (1999–2011), the chance of industry-average net income being less than 0.6 percent in any year was less than 0.13 percent—a far lower likelihood than was targeted by the aforementioned actuarial models.

Analysis of the companies' underwriting gain/loss experience yields similar conclusions. In any given year, 53 to 94 percent (on average, 78 percent) of the 17 companies had an underwriting gain, and there were no years where the average industry underwriting result was a loss. Again, there appears to be no evidence supporting a traditional underwriting cycle. The relative variability in underwriting gain/loss (a standard deviation on average annual profitability of 1.3 percent relative to a 2.8 percent mean) was greater than the variability of net income, but based on these 13 years of experience, there is nevertheless just a 2.1 percent chance that the industry would ever have a year where the average

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underwriting gain/loss was as low as 0.2 percent (as it did in 1999).

Experience by Total Revenue

To explore whether companies with different levels of total revenue might have different net income and underwriting gain/loss experience, Exhibit 2 summarizes net income and underwriting gains/losses as a percentage of total revenue for the 17 companies from 1999 to 2011, within total revenue categories.

In each total revenue category, 89 to 97 percent of the 17 companies (on average, 91 percent) were profitable in any given year. The variability in profitability in mean net income by annual revenue was very small in each total revenue category: average net income was 3.8 percent with a standard deviation

for the mean net income across the various revenue categories of 0.6 percent. Average profitability in each revenue category was at least 2.7 percent, suggesting that neither smaller nor larger companies experienced a traditional underwriting cycle.

Looking at the companies' underwriting gain/loss experience yields the same conclusion. From 56 to 94 percent (on average, 78 percent) of the 17 companies had an underwriting gain in any given year. The variability in mean underwriting gain/loss by annual revenue was small: with a 3.0 percent mean underwriting gain/loss across the various revenue categories, the standard deviation on the annual averages was 1.5 percent. In no annual revenue size category was the average underwriting gain less than 1.4 percent. Thus, regardless of the level of total revenue, there is no evidence that these companies experienced an underwriting cycle.

Exhibit 2
Comparison of 17 Blues Plans - Profit by Annual Total Revenue
 Aggregated results from 1999-2011

Total Revenue	# of Occurrences	# w/ Pos Net Inc	% w/ Pos Net Inc	Mean Net Inc	Std Dev Net Inc	# w/ Pos U/W	% w/ Pos U/W	Mean	Std Dev
								U/W G/L	U/W G/L
\$2.8+ billion	33	30	91%	4.6%	3.1%	31	94%	5.6%	4.7%
\$2.4 - 2.799 billion	29	28	97%	4.0%	2.9%	25	86%	3.7%	3.5%
\$2.0 - 2.399 billion	47	42	89%	2.7%	2.8%	34	72%	1.8%	3.0%
\$1.6 - 1.999 billion	41	38	93%	3.9%	2.5%	32	78%	2.8%	2.9%
\$1.2 - 1.599 billion	36	32	89%	3.9%	3.1%	29	81%	2.8%	3.0%
\$1.199 billion <	25	23	92%	3.9%	3.2%	14	56%	1.4%	3.3%
All	211	193				165			
Unweighted Averages Across Categories			91%	3.8%	0.6%		78%	3.0%	1.5%

Experience by Company

Finally, to investigate whether each company's results might be driven by factors unique to that company, Exhibit 3 displays the companies' net income and underwriting gain/loss experience as a percent of total revenue by company.

Between 69 and 100 percent (on average, 91 percent) of the companies had a positive net income in any given year. Eight of the 17 companies were profitable in every year, and all but three companies were profitable in at least 85 percent of the years. The variability in profitability in mean net income by company was substantial: with a variance across average company results of 2.2 percent. While no companies experienced average profitability below 1.3 percent, six companies averaged net income that was less than or equal to 2.5 percent of total revenue, and four experienced average net incomes above 6 percent of total revenue. This wide variation suggests that company-specific factors drove variances in net income profitability.

Exhibit 3
Comparison of 17 Blues Plans - Profitability by Company 1999-2011

Company (NAIC #)	Total Years	# w/ Pos NI	% w/ Pos NI	Std Dev		# w/ Pos U/W	% w/ Pos U/W	Mean		Std Dev	
				NI	NI			U/W G/L	U/W G/L		
Premera Blue Cross (47570)	13	13	100%	2.7%	1.6%	13	100%	2.0%	1.2%		
Group Hospitalization & Med Svcs (53007)	13	13	100%	2.9%	1.2%	12	92%	1.7%	1.1%		
Regence BlueShield (53902)	13	11	85%	2.5%	2.7%	7	54%	0.9%	3.1%		
BCBS of TN Inc (54518)	13	13	100%	4.7%	1.9%	13	100%	4.8%	2.6%		
BCBS of GA Inc (54801)	13	13	100%	6.8%	1.8%	11	85%	5.9%	3.4%		
Regence BCBS of OR (54933)	13	11	85%	1.3%	2.2%	4	31%	-0.5%	2.2%		
Wellmark Inc (88848)	9	7	78%	2.4%	4.8%	6	67%	1.2%	3.7%		
Anthem Health of VA (71835)	7	7	100%	8.8%	1.3%	7	100%	12.4%	1.9%		
Anthem Health Inc (60217)	13	12	92%	6.2%	2.7%	12	92%	7.6%	3.6%		
BCBSM Inc (55026)	13	10	77%	1.8%	2.4%	8	62%	0.9%	2.7%		
QCC Ins Co (93688)	13	11	85%	2.8%	2.7%	11	85%	2.6%	2.2%		
Horizon Hlthcare of NJ Inc (95529)	13	13	100%	3.1%	0.7%	13	100%	2.6%	1.0%		
Louisiana Health Services (81200)	13	12	92%	2.9%	2.0%	5	38%	0.1%	1.9%		
Health Now of NY Inc (55204)	13	13	100%	2.4%	1.3%	11	85%	1.7%	1.4%		
Carefirst of MD Inc (47058)	13	9	69%	1.4%	2.4%	9	69%	0.5%	1.5%		
BCBS of SC (38520)	13	13	100%	6.7%	2.2%	13	100%	5.4%	2.6%		
BCBS of MA Inc (53228)	13	12	92%	3.6%	2.6%	10	77%	2.1%	2.1%		
All	211	193				165					
Unweighted Average Company Results:			91%	3.7%	2.2%		78%	3.1%	3.3%		

Again, these results are consistent with those that derive from reviewing the companies' underwriting gain/loss experience. While there was significant variability in underwriting results across companies in any given year, on average, 78 percent of compa-

nies experienced an underwriting gain in any given year. Moreover, 11 of the 17 companies had an underwriting gain in at least 77 percent of calendar years, and only two companies had an underwriting gain in less than half of the calendar years. Again, the variability in mean underwriting gain/loss by company was substantial, suggesting that company-specific factors drove variances in underwriting gain/loss: five companies had average underwriting gains that were less than 1.0 percent of total revenue; seven companies had average underwriting gains between 1.2 and 2.6 percent of total revenue; and five companies had average underwriting gains that were at least 4.8 percent of total revenue.

While underwriting cycles are, as described above, an industry-level phenomenon, it is of some interest that loss years at neither the industry nor company level occurred in anything resembling a sine-wave pattern. As reported in the following table, even among the three companies with the lowest average underwriting gain from 1999 to 2011 (highlighted in Exhibit 3), each company's underwriting results appear to be random fluctuations around a very low mean underwriting gain.

As illustrated in Exhibit 4 there is no common pattern to the above annual results, and the results do not correlate to a recognizable underwriting gain/loss cycle. There is some convergence in the tallest peak (2005) for LA Health and Regence OR, but this appears to be an unusual coincidence, as there is no convergence of peaks in any other year.

Conclusions

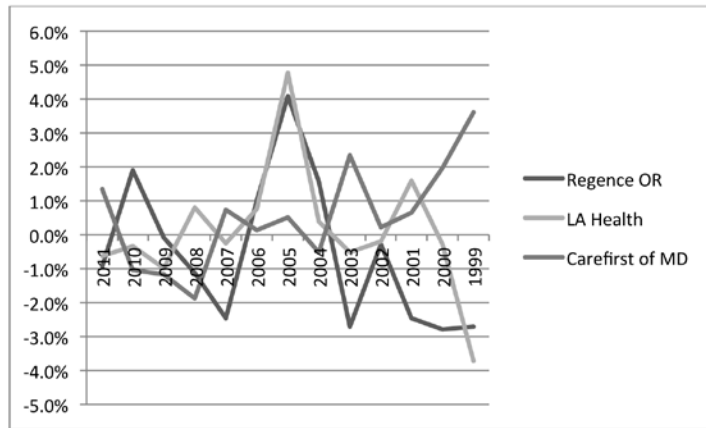
It should be noted that this paper's scope is limited to the question of whether an underwriting cycle currently exists and does not address the appropriateness of current RBC formula calculations. The author is aware that there are ongoing discussions about whether and how to adjust such formulas for certain risks and given the current health care environment.

This analysis considers the 1999–2011 profitability of all mid-sized Blues-affiliated companies—that is, those with \$1.8 to \$3.8 billion of net premiums written in 2010. The experience of these companies

Exhibit 4 Results for 3 Companies with Lowest Average Underwriting Gain 1999-2011

Underwriting Gain/Loss as % of Total Revenue by Calendar Year

	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999
Regence OR	-0.9%	1.9%	-0.1%	-1.1%	-2.5%	1.0%	4.1%	1.6%	-2.7%	-0.3%	-2.5%	-2.8%	-2.7%
LA Health	-0.6%	-0.3%	-1.0%	0.8%	-0.2%	0.8%	4.8%	0.4%	-0.5%	-0.2%	1.6%	-0.3%	-3.7%
Carefirst of MD	1.4%	-1.0%	-1.2%	-1.9%	0.7%	0.1%	0.5%	-0.5%	2.4%	0.2%	0.7%	2.0%	3.6%



does not support the contention that an industry underwriting cycle has occurred during the last 13 years. While these companies' net income and underwriting gains did vary from year to year as a percent of total revenue, in the aggregate, the Blues-affiliated plans enjoyed 13 years of uninterrupted profitability. Factors unique to the particular companies, not industry conditions, appear to account for variability in profit.

These findings strongly indicate that actuarial models seeking to establish appropriate target surplus levels for health insurers should not assume an underwriting cycle exists. Abandoning this assumption in line with actual industry experience, all else equal, would reduce the surplus targets for the companies considered in this analysis and, presuming the results hold more broadly, for all companies. This in turn could allow some companies—those that currently hold very high surplus—to reduce their surplus without sacrificing sought-after high probabilities of maintaining surplus above threshold RBC ratios. ■



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