

HEALTH COST INDEXTM REPORT

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Special Edition of the Health Cost Index ReportTM

by

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Forecasting Health Insurer Profitability: 1997-1999

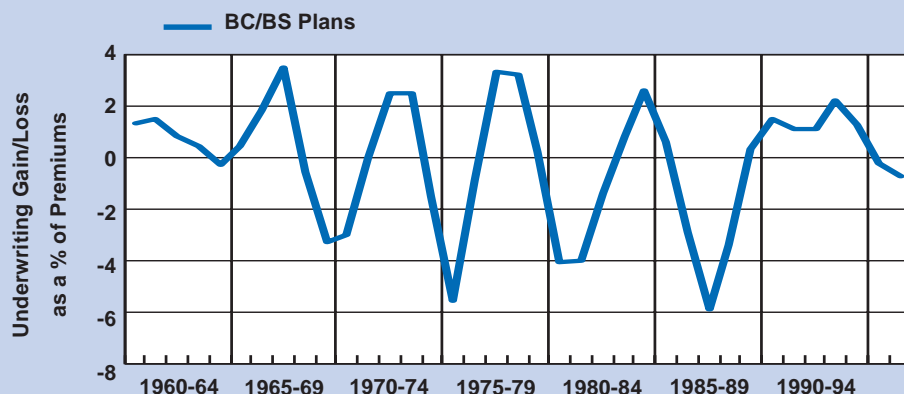
The insurance industry as a whole, and the Blue Cross/Blue Shield system in particular, experienced diminished profitability during 1995 and 1996. Fluctuations in profitability are driven by differing growth rates in premiums (revenue) and underlying medical costs. Medical cost trend data, Milliman & Robertson's Health Cost Index, and unpublished premium trend data from the Bureau of Labor Statistics Employment Cost Index can be used to build a model of the Blue Cross/Blue Shield systems underwriting profitability. Past studies have shown a very strong consistency between commercial carrier results and Blue Cross/Blue Shield results. Similar forecast results would be expected for commercial carriers as well. This model indicates that the two years of underwriting losses experienced in 1995 and 1996 should continue into 1997, 1998 and 1999. These forecasts assume moderate in-

creases in underlying medical cost trends over this time period. Higher trends would lead to deeper losses. These results do not include investment income and results can and will vary by individual plan.

The Blue Cross/Blue Shield system is expected to report its second straight year of underwriting losses (losses before investment income) for 1996. This comes on the heels of an unprecedented six straight years of profitability, similar to patterns found in the HMO and commercial carrier sectors of the market. The previous string of profits helped boost reserve levels previously depleted during severe losses in the late 1980's. Despite the underwriting losses of the past two years, investment income has been sufficient to result in an overall net gain for the system.

The results of the past two years appear to be primarily related to

Chart 1: BLUE CROSS/BUE SHIELD UNDERWRITING RESULTS





competitive pressures eroding premium margins. However, further analysis indicates that if cost trends turn up, as expected, the underwriting losses will continue and deepen. These deeper losses have probably already affected some individual Plans.

Chart 1 (on page 1) illustrates the fluctuations in the Blue Cross/Blue Shield (BCBS) systems profit/loss before investment income stated as a percent of premium.

It should be noted that these are industry average results. Individual plans can vary significantly due to local market conditions and their approach to underwriting cycle management.

This paper examines the issues surrounding the fluctuations in health insurer profitability, commonly referred to as the *underwriting cycle*. The core of the paper is a model developed to explain these fluctuations and forecast future financial results. The model is built from first principles, many of which can be found in two prior Milliman & Robertson, Inc. research reports by Reed, Roberts and Maule, using the Health Cost Index (HCI) as a proxy for health care costs and unpublished data from the Bureau of Labor Statistics Employment Cost Index as a measure of health insurer premiums.

The HCI is a proprietary measure of the per capita health care cost increases for the non-Medicare population. The HCI is published regularly in Milliman & Robertson, Inc.'s Health Cost Index Report™.

The Employment Cost Index is published by the Bureau of Labor Statistics and tracks increases in both wage and benefit costs experienced by employers. We use an unpublished subindex of the benefits index as a measure of health insurance premium increases.

Historical Underwriting Cycle

During the 1980's, much attention had been focused on the observed regularity of health insurer's profitability fluctuations. For thirty years the underwriting results of the BCBS Plans, defined as the difference between premium revenue and incurred claims and expenses, had exhibited a pattern of alternating three year periods of profit and loss. Chart 1, shown previously, illustrates this historical pattern for BCBS plans. This regular pattern of gains and losses continued until the early 1990's.

Research by numerous authors has produced many theories as to the nature and cause of this cycle. The factors affecting health insurance industry profitability are discussed below.

Factors Affecting Profitability

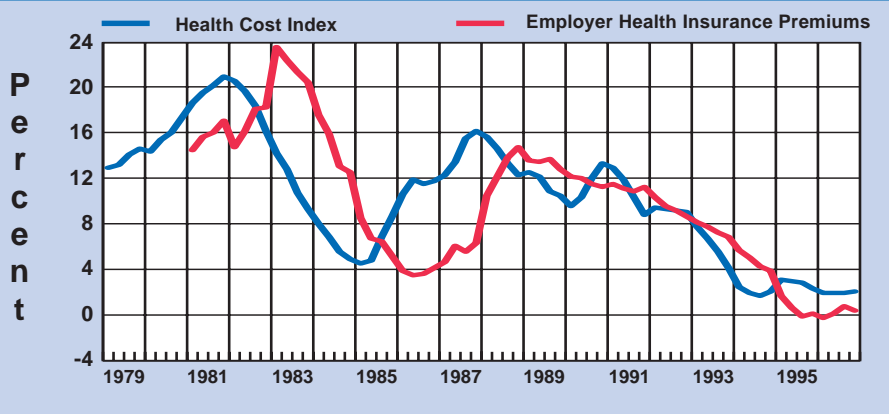
Unexpected Changes in Incurred Claims

Profitability in the industry is affected by the interaction of actual cost trends versus premium trends. Cost trends are referred to as the rate of change in actual cost per person for a given time period. Premium trends refer to the rate of change in premium charged per person for that same time period. Simply stated, underwriting profits are the difference between revenues (premiums) and costs. If the revenues and costs change at different rates over time (trend), profitability will rise and fall. The change in profits is directly related to the ability of insurers to properly measure and predict their incurred claim and other cost trends and reflect these changes in revenues.

Competitive Pressures

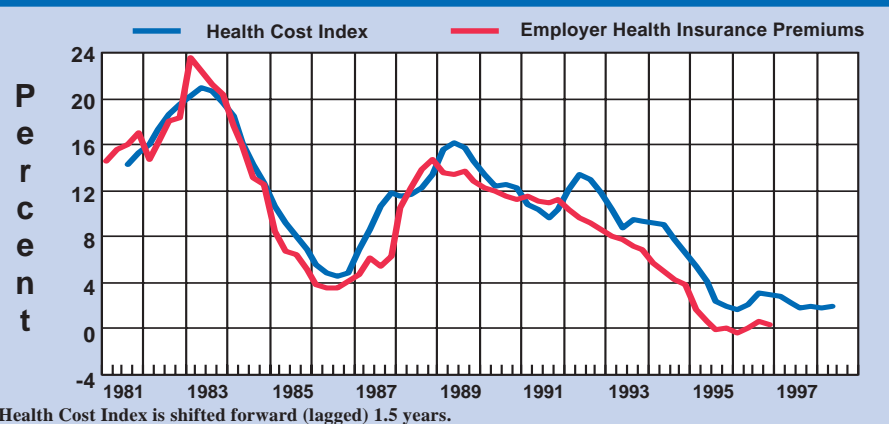
The competitive pressures of the health insurance marketplace have a

Chart 2: HEALTH COST INDEX VS *EMPLOYER HEALTH INSURANCE PREMIUMS



*Employer Health Insurance Premiums are unpublished data from the Bureau of Labor Statistics Employment Cost Index

Chart 3: HEALTH COST INDEX VS *EMPLOYER HEALTH INSURANCE PREMIUMS



Health Cost Index is shifted forward (lagged) 1.5 years.

significant impact on the relationship of cost and premium trends. Even if an insurer was able to perfectly predict future cost trends, competitive pressures (relating to an insurer's desire to maintain and grow market share) and recent financial results influence the rate at which an insurer actually increases premiums.

As profits rise, the pressures to increase market share and to become more competitive increase. These pressures often come into conflict with the trend forecasts provided by actuaries. The lack of defensible or believable forecast models allows the competitive pressures to overcome the need for these higher trend assumptions at critical junctures, such as the trough in the medical trend cycle.

Periods of rising cost trends create difficult choices between market share and profitability. If premiums are increased at a faster rate than competitors, market share is likely to suffer. Implementation of increased trend assumptions is often postponed until competitors have acted or until it is obvious from developing experience that underwriting results are deteriorating rapidly.

Modeling Profitability

It is possible to use these concepts to formulate and test a model of profitability for the industry. Premium trends are observable and are highly correlated with past actual cost trends. This occurs because actuaries often rely on past trends as the forecast

of future trends, lacking better predictive models. The timing is such that premium trends for future time period t are effectively set based on actual cost trends approximately 1.5 years prior, when the actual estimates are being made. It is important to recognize this relationship as we can use it to anticipate future premium increases. Estimates of future premium increases can be based on past cost increases assuming that this lagged relationship holds. Charts 2 and 3 illustrate the relationship between the HCI (representing cost increases) and the Employment Cost Index health insurance premium trend.

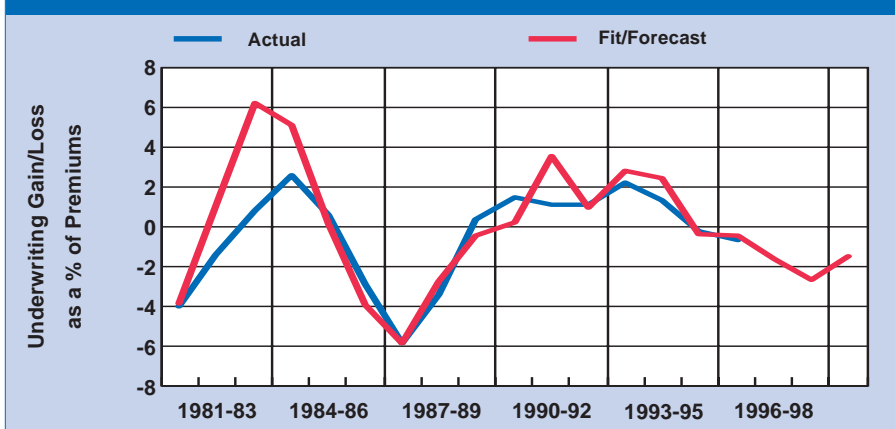
The high correlation, on a lagged basis, between the two series should be apparent, but can be further illustrated by artificially removing the lag between the two series. This is accomplished by shifting the Health Cost Index forward 18 months. This is illustrated in Chart 3.

Estimates of changes in profitability can be made using the difference between observed premium and cost trends. If premium trends are below cost trends the profitability will diminish. If premium trends outstrip cost trends profitability will increase.

Testing the Model

In order to test this model we need a measure of actual cost trends over time. The Health Cost Index has been designed and developed by Milliman & Robertson to fill this need. Using the difference between the annual rate of change from the Health Cost Index and the health insurance premiums, we can determine the expected change in underwriting

Chart 4: BC/BS UNDERWRITING RESULTS-ACTUAL VS FITTED



Summary of BC/BS Underwriting Results and Forecasts

Year	Actual Gain/Loss %	Forecasted Gain/Loss %
1994	1.28%	
1995	-0.24%	
1996*	-0.73%	
1997		-1.7%
1998		-2.7%
1999		-1.5%

Source: BC/BS Association and Milliman & Robertson, Inc. Copyright 1997 Milliman & Robertson.
*1996 reflects results through the third quarter.

gain/loss for the Blue Cross/Blue Shield System.

In order to develop forecasts using this model, future values of the cost trend and premium trends are needed. The relationship between premium increases and past cost increases make it easy to forecast future premium increases. We also produce forecasts of the HCI for three years into the future based on proprietary econometric models. These models use real economic activity as a leading indicator for future health care consumption (see *Modeling and Forecasting National Health Expenditures*, Cookson and Reilly) among other variables.

Chart 4 illustrates the fit and forecasts that are based on this model. The forecasts are based on

the HCI forecasts, which show moderate increases in trends during 1997 and more significant increases into 1999. The forecasts of premiums for 1997, 1998 and 1999 use past actual and forecasted HCI trends as the assumed premium increases.

The model does a reasonably good job fitting observed profitability, given the simplicity of the model. The only significant area where the model did not fit well was during the early 1980's, where actual gains were much lower than expected. This was at a time when many groups were switching to ASO or Cost Plus which would significantly reduce the gains accruing to Blue Cross and Blue Shield Plans.

The model forecasts contin-

ued losses in 1997, 1998 and 1999. If trends are higher than expected, which has at least a 50% chance of occurring, then underwriting results are likely to be worse in all three years.

The conclusion is that the prior two years of losses were primarily competition driven and not related to any large upturn in trends. If trends turn up, as expected, then underwriting losses will deepen. The net result is that surplus accumulated during the long stretch of profitability during the late 1980's and early 1990's will be reduced.

Underwriting Cycle Management Issues

In order to manage the *underwriting cycle* it is clear that accurate forecasts of future cost trends are essential. However, accurate forecasts of future expected costs are not sufficient to ensure stable underwriting results. A marketplace strategy that reflects the tradeoffs of market share versus profits is necessary. The inability of other insurers to recognize turning points in trends makes it difficult to remain competitive in the marketplace while staying profitable. A consistent strategy for dealing with the underwriting cycle must be in place and be followed with discipline.

The ability to hedge trend risks would allow an insurer to operate more aggressively in the marketplace despite the expectation that trends will rise. Even though the Chicago Board of Trade has had a health care trend futures/option hedge product on the drawing board for some time, no action has been taken to implement it. ■