

**Forecasting Health Insurer  
Profitability: 1998-2000**

**Milliman & Robertson, Inc.  
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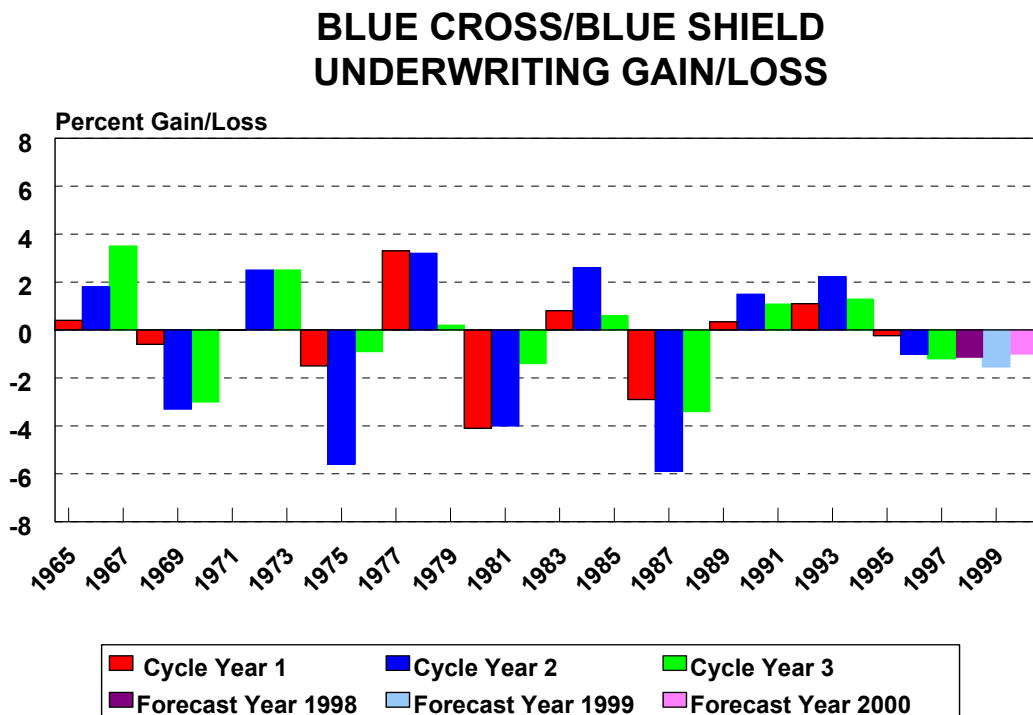
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## Forecasting Health Insurer Profitability: 1998-2000

This research report attempts to forecast the financial results of health insurers using Blue Cross/Blue Shield historical results. It does this by examining the historical health underwriting cycle as a function of healthcare costs, as measured by Milliman & Robertson's Health Cost Index (a proprietary measure of healthcare cost increases). Using economic forecast models, it utilizes forecasted values of the Health Cost Index to project underwriting results.

The underwriting losses experienced by the Blue Cross/Blue Shield system during 1995 and 1996 extended into 1997. The intense competition between health insurers to capture increased market share has kept premiums low. This, in turn, has led to disappointing financial results over the past three years. Chart 1 below shows the history of the Blue Cross/Blue Shield system and our three year forecast (1998-2000) of underwriting gains and losses since 1965 as a percentage of premium. The last three years before our forecasts show increasing losses culminating in a 1.2% underwriting loss in 1997. Note that these results are exclusive of investment income. If the impact of investment incomes, which has been very favorable in recent years, is included net income for the Blue Cross/Blue Shield plans would be positive during the past three years.

Chart 1

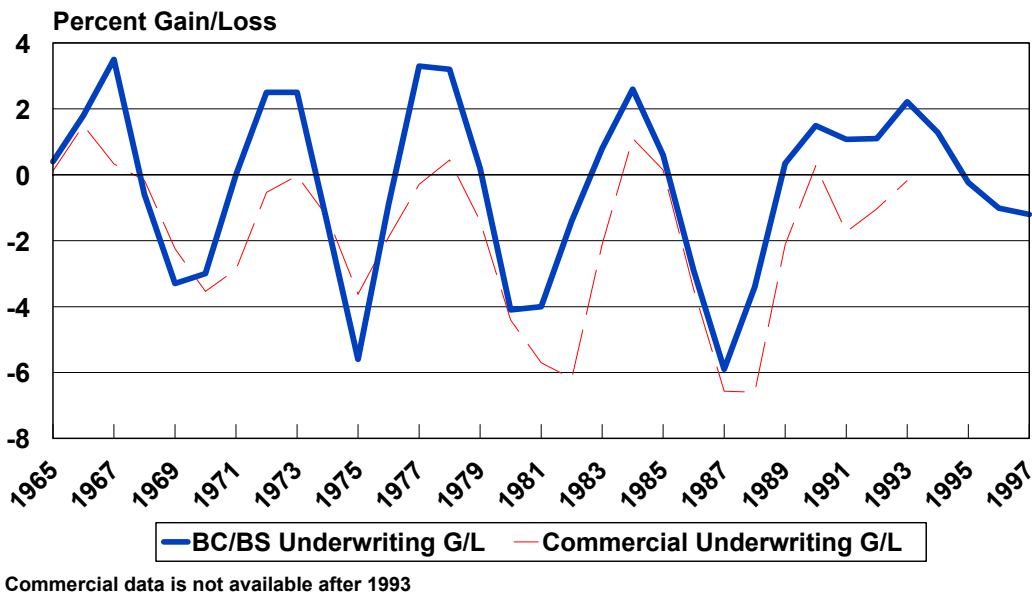


Between 1965 and 1991 the results in Chart 1 show a consistent pattern of three consecutive years of gain followed by three consecutive years of loss. The unfavorable results of the last three years appear to be consistent with the past health underwriting cycle pattern with the exception of three additional years of gain between 1992 and 1994. If the underwriting cycle's historic three-year pattern is to resume, the Blue Cross/Blue Shield system would need to produce positive returns in 1998 through 2000. As discussed later in this report, this is not a likely scenario. However, this does not mean there is no longer a cycle, since most economic cycles do not have the regularity exhibited by historical Blue Cross/Blue Shield underwriting results. Most business cycles, by definition, tend to be recurrent but don't exhibit the level of regular periodicity seen in the Blue Cross/Blue Shield underwriting results, at least up to 1992. Since 1989 the cycle appears to have changed to one of longer duration, with smaller annual gains and losses, especially considering our forecasts for 1998-2000.

Chart 2 illustrates the health insurance profits/losses for commercial carriers compared to Blue Cross/Blue Shield plans. The two carriers show consistent results over the time period shown (commercial data is not available after 1993). These results are not completely comparable because of differences in commercial reporting. However, they do exhibit a great deal of consistency in the cyclical patterns.

*Chart 2*

### BLUE CROSS/BLUE SHIELD AND COMMERCIAL UNDERWRITING GAIN/LOSS



It must also be noted that if we were to look at individual Blue Cross/Blue Shield plans (or even individual commercial carriers), their results are likely to differ, sometimes substantially, from the

underwriting gain/loss cycles displayed in Charts 1 and 2 -- which apply to the entire Blue Cross/Blue Shield or commercial systems. Depending on the size of the individual plan or carriers and its policy towards managing the underwriting cycle, its financial results will vary accordingly from the overall system's results. However, we would expect that the results by individual carriers would exhibit similar cyclical patterns to the overall system.

## The Underwriting Cycle

Underwriting gains and losses are a result of the differences between revenue and expenses. The former is represented by the amount of premium revenue and the latter is measured by the amount of incurred claims and other operating expenses. If revenues are rising faster than costs, then gains are likely to occur. If, on the other hand, the insurer's claims and expenses rise faster than the premiums charged, losses will result.

The key to profitability is the successful management of the relationship between revenues and costs. Insurers need to have the ability to measure their incurred claim trends adequately. Milliman and Robertson's Health Cost Index (HCI), which measures healthcare cost increases for private insurers, can be used as a guide in anticipating future claim costs. It is based on data from providers and reflects per capita healthcare cost increases for the overall population, excluding Medicare.

Chart 3 illustrates the Blue Cross/Blue Shield underwriting results compared to healthcare cost trends as represented by the HCI. Examining this graph, it is apparent that underwriting results and healthcare trends as measured by the HCI are inversely correlated.

*Chart 3*

### **BLUE CROSS/BLUE SHIELD UNDERWRITING GAIN/LOSS VS. HEALTHCARE TRENDS**

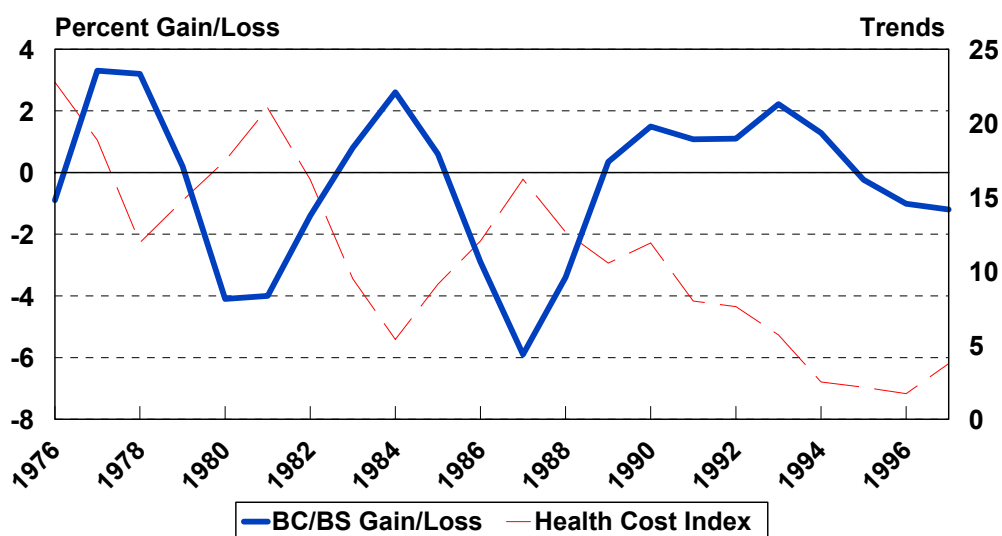
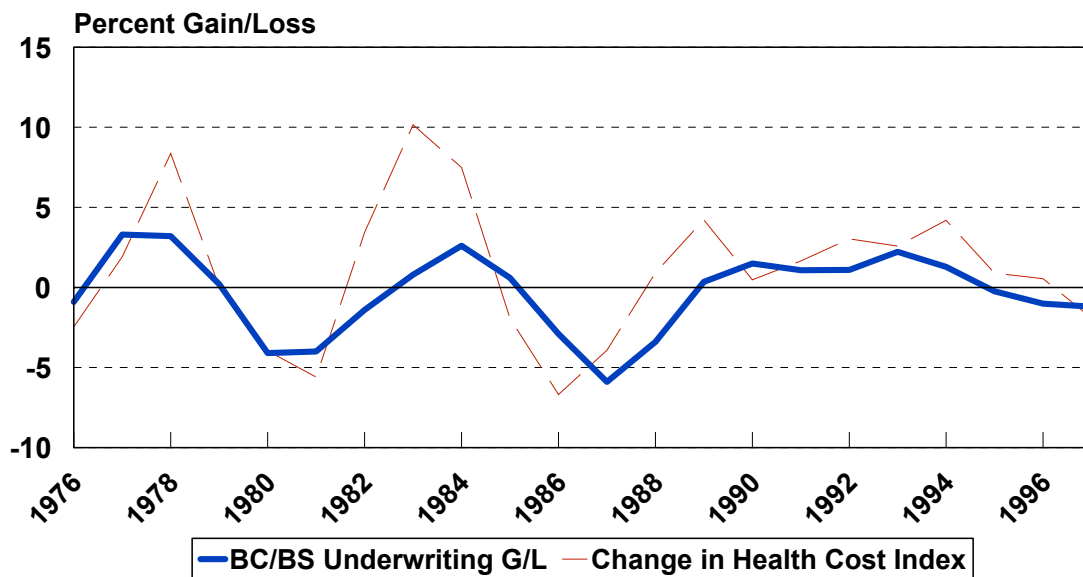


Chart 4 attempts to portray a better visualization of this relationship by using the negative of the HCI trend graph. In addition, the Health Cost Index graph reflects the change in trends 18 months apart, meaning the difference between current trends and the trend levels from 18 months prior. This 18 month lag follows the premise that cost trends for providers lead health insurance premiums by about 18 months. This lag is due to the time needed to collect and analyze historical claims data and to implement changes in premiums. In many instances, premium rates are guaranteed for 12 months or more. Also, the Blue Cross/Blue Shield plans have many regulatory requirements that impact how quickly they can react to changes in the environment.

*Chart 4*

### **BLUE CROSS/BLUE SHIELD UNDERWRITING GAIN/LOSS VS. CHANGE IN HEALTHCARE TRENDS**



HCI data reflects change in 12-month trends 18 months apart

Fur ther evidence that the cost trends for providers leads health insurance premiums by about 18 months can be obtained by comparing the Health Cost Index against the Employment Cost Index -Health Insurance Permiums. The Employment Cost Index - Health Insurance Premiums is the governments unpublISHED estimate of employers increase in health insurance premiums, which is measured as a component of the employee benefits costs which are reported quarterly. Charts 5 and 6 illustrate the Employment Cost Index versus the Health Cost Index. Chart 5 shows them on the actual time scale, and Chart 6 shows the HCI trends delayed 18 months to correspond more closely with the Employment Cost Index. The close correspondence between these two graphs is indicative of the delay that exists between changes in cost trends and the insurers recognition of these trend changes.

Chart 5

### HEALTH COST INDEX VS. EMPLOYMENT COST INDEX

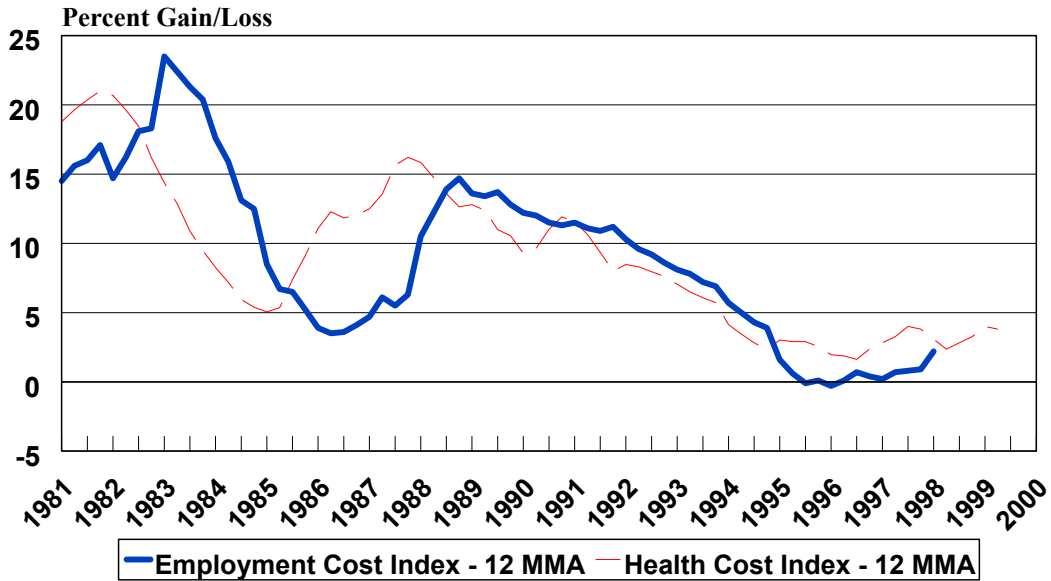
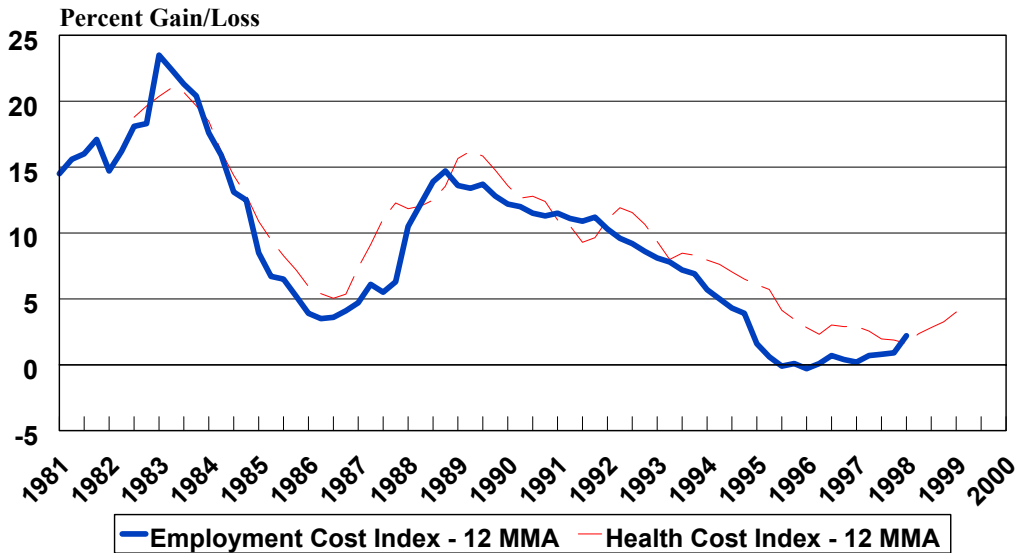


Chart 6

### HEALTH COST INDEX VS. EMPLOYMENT COST INDEX



Health Cost Index is shifted forward (lagged) 18 months.

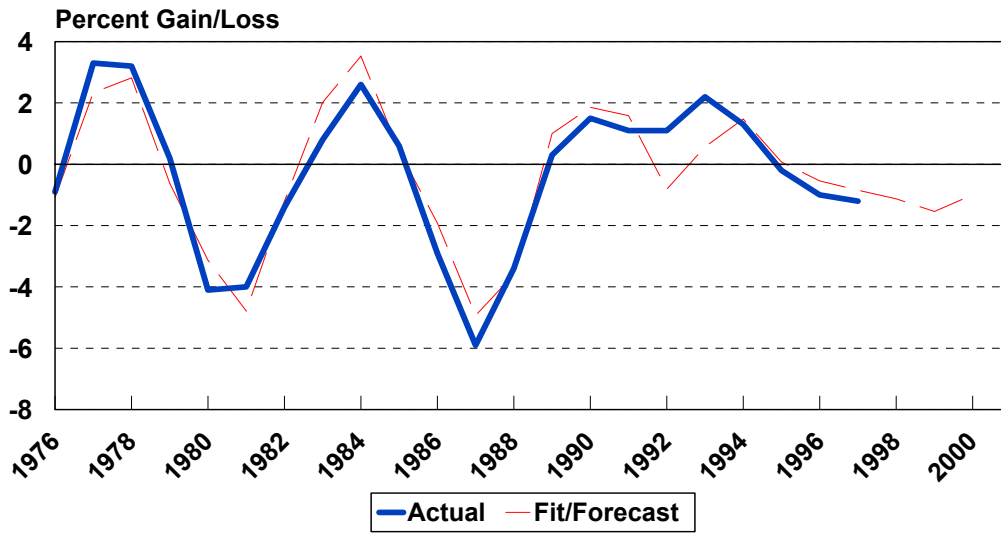
## Modeling Profitability

Having established a correlation between Blue Cross/Blue Shield underwriting results and the Health Cost Index, the next step is to formulate a statistical model that will enable the forecasting of underwriting profitability. Guided by time series forecasting techniques, variables that significantly impact underwriting results were first identified. Besides the HCI trends described earlier, the prior surplus levels were also significant variables. Once an appropriate forecast model is developed, it is necessary to have future values of the independent variables, so that a projected value of the underwriting gain or loss can be obtained. The Health Cost Index is projected three years out so that future values are available to forecast the underwriting gain/loss. In order to obtain future values of the surplus variable, an assumption was made regarding investment income. The underwriting forecasts presented in this report are based on an investment income assumption of 1.5% of premium for the years 1998, 1999 and 2000. This is lower than the returns of the past ten years which have averaged about 1.7%, but the favorable returns seen recently are not likely to be sustained over the long run.

Chart 7 displays the actual historical underwriting gains and losses versus the fitted values from the forecast model described here, as well as the projected values of the Blue Cross/Blue Shield systems underwriting gain/loss. Note that the forecast for 1999 uses the 1998 gain/loss forecast to estimate the 1998 surplus level, which can then be used to forecast the 1999 underwriting gain/loss. The same process follows for the year 2000 gain/loss calculation.

*Chart 7*

**BLUE CROSS/BLUE SHIELD UNDERWRITING RESULTS  
ACTUAL VS. FITTED**



Year	Actual Gain/Loss %	Forecasted Gain/Loss %
1995	-0.24	
1996	-1.01	
1997	-1.20	
1998		-1.13
1999		-1.54
2000		-1.00

Source: Blue Cross/Blue Shield Association and Milliman & Robertson, Inc.  
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Examining Chart 7 more closely, the forecast model produces fitted values that are reasonably close to the actual observed values. The only period that doesn't fit is 1992-1993 that occurred at the time the old cycle would have anticipated negative results. However, at that time there was a lot of discussion about the cycle within the health insurance marketplace, and many carriers made a sincere effort to try to offset the normal cyclical forces. To a large extent it looks like they did have an effect, but it eventually wore off. Since the Health Cost Index is measuring the average market trend, various factors exist that may cause actual trends to differ from the Index. Different trend scenarios would produce different underwriting gain/loss forecasts.

The table displayed below Chart 7 lists the underwriting returns during the past three years and during the three projection years.

Based on this forecast model, further underwriting losses are expected during 1998 through 2000. However, the magnitude of these losses is confined to a range of 1.0% to 1.5%. These results seem to point to the fact that the health underwriting cycle of three consecutive years of alternating gains and losses that prevailed between 1965 and 1992 no longer holds. This does not say that the cyclical nature of profitability no longer applies, but that the three year regularity of the cycle prior to 1992 is unlikely to continue. In fact, since 1989 the cycle appears to be more protracted in length (approximately 6 years gain or loss) and greatly dampened in severity. This dampening is likely a direct result of the much more muted nature of health insurance trends brought about by the increased effectiveness of managed care and the lower inflationary environment.

The implications of the forecast model are that if trends are lower than forecast, then underwriting results will be better than projections. Alternatively, higher trends will result in more negative financial results. Our trend scenarios, based on the Health Cost Index, range from a 2.0% to 2.5% increase in trends between year-end 1997 and mid-year 1999 and then level off. This could translate into significantly higher trends for unmanaged care. Related to the issue of higher trends is the possibility of a backlash against managed care, discussed in detail in the July 1998 issue of the Health Cost Index Report™. At this time the assumptions in our HCI models do not reflect any increase from the managed care backlash. The efforts of managed care plans to control the utilization of medical care services, in addition to their ability to negotiate discounts with providers, has curbed healthcare inflation over the past decade. However, the deluge of legislation that has arisen in the interest of protecting the patient, in addition to the more aggressive posturing of providers in contract negotiations, may lead to at least a partial reversal of this low trend environment. If this scenario was to materialize and trends increased substantially, underwriting losses would be much higher. Furthermore, if investment income results are higher than projected in the scenario used here, future underwriting losses are also likely to be somewhat greater than projected since higher surplus levels lead to lower underwriting gains.

## Managing Profitability

Healthcare cost trends have risen steadily since mid-1996 due to changes in Medicare reimbursement and the healthy economy. Based on forecasts of the Health Cost Index, healthcare costs are expected to continue increasing steadily during 1998 with the trends leveling in 1999. This means that insurers will eventually have to raise premiums to keep up with or exceed the expected rise in costs. Insurers need to balance the conflicting objective of increasing premiums to improve profitability while not increasing them so much that they erode market share. It is a good business practice for insurers to recognize the underwriting cycle and develop strategies around it, rather than operating strictly on a reactionary basis. This means that insurers need a consistent strategy for dealing with the underwriting cycle and must adhere to the strategy through the peaks and troughs of the cycle. The strategy has to be designed in such a way that sufficient surplus is accumulated during the profitable phase of the cycle to offset the losses incurred during the unfavorable portion of the cycle and still maintain adequate contingency reserves. Mentioned below are some of the strategies necessary to successfully manage the underwriting cycle:

- **Clearly Defined Management Strategy and Setting of Targets:** A specific strategy needs to exist for every stage of the underwriting cycle. The insurer has to balance profitability with the need to increase market share. Overall success is only attainable by strict adherence to the defined market place strategy.
- **Availability of Experience Data:** This requires insurers to maintain accurate, up to date information regarding their experience. Management needs to utilize this data in a timely, tempered fashion and not overreact to current market conditions.
- **Anticipation of Future Trends:** This requires a forward looking forecasting system that can anticipate future changes in healthcare costs. This can obviously be of great advantage in minimizing the effects of the underwriting cycle.
- **Determining Future Premiums:** Insurers often come under pressure to alter their trend assumptions in response to the market place. For example, if experience trends were lower than assumed, resulting in underwriting gains, it is tempting to keep future rate increases low. However, if these changes occurred at a critical juncture, such as the trough in the cost cycle, then these rate increases will turn out to be inadequate. Therefore, it may be necessary at certain times to adopt a pricing strategy that is deliberately out-of-sync with the market conditions at that time. This form of pricing is made easier if adequate surplus is available.
- **Risk Tolerance:** It is inevitable that there will be phases in the underwriting cycle when insurers will sustain losses. It is important to gauge the level of sustainable risk and also understand that proper management of the underwriting cycle can reduce the effects of this by building up adequate levels of surplus during the cycle's profitable phases.