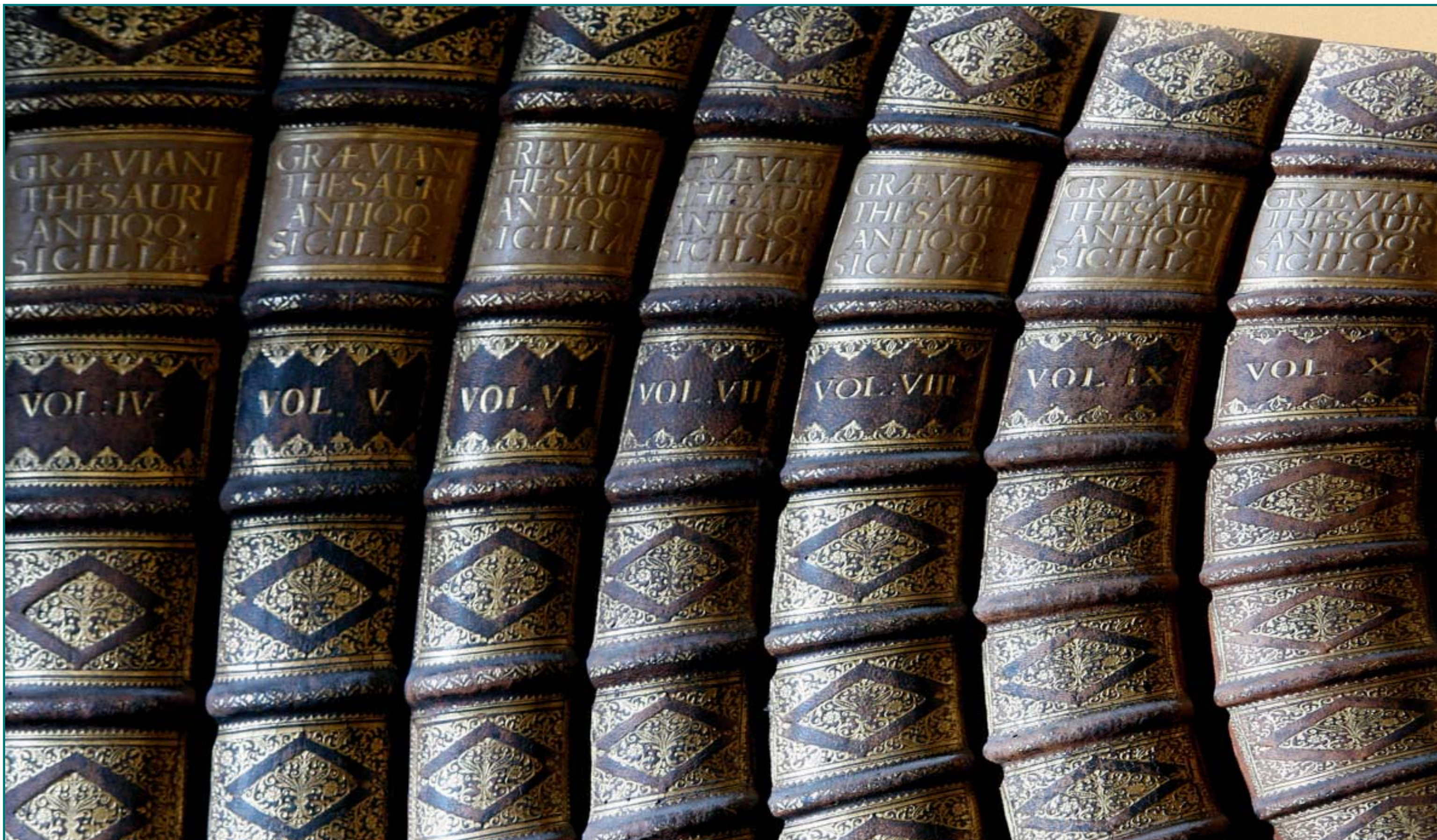
TREND – "The Wild Card"

by Tad Montross, Chairman and CEO

A Berkshire Hathaway Company



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Tad Montross

Franklin (Tad) Montross is Chairman and CEO of General Re Corporation. He began his career with Gen Re in 1978 as a casualty facultative underwriter. Since then, Tad has held a number of positions of increasing responsibility, both in the U.S. and internationally. In 1992, he was promoted to Chief Underwriter for the Treaty business. In 2001 he became a member of Gen Re's Executive Committee and the group's President and Chief Underwriting Officer, with management responsibilities including Treaty Underwriting, Actuarial and Claims. In 2008 he was appointed Chairman and CEO.

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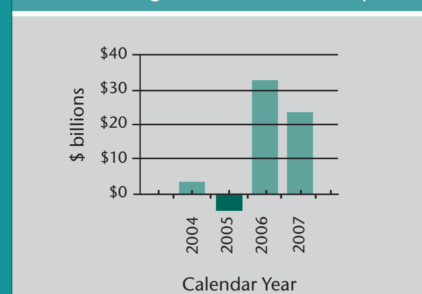
The property/casualty insurance industry results in both 2006 and 2007 were extraordinarily good. The North American property/casualty underwriting profit in 2006 was $31 billion and $19 billion in 2007. This $50 billion – or embarrassment of riches – is driving rate reductions and, in some cases, irrational behavior. Just looking at calendar years 2006 and 2007 in Graph 1A, one might conclude the property/casualty industry is an easy business. Unfortunately, even with these record underwriting results, the industry's return on equity is still below those of other industries.

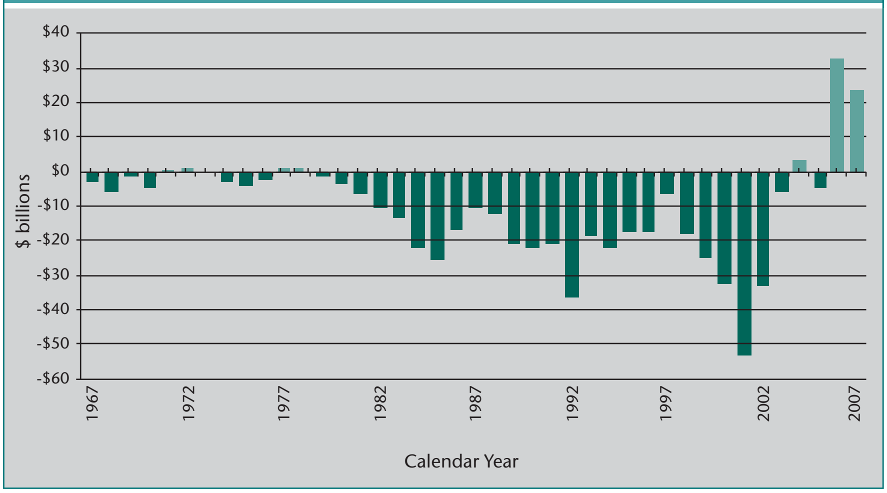
An Embarrassment of Riches?
U.S. Property/Casualty Industry Underwriting Results Graph 1A



Source: A.M. Best Aggregates and Averages 2006

If one looks at a longer time frame, say 40 years from 1967 to 2007, one gets a very different picture and perspective (see Graph 1B). The cumulative underwriting loss from 1967 to 2007 was $416 billion. There were underwriting losses in 33 years totaling $481 billion and underwriting profits in just eight years totaling $65 billion – 86% of those profits were produced in 2006 and 2007 alone. So while it is tempting to be influenced by recent record calendar year results, the real challenge to superior underwriting results is a thorough understanding of accident year vs. calendar year underwriting results and of the underlying trends.

An Embarrassment of Riches?
U.S. Property/Casualty Industry Underwriting Results Graph 1B



Source: A.M. Best Aggregates and Averages 2006

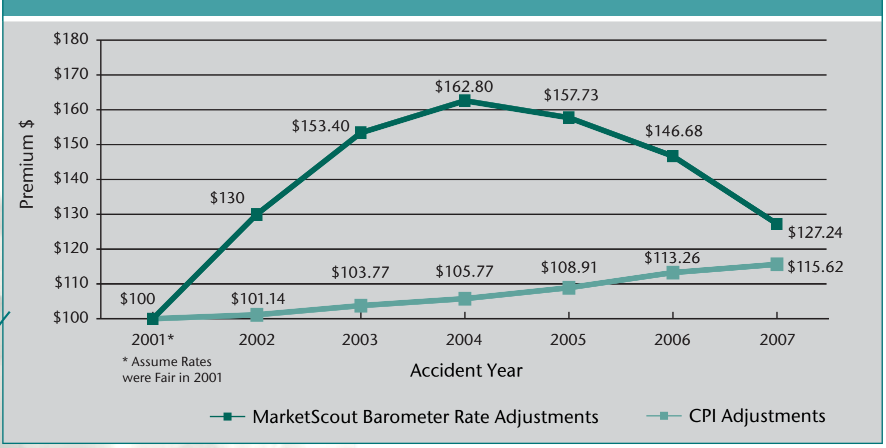
Calendar Year vs. Accident Year

It seems straightforward that pricing and underwriting decisions should be made based on current accident year results, not reported calendar year results that include prior year change in loss reserve estimates, both good and bad. However, calendar year results have driven behavior throughout cycles, and several years of price reductions have eroded accident year profitability.

Graph 2 shows the change in the U.S. property/casualty industry rates each year since 2001 as measured by the pricing service MarketScout. These price changes are compared to an index of consumer price changes (CPI). Despite significant price reductions in the past three years, the 2007 accident year rate level was still 27% above where it was in 2001. Yet most industry observers believe that rates were not adequate until the 2002 accident year. The 2007 rate level is slightly below the 2002 rate. Finally, consider the impact of inflation on rates. The CPI index indicates that inflation is up about 15% since 2001. Therefore, before we even begin to consider the impact of trends, given continued rate reductions and rising CPI, the 2008 accident year may well be unprofitable.

But focusing on the current accident year rate levels isn't enough. We must also estimate trend (actually trends, as there are several different types of trend) both for the current year and for the future. Estimating trends is part of what makes pricing of insurance so difficult and underscores the fact that we sell a product whose cost is unknown when we sell it. In fact, in some classes or lines of business, it may be decades before we have confidence about the ultimate results.

P&C Rate Adequacy Graph 2



Sources: MarketScout and Bureau of Labor Statistics

Trend

Trend is used by statisticians to describe "the general direction in which something tends to move."[1] Based on past data, trend is used to project into the future, which introduces at least two variables: the quality of the historic data, and the fact that we extrapolate from that data into the future.

In insurance, we analyze three basic types of trend: Loss trend, Exposure trend and Premium trend. Loss trend is an estimate of the change of both the frequency and average severity of loss. Frequency and severity trends can be either negative or positive and sometimes one factor is negative while the other is positive. Exposure trend is the change in the underlying risk profile or risk characteristics for the portfolio: change in insured values, limits, payrolls, etc. Premium trend is the change in price level per exposure, including changes in discretionary underwriting credits or debits. It is the real change in rate adequacy adjusted for changes in exposure. I'll discuss each type of trend separately with some observations about how they impact or may influence each other and how they impact various risk layers.

[1] American Heritage Dictionary

Year-Over-Year Variability on a Ground-up Basis — Table 1

AY Ending June 30	Severity	% Ch.	Frequency	% Ch.
Loss Trend: Variability – Commercial Property Fire				
2001	$22,421		3.18	
2002	$24,779	10.5%	2.57	-19.2%
2003	$26,016	5.0%	1.96	-23.7%
2004	$28,315	8.8%	1.84	-6.1%
2005	$30,263	6.9%	1.54	-16.3%
2006	$32,027	5.8%	1.66	7.8%
Commercial Auto Liability – Bodily Injury – Loss Trends – Total Limits – Multistate				
AY Ending June 30	Severity	% Ch.	Frequency	% Ch.
2001	$30,119		1.2076	
2002	$31,648	5.1%	1.1052	-8.5%
2003	$32,253	1.9%	1.0642	-3.7%
2004	$36,881	14.3%	1.1285	-6.0%
2005	$38,850	5.3%	1.0912	-3.3%
2006	$37,664	-3.1%	1.0950	0.3%

Source: ISO Circulars AS-CF-2007-021 and AS-CA-2007-032

Loss Trend

Establishing premiums, or the loss cost component of the premium, is all about estimating the unknown. We estimate both the expected number of claims per exposure and the average cost per claim, which we refer to respectively as frequency and severity estimates. These estimates are based on historical data by line or class of business; the changes are suggested by the data, and extrapolations are based on distributions for excess layers.

Frequency and severity trends are subject to significant variability (particularly in excess layers), inflection points, the leveraged effect of inflation, and interesting interplays between frequency and severity indications. The year-over-year variability in severity and frequency on a ground-up basis can be seen in the two examples in Table 1.

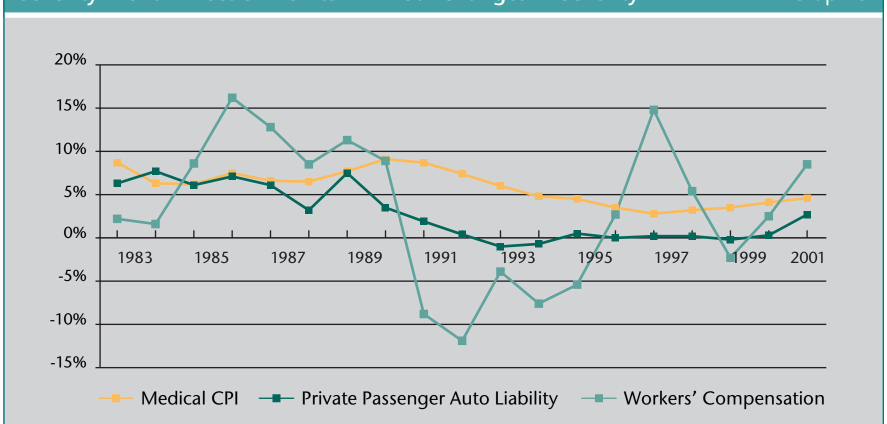
The data is often lumpy in both the average frequency and the average severity indications for these two lines of business. It is also several quarters old, which makes extrapolating forward for the coverage period challenging. Obviously, the more variable and/or dated the data, the more difficult it is to estimate or, said differently, less reliable the projections of future severity and frequency loss trends are.

Inflection Points

Inflection points in the trend (where its concavity changes), or any point where the trend changes abruptly, represents a particular challenge to identify and incorporate in pricing assumptions. In most cases, multiple data points (quarters or years) are required to fully recognize the change in trends before they are used, which can create a significant gap between expectation and reality.

Volatility Management

Severity Trend Inflection Points – Annual Changes in Severity — Graph 3



Sources: Best's Aggregates and Averages; Bureau of Labor Statistics; Medical CPI Based on Ultimate Loss Estimates per Gen Re

For example, Graph 3 shows that the average severity trend for workers' compensation has been very volatile. High points reached in 1985 and again in 1996 were accompanied by large decreases. Negative trend was experienced from 1990 - 1994 and then again briefly in 1999. These shifts usually lead to increased estimation error in loss costs which creates results that are either better or worse than the "expected" or priced results.

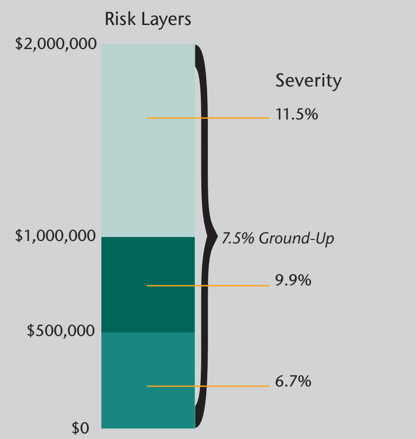
These lags in correct estimation create frustration on the part of insurance consumers who all would like to pay less and think that negative (i.e., favorable) trends will continue and that positive (i.e., deteriorating) loss cost trends are an anomaly.

Leveraged Impact of Severity Trend

Excess layer variability and the recognition of trends are more difficult because there is greater variability in the data and more inflection points.

The effect inflation has on a layered basis is even more dramatic as the lower layers are capped by the limit or size of layer. As the size of losses increases, the additional amounts

Severity by Layer Graph 4



Assuming a ground-up severity trend of 7.5%, in the first layer of $0 to $500,000 the trend is 6.7% due to layer capping; it is 9.9% in the layer $500,000 x $500,000 and 11.5% in the layer $1M x $1M due to spillover from the lower layer. The 11.5% represents both more claims to the excess layer and greater average severity.

are pushed disproportionately into the upper layers. This dynamic between layers for an insurance product or portfolio can be seen in the example in Graph 4.

Differing Frequency vs. Severity Trends and Allocations

In some lines of business, loss frequency trend can be negative while severity trend is positive, i.e., severity is increasing. This can create anomalies where the gross or total loss cost is flat or changing slightly but the net loss cost is decreasing and the ceded loss cost is increasing. This is because as the average severity is increasing, the allocation of loss cost between layers is changing with more of the total loss cost going to the excess.

In the example in Graph 5A, the annual frequency trend is -3% while severity is +5%. In Year One the gross loss is made of 100 claims at $300,000 per claim. The excess layer attaches at $250,000 per risk so $25M falls within the retention and $5M goes to the excess layer. In Year Two, the frequency of claims is down 3% from 100 to 97 claims, while the average severity is up 5% from $300,000 to $315,000. Retained losses drop to $24,250,000 (97 claims at $250,000 per claim) and the losses above the retention ($315,000 less $250,000 times 97 claims) increase to $6,305,000. In Year Three the frequency drops to 94 claims with an average severity or cost increasing to $330,750. The losses within the retention drop further to $23,522,500, and the losses above the retention increase to $7,597,000. Graph 5B shows how changes of frequency and severity play on the percentage of loss that is retained versus ceded. The math in this example is pretty straightforward but the interplay between frequency and severity and its impact on retained vs. excess losses is not intuitively obvious.

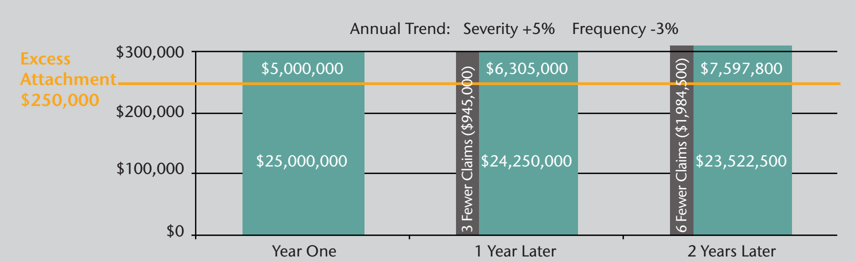
Exposure Trend

In addition to loss trend assumptions, an estimate of the expected change in exposure trend must be made. Depending on whether we take a ground-up or excess layer perspective, exposure trend can refer to limits drift, insured value changes, payroll increases and changes in deductibles. Over time, an insurer may see its portfolio of risks shift as more insureds purchase higher limits. This shift in exposure means more claims could be paid out at higher values. Likewise with inflation, both economic and social, insured values are constantly changing. Finally, higher policy deductibles reduce the premium being collected, meaning less is left to pay for the higher limit losses.

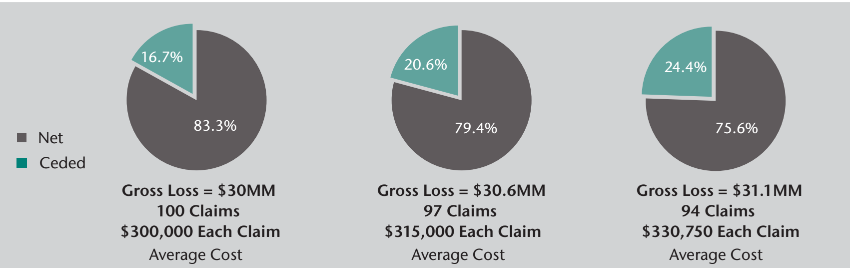
Exposure trend is not to be confused with changes in *risk exposures* such as: (1) a fire risk where the occupancy, protection class or neighborhood changes during the year; (2) a wind risk where the roofing material is updated and shutters are installed; (3) an auto risk where the miles driven drops in half; (4) a contractor's risk that begins performing General Contracting work as well as artisan work; and (5) a products risk in an environment where tort law or standards are changing. These changes in risk exposures are considered in the underwriting processes.

Information asymmetries, both at the risk and portfolio level, are a

Loss Trends and Reallocations Graph 5A



Graph 5B



particular challenge in identifying and assessing changes in exposures. Exposure reductions or loss mitigation actions are likely to be reported while increases in exposure or risk deterioration are unlikely to be reported voluntarily, making onsite risk engineering critical on more complex and large risks. Unfortunately, assessing exposure changes prospectively on middle market and smaller risks is very difficult and often deemed not to be cost efficient.

Exposure trend creates another potential gap between actual loss costs for a risk or portfolio and the "expected" or priced loss costs.

Premium Trend

Insurers – and reinsurers who rate their business as a function of a primary insurer's subject premium, or who rely on an exposure pricing model that incorporates an estimate of the direct loss ratio for a line of business – also must take into account premium trend before they price their business. How are the premiums being charged for the original policy changing, and how quickly are they changing?

Experience rating, and the parameters underlying exposure rating (really just experience rating for aggregate results), all attempt to recast the history at current (or prospective period) levels, regarding severity, frequency, exposure and premium level.

Filed rate information, if available, does not tell the whole story because typically the underwriter or underwriting process incorporates a number of debits and credits that can be applied based on a specific risk characteristic. These judgments are subject to many behavioral biases, and even if accurately tracked, it is difficult to assess the appropriateness of underwriting judgments. Viewed historically, underwriting judgment appears to bounce from too optimistic to too pessimistic over the course of the underwriting cycle.

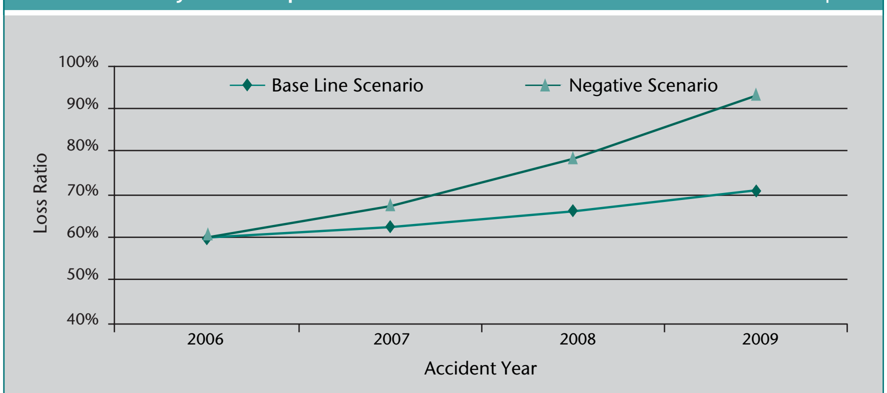
There has also often been a marked difference between the way new business and renewals are viewed and priced. At most companies, new business rate adequacy is not tracked. Tracking filed rate information as well as actual rate levels and their impact on loss ratios is made all the more complicated by the phenomenon of "adverse selection," whereby selective lower pricing to attract the better risks can actually significantly improve line or portfolio performance. The key is to understand and be able to measure risk attributes that differentiate experience, good or bad, in order not to be adversely selected against. The days of tariff rating or average rating are over. The sophistication of data gathering, data mining and now predictive modeling is significantly changing the playing field and will likely define the winners and losers over the next decade.

Sensitivity

Just how sensitive are underwriting results to the various trend assumptions we make? To simplify, I will consider loss and premium trends assuming the exposure trend is accurately priced.

In Table 2, I have laid out a base scenario and a "negative" scenario. The loss frequency assumption was changed from -2% to +2%, the loss severity from +5% to +7%, and the premium change assumptions from -1%, -3%, and -4% to -3%, -6% and -8% – seemingly minor adjustments. If we run the underwriting model for four years using these assumptions (see Graph 6), the base line loss ratio increases from 60% to 70%, while in the negative scenario the loss ratio jumps to over 90%. This shows the importance of actively monitoring and acting on changes in trends. What appear to be small annual trend changes, if ignored, can have a large, cumulative adverse effect.

Underwriting Discipline
Trend Sensitivity to Assumptions Graph 6



Source: Gen Re

Underwriting Discipline Table 2

Loss Trend Assumptions	Basic Scenario	Negative Scenario
Frequency	-2%	+2%
Severity	+5%	+7%
Price Change Assumptions	**Basic Scenario**	**Negative Scenario**
2007	-1%	-3%
2008	-3%	-6%
2009	-4%	-8%

Conclusion

Measuring, tracking and estimating the three major types of trend – loss, exposure and premium – is one of the major challenges insurers and reinsurers face throughout the cycle. The data quality and timeliness, inflection points, reallocations, credibility (particularly in higher layers), changing exposures and premium levels underscore the difficulties in "selling a product whose cost is unknown when we sell it," and explains the frustration policyholders have when buying a product whose price is inconsistent: almost always too high or too low. Over time, the ups and downs can cancel each other out, but at any point in time the buyer or seller will be "ahead or behind." This has led to significant arbitrage opportunities in the past that will likely increase in the future as buyers of products in all industries (not just insurance) have become much more short-term oriented and the products more commoditized.

Today more than ever, insurance is a product where companies must get the pricing correct upfront and where producing good underwriting results consistently is the only sustainable strategy. Neither can be achieved without a thoughtful, diligent focus on trend.