RISK THEORY AND PROFIT LOADS - REMARKS

(1990 Ratemaking Seminar)

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CAS 1990 Ratemaking Seminar
Session 1B & 3B - Risk Theory & Profit Loads
Remarks of Chuck McClenahan

Some of you may be old enough to remember the *Beat Generation*. This is a term coined by the author Jack Kerouac to describe members of the post-war generation, notably in San Francisco, who rejected values of the past and believed there to be no future for humanity. The beat generation accepted only the immediate present in terms of experience and sensations.

Well, ladies and gentlemen, I have been to San Francisco recently and I am here to tell you that the Beat Generation lives.

Some changes have, of course, taken place since 1960 when the *Love Generation* took over. No longer relegated to espresso houses, the latter-day beatniks hold court in a converted high school gymnasium in the San Francisco area. The rhythmic beat of bongo drums has given way to the pounding of gavels. Depressing poetry has been supplanted by even more depressing legal arguments. And the sincere, if misguided, characters - epitomized by Maynard G. Krebbs - have been replaced by equally sincere, and even more misguided, lawyers, econometricians, academicians, regulators and actuaries.

Ladies and gentlemen, I give you the latest incarnation of the Beat Generation - the California Proposition 103 hearings.

Just as the Beat Generation accepted only the experience of the immediate present, the California Department of Insurance has proposed methodology for rolling back rates based upon a single calendar year of experience - apparently ignoring both the experience of the past and any concern for the future solvency of insurers or viability of the California market.

And, just as members of the Beat Generation could spend days discussing esoteric issues such as "what is the sound of one hand clapping?" the Proposition 103 hearings are focusing on how to measure property-casualty rate of return and how to reflect rate of return in the premium rates.

I have been invited here today to discuss the manner in which the profit and contingencies provision might be properly developed in the context of property-casualty rate regulation. Specifically, I am to provide a summary of some of the evidence I gave at the Proposition 103 hearings. More specifically, I am here to defend what has become known as the "Return on Sales Model."

In Ayn Rand's novel *Atlas Shrugged* there is a character named Hugh Axton. Dr. Axton is a philosopher who steadfastly clings to Aristotelian principles of logical order. As a result he comes to be known as "the last of the advocates of reason" - although he refers to himself as "the first of their return." Well, while I am by no means the last advocate of return on sales, a review of the Proposition 103 testimony will indicate that I am certainly in the minority. And I suspect my presence on this panel overstates the proportional representation of return on sales supporters.

I believe, however, that the vast majority of practicing actuaries are generally unconcerned with the theoretical bases underlying profit and contingencies provisions. Market forces tend to be more important determinants of proposed rate levels than are theoretical hurdle rates. There might be some jurisdiction (dare I say Commonwealth?) in which insurers knowingly price to an economic loss, while in another jurisdiction the direct writer rates may be far more germane to the filed rate level than the target rate of return. Even some of the market leaders must have something other than target rate of return as the primary motivator, if one is to judge by the prevalence of filings for rates less than those justified by the actuarial analyses.

By the way, there seems to be a prevalent misconception that return on sales is the same as underwriting profit. Let me set this straight. Return on sales is in no way inconsistent with the reflection of investment income in ratemaking. What we're discussing is the denominator, not the numerator.

In setting up the ground rules for our panel, Dave Appel asked that we address certain questions relating to our preferred rate of return models. The questions were as follows:

1. How does it give due consideration to investment income?

2. How does it evaluate whether rates are "not excessive, inadequate or unfairly discriminatory?

3. Is it consistent with financial theory?

4. Is it consistent with regulatory theory?

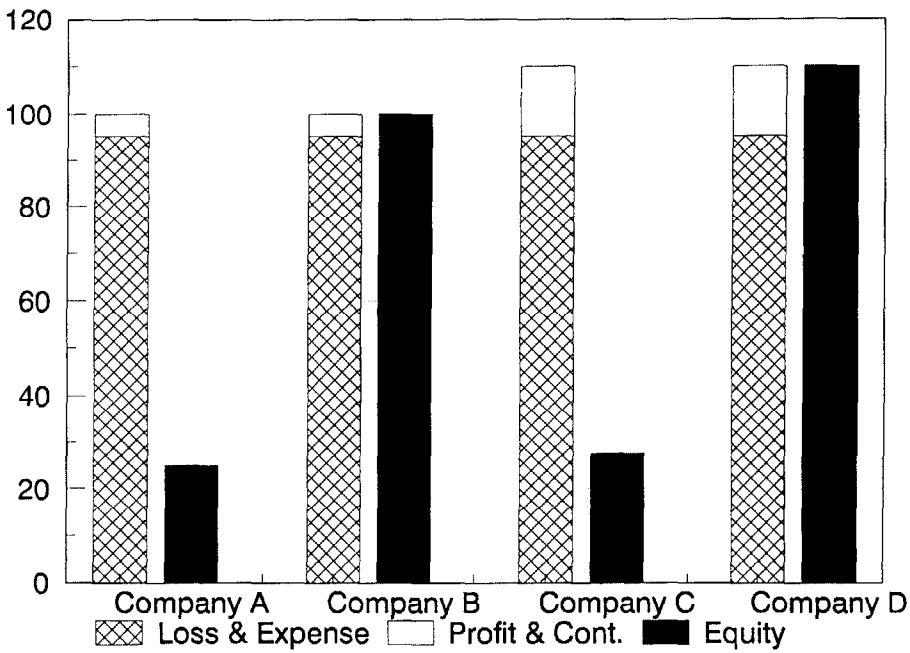
5. Does it accurately model the insurance transaction?

6. What are the difficulties in implementation?

7. Should the same model be used in the regulatory and internal/planning contexts?

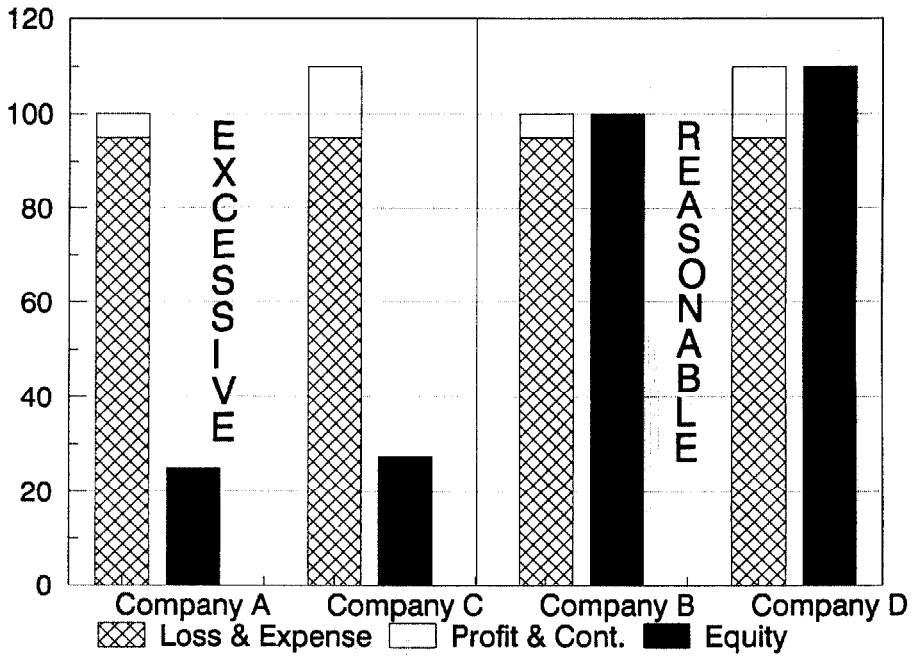
I promise to make at least passing response to each of these questions before I'm through here. But, before I address Dave's questions, let me share with you some of my observations relating to this subject:

First, and foremost, the goal of the regulatory process under Proposition 103 is ***rate*** regulation, not *rate-of-return* regulation. The prior approval rating law in California is not an excess profits law. It is ***rates*** which are not to be excessive, inadequate or unfairly discriminatory. Now I know that it is difficult to understand how a company could earn an excessive rate of return by charging inadequate rates, so there must be some relationship between the two. But, one of the drawbacks of the return-on-equity model is that it forces the regulator to forgo rate equity for rate-of-return equity.



Consider the example shown here. We have four companies, each writing the same coverage in the same market and providing the same level of service. Companies A and B propose rates of $100, while companies C and D request approval of $110. Companies A and C are leveraged at four times surplus, while the more conservative companies B and D limit their premium writings to only one times surplus.

I have assumed that pure premium and expenses represent $95 for the product being offered. Thus, the profit and contingencies provision represents $5 for companies A and B and $15 for C and D. The concept of rate equity would seem to require that for purposes of rate regulation, companies A and B be treated identically. The same would be true of C and D. But what happens under the return-on-equity model?

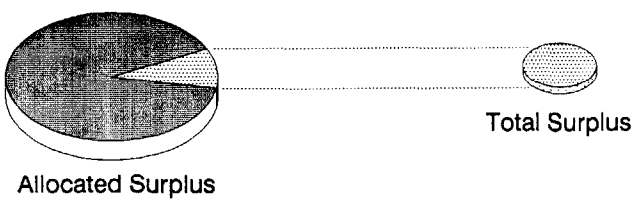


Assume that the regulator is using a 15% return on equity as the benchmark for excessiveness. In our example, the two highly-leveraged companies, A and C, project gains in excess of 15% against surplus while B and D pass the excessiveness test. So the regulator approves one $100 rate and one $110 rate while disapproving one $100 rate and one $110 rate. The regulator has subordinated rate equity to rate-of-return equity.

The second observation I wish to share with you is that no matter how much the return-on-equity advocates may wish to ignore the fact, there is no such thing as California Private Passenger Automobile surplus - unless, of course, we are looking at a company writing only private passenger auto and solely within California.

The fact is that the entire surplus of an insurer stands behind each and every risk. It supports all of the reserves related to all of the claims and policies issued by the company. And any artificial allocation of that surplus in no way limits the liability of the company to pay claims or honor other financial commitments.

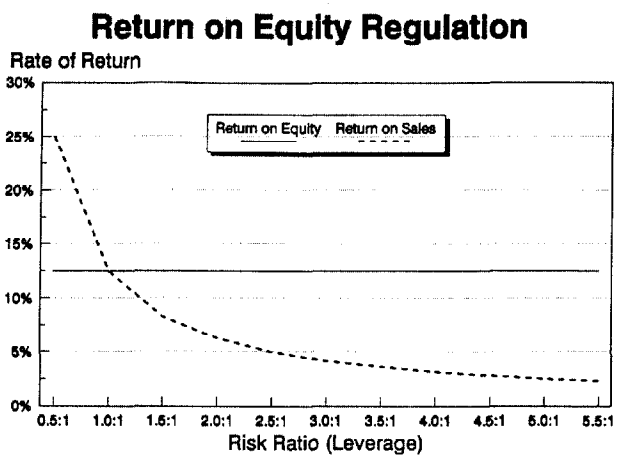
Which Represents Greater Protection?



One of the problems with the return-on-equity basis for rate regulation is that it requires an artificial allocation of surplus to jurisdiction and line of business. In so doing, the method ignores the value inherent in the unallocated surplus. In essence, the method treats a multiline national company with $100 million of surplus - $1 million of which is allocated to California private passenger automobile - identically with the California private passenger auto carrier capitalized at $1 million. Simply stated, the allocation of surplus basis fails to allow a reasonable return on unallocated surplus and therefore unfairly discriminates against large, multiline insurers.

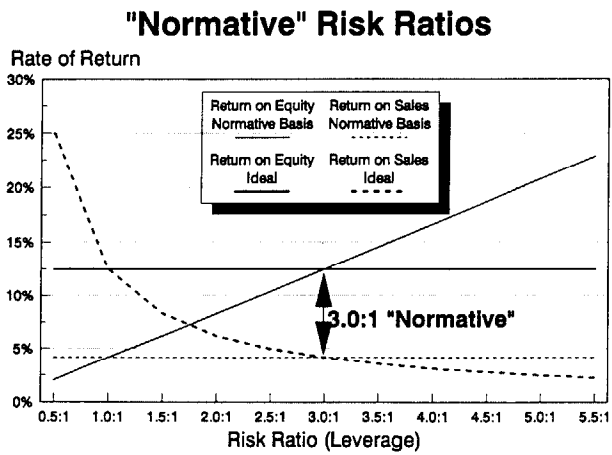
There is also the minor problem of an equitable allocation basis. Just how should surplus be allocated to jurisdiction and line? How should the investment portfolio be assigned in order to track incremental gains and losses in allocated surplus? Or should the surplus simply be reallocated each year without regard to actual results? What do you do in the case of surplus exhaustion? Can any return be excessive when measured against a negative equity? These are tough questions. Thank goodness we return-on-sales advocates don't have to answer them. I will leave the answers to those who favor the return-on-equity basis.

Within the California Insurance Department, and unfortunately in some actuarial quarters as well, there exists the misconception that the surplus allocation problems can be eliminated through the use of benchmark writings-to-surplus assumptions. In the regu-speak of the Proposition 103 hearings these are known as "Normative" ratios.



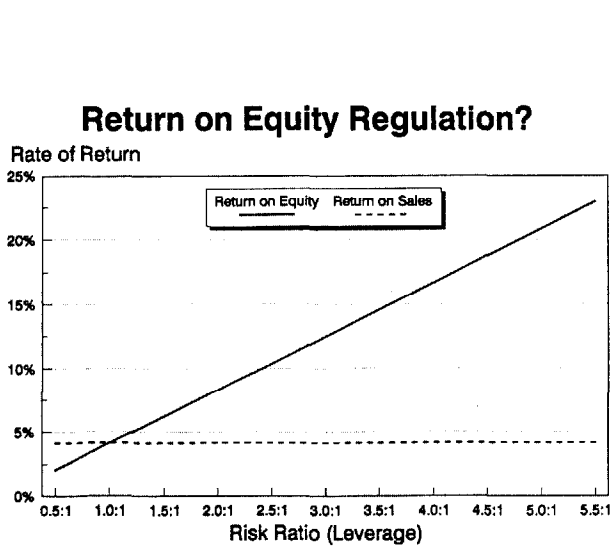
Return-on-Equity regulation is based upon the determination of a target rate of return-on-equity, or a reasonable range of such rates, and applying the target to each filer. When properly implemented, companies less highly leveraged will enjoy a greater allowable return on sales than companies more highly leveraged.

In the chart shown, the return on equity is assumed to be 12.5%. This would correspond to a 25% return on sales at a .5:1 risk ratio and 2.5% on sales at 5:1.



In this slide, through the magic of regulatory authority, we have determined that a "normative" ratio of writings-to-surplus of 3:1 shall be appropriate for this line of business in our jurisdiction. This is somewhat reminiscent of the action of the Indiana legislature when, in an effort to simplify things, they passed a law that henceforth pi would be equal to exactly 3.

The action of the "normative" risk ratio is to allocate an amount of surplus to the jurisdiction and line of business involved. Since the allocated surplus depends entirely upon the premium volume, the return on equity function becomes a positively sloped line. Since we have replaced the true return on equity relationship with one based upon a "normative" risk ratio, let's eliminate all reference to the real world and look at the regulatory alternative world instead.



What we have now is a situation in which each insurer is allowed to include a profit and contingencies allowance of 4.167% of premium. The provisional return on equity will, of course, depend upon the true relationship between surplus and premium. The "normative" ratio has indeed eliminated the surplus allocation difficulties. But is the result return-on-equity regulation? It looks suspiciously like return-on-sales regulation to me. And it represents a damned complex way of getting there.

Return-on-sales based rate regulation is simply the establishment of benchmarks for what constitutes excessive or inadequate profit and contingencies as percentages of premium. It can be as simple as the 1921 NAIC Profit Formula which allowed 5% of premium for underwriting profit and an additional 3% for conflagrations. Or it can be as complicated as, for example, the California Insurance Department methodology based upon "normative" risk ratios and reflecting investment income on cash flows by line. But however the benchmarks are established, the application is premium-based, and independent of the relationship between premium and surplus. As such, it represents true **rate** regulation - not rate-of-return regulation.

I promised to address Dave's questions and I'd better do so before I find myself waxing eloquent on the return on sales basis as a solution for all of society's ills.

How does the return-on-sales basis give due consideration to investment income?

The simple answer is "any way you want it to." But let me discuss how I believe it ought to be done.

First, some basic philosophy of insurance operations. When an insured purchases a policy of insurance, and pays for it in advance, he or she suffers what is known as an opportunity cost by virtue of paying out the premium funds in advance of losses and expenses actually being paid. In theory, the policyholder could have invested the funds in some alternative until they were actually needed by the insurer. Where insurance rates are regulated for excessiveness, it is appropriate that this opportunity cost be recognized.

The opportunity cost should be calculated based upon the cash flows associated with the line of business, and should reflect the fact that not all cash flows go through invested assets - some portion are required for the infrastructure of the insurer. The building and desks and computer software which were originally purchased with someone else's premium dollars are now dedicated to providing service to current policyholders and should be viewed as being purchased at the beginning of the policy period and sold at the end.

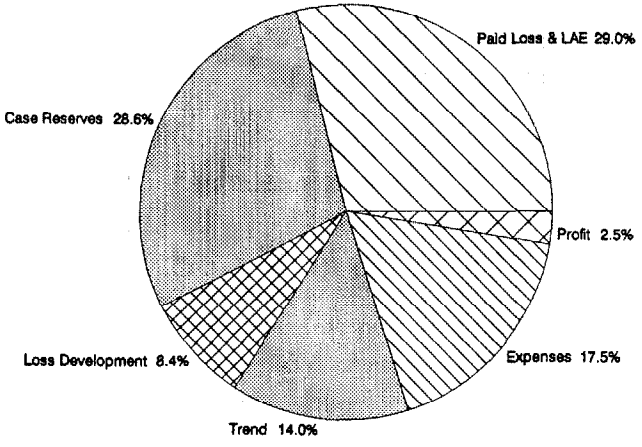
Most importantly, the calculation should be made at a risk-free rate of return. It must be understood that the insured has not purchased shares in a mutual fund. The existence of an opportunity cost does not give the policyholder a claim on some part of the actual investment earnings of the insurer. Should the insurer engage in speculative investments resulting in the loss of policyholder-supplied funds, the company cannot assess the insureds to make up the shortfall. By the same token, investment income over and above risk-free yields should not be credited to policyholders in the ratemaking process.

Finally, investment income on surplus should be excluded from the ratemaking process. Policyholders' surplus represents owners' equity which is placed at risk in order to provide the opportunity for reward. While it provides protection to

policyholders and claimants, the surplus does not **belong** to them. In fact, in addition to again creating problems with allocation of surplus to jurisdiction and line, the inclusion of investment income on surplus creates a situation in which an insurer with a large surplus relative to premium must charge lower rates than an insurer which is less well-capitalized. In other words, more protection for lower cost. This does not represent equitable rate regulation.

How does the return-on-sales basis evaluate whether rates are "not excessive, inadequate or unfairly discriminatory?"

According to the CAS *Statement of Principles Regarding Property and Casualty Insurance Ratemaking*: "A rate is reasonable and not excessive, inadequate, or unfairly discriminatory if it is an actuarially sound estimate of the expected value of all future costs associated with an individual risk transfer."



In order to keep the various components of the process of estimating the costs associated with a risk transfer in perspective, I have prepared this pie chart which represents an approximation of the composition of average private passenger rates. On average, 29% of the new rate will be directly associated with paid losses and loss expenses. 17.5% represents the provision for other expenses. Assuming that the other expenses are reasonably predictable, we therefore have about 46.5% of the new rate accounted for with reasonable certainty.

On average, 28.6% of the new rate will be based upon case estimates, 8.4% on loss development and 14% on trend. Profit and contingencies provisions account for the remaining 2.5%. I point these relationships out in advance to help you to understand why the statement of principles does not devote more space to the underwriting profit and contingencies provisions. Our principles state: "The underwriting profit and contingencies provisions are the amounts that, when considered with net investment and other income, provide an appropriate total after-tax return."

Appropriate is not much more helpful than *reasonable*. But then we are dealing with a relatively small piece of the pie. Much more attention is focused upon loss development and trend in the ratemaking process - and this is appropriate, given the impact of errors in these estimates.

In any event, most regulators do not feel constrained by the CAS position on what constitutes an excessive rate. In fact, the application of rate regulatory authority in the various prior approval jurisdictions of the U.S. evidences wide disparity. It is quite possible that a profit provision which might be viewed as excessive in Massachusetts could be deemed inadequate in Iowa. There is no universally acknowledged standard for excessiveness. Nor do I expect one to be brought down on stone tablets from the Proposition 103 mountaintop.

There is, however, a relationship between the benchmark for excessiveness adopted within a jurisdiction and the resultant market conditions. The size and composition of the residual market, the number of insurers in the market, and the degree of product diversity and innovation are all related to the insurance industry perception of the opportunity to earn a reasonable return from the risk transfer. And any regulator who thinks that this relationship is less powerful than a sound economic argument for a given maximum profit provision is destined to learn a lesson about

the difference between theory and practice.

Is the return-on-sales basis consistent with financial theory?

The answer to this question depends upon whose theory we're using as the standard. If we start with the assumption that the goal of insurance company management is to maximize return on equity, I guess I start out with one strike against me. I always had a problem with that assumption, however. I could never understand why management didn't simply dividend out part of equity in order to increase the rate of return on the remainder.

If, instead, you start with the assumption that management is motivated to maximize total return, and leave the denominator out of the assumption altogether, I start out on an equal footing with my return-on-equity brethren.

Well, I'm sorry to be such a Pollyanna, but I have to tell you that I have witnessed situations in which top managements of insurance operations have made decisions to the detriment of total return simply because they represented the right things to do. Now my economist colleagues will be quick to charge that these decisions were really cold-blooded attempts to improve public relations. But they weren't, and most of them are not even public knowledge.

So, I guess **my** economic theory is that the combination of market forces and the motivations of insurance managements will generally be sufficient to protect the policyholder from excessive rates and that regulatory attention should be focused on the promotion of solvency instead. And **no** prior-approval regulation can be consistent with that theory.

Is the return-on-sales basis consistent with regulatory theory?

In this question, Dave is referring to the public utility regulatory model. Public utility rate regulation generally involves a monopolistic provider of service within a single jurisdiction. As such, return-on-equity can actually be calculated and rates of return can be targeted based upon equity.

But there is no requirement that such be the case. For example, I serve as the

actuarial advisor to the Manitoba Public Utilities Board which regulates the rates of the Manitoba Public Insurance Corporation - a crown corporation with monopolistic control of basic auto insurance within the Province of Manitoba. Ladies and gentlemen, the Manitoba Public Utilities Board has managed to regulate those insurance rates without once targeting, or even calculating, a return on equity.

Admittedly, return-on-sales is not a reasonable basis upon which to make industry-to-industry or even company-to-company performance assessments. I myself prefer return-on-equity for these exercises. But wishing for a California private passenger surplus will not create one. And measuring return-on-equity by line and jurisdiction becomes akin to measuring the length of the whiskers on the Easter Bunny. We know how to do it in theory - we simply can't find the damned rabbit.

Does the return-on-sales basis accurately model the insurance transaction?

Since whatever profit provision is adopted will be collected as a part of premium, the concept of simply sending out end-of-the-year bills to policyholders for their appropriate contribution to surplus having so far received little support, I believe return on sales to be consistent with the insurance transaction. Whether the cash flows inherent in the insurance transaction are accurately modelled will depend upon the handling of the opportunity cost calculation.

What are the difficulties in implementation of the return-on-sales basis?

The only difficulty is that the regulator has to accept responsibility for the market conditions which result from his or her regulatory actions. There will be little in the way of academic support or complex econometric formulas to hide behind. The simplicity of the method imposes an implied accountability to understand its ramifications.

Should the same model be used in the regulatory and internal/planning contexts?

No. The goals are completely different. The rate regulator is basically concerned with the prevention of rate gouging. There is little in the way of political fallout from inadequate rates. In addition, the regulatory concerns rarely extend beyond the borders of the jurisdiction involved. Finally, there is a far wider range of options

available to insurer management than to the regulator who can only approve or disapprove a rate filing.

To state that the return-on-sales basis is appropriate for the financial management of a national multi-line property and casualty insurer would be erroneous. But I'll venture a guess that there are many economists who might be surprised by the number of smaller companies using return-on-sales as the internal model.

This concludes my answers to the questions posed by Dave. But since Dave is an admitted return-on-equity user, I do not intend to limit my remarks in support of return-on-sales to answering questions such as whether return-on-sales is consistent with the historic use of return-on-equity in public utilities regulation.

You'll note there was no question as to whether return-on-equity is consistent with historic rate regulatory practice in most prior approval jurisdictions of this country. Well, not only are premiums used as the base against which profit provisions are measured, but most jurisdictions recognize premium as an equitable basis for the allocation of costs. While premium taxes abound, I'm not aware of any surplus taxes being imposed on property-casualty insurers. And even California, when faced with the question of how to recover the costs of all these hearings on Proposition 103, opted to assess based upon premium written, not equity.

It is my belief that return-on-sales provides more usable information to the public as well. The concept of markup is generally understood, and the consumer who is faced with two apparently similar products gains useful data when informed that one is marked up by 5% and the other by 10%. The information that one produces a 12% return on equity whereas the other produces 18% is not quite so helpful. Of course the actual prices themselves are the most useful data in the consumer decision.

In summary, my case for return on sales is based upon two major points. First, there is a difference between rate regulation and rate of return regulation. I believe that the proper application of prior approval rate regulatory authority demands that equal rates for equivalent products be treated equitably. In a competitive environment it is therefore improper to make a determination as to what constitutes an excessive price based upon the equity position of the producer.

And second, we have the practical problem that equity cannot be allocated to jurisdiction and line. The use of "normative" relationships between writings and surplus creates a return-on-sales approach in return-on-equity clothing.

Return-on-sales regulates rates not rates of return, and it treats equal rates for equivalent products equitably. It has a real basis, requiring no artificial allocation. It is simple, easily understood, consistent with historical regulatory practice and generally accepted. It is consistent with the inclusion of investment income in the ratemaking process. It slices, it dices, it Juliennes. Isn't it amazing!