COMMENTS ON CASTF'S DRAFT PRICE OPTIMIZATION WHITE PAPER

On May 19, 2015, NAIC's Casualty Actuarial and Statistical (C) Task Force (CASTF) made public its draft White Paper on Price Optimization ("PO") for comment. Here, we present the comments of the Consumer Federation of America ("CFA") and the Center for Economic Justice ("CEJ") on the draft White Paper. The comments are organized to correspond with each paragraph in the White Paper.

Paragraph 1 – CFA and CEJ do not believe that PO is a method to refine previous judgments made by insurers in selecting final rates. We believe that PO is a new approach to ratemaking that, for the first time, reflects individual consumer demand in pricing.[1] Since "statutory rate standards have traditionally been defined in terms of expected losses and expenses"[2] and since PO is "a systematic process for suggesting amendments to theoretical cost-based prices,"[3] PO is a departure from the cost-based pricing which is the foundation of statutory rate standards and actuarial ratemaking principals. PO is a per-se violation of both statutory standards and actuarial principles. If the White Paper is to define PO as the use of "sophisticated tools and models," it should be further clarified (as suggested in the draft paragraph 11a) to read "sophisticated tools and models to depart from cost-based pricing."

Paragraph 2 – The phrase "the changes were...often selections lower than indications" is misleading by virtue of severe understatement. CFA's review of thousands of auto insurance rate filings over decades revealed that judgments applied to final prices were almost always downward and applied to overall rate indications or broad risk classifications. In the vast majority of the cases, the selection of rates was below an indicated rate that would have never been approved by regulators because of clearly inflated and erroneous rate indications. In some cases, the lower rate selection was because of the combination of limited credibility and non-competitive rates. We can recall no more than a dozen proposed upward judgmental price adjustments over the years and most of these were disapproved. It is one thing for an insurer to request a rate below the indicated price, effectively saying we are willing as a corporation to make less money for competitive reasons in this territory or class or even on overall statewide rate level, it is quite another to say we are going to raise the price above the statutory standard in order to increase our income, particularly in a line of insurance required to be purchased by the state doing the regulation. This has never been allowed in the past.

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[1] In paragraph 24 of the Draft White Paper, CAS agrees, "until recently, companies had limited ability to quantitatively reflect individual consumer demand in pricing."
[2] See paragraph 9 of the Draft White Paper.
[3] See Paragraph 19c of the Draft White Paper, quoting Tower-Watson's letter of November 3, 2014 to the NAIC Auto Insurance Study Group.

Paragraph 3 – No matter how much big data is available, there cannot be actuarially sound adjustments made at the individual level, as is suggested here. If an adjustment is made to a rate "by individual insured," that adjustment does not involve actuarial considerations since credibility for an individual personal auto insured is always zero.

Paragraph 4 – There are two "some argue" statements here that are problematic and diminish widely agreed upon characteristics of PO by implying that they are merely the opinion of some. CFA and CEJ ask who is it that argues that PO is not "developed to increase insurers' profits"? Surely the sales pitches of Earnix and other purveyors of PO software make clear that this is the intent of the models. Further, even insurers that sometimes argue other purposes such as retention and lifetime policy value (essentially profit maximization strategies themselves), do not deny that PO aims to increase profits. Who would spend millions on these tools if profits were not going to be enhanced? Also, if only some argue that PO is unrelated to losses and expenses, who is it that argues that PO is related to losses and expenses? Unless there are credible arguments that PO is based on losses and expenses, this assessment should not be relegated to a paragraph describing the "arguments" of "some." Please also note that CFA and CEJ also argues that PO can also create excessive rates if applied by classification as opposed to on an individual basis.

Paragraph 5 – What is the definition of "acceptable levels of adjustment"? If this implies that there is a range around the point estimate for a rating factor, what is the acceptable range and what is the basis for such a concept that effectively negates cost-based pricing? Reasons why CFA and CEJ believe that use of a range is inappropriate are found in Appendix 2 of this statement.

Paragraphs 6 – 10 – CFA and CEJ have no comment on these paragraphs.

Paragraph 11: We have comments on some of the sections of this Paragraph:

a. – The penultimate sentence is inconsistent with Paragraph 1 of the Draft White Paper. Here PO is defined as being separate from actuarial judgment but in Paragraph 1, it is defined as a tool to make judgment "more objective."

d. – The actuarial indication cannot be both "the best estimate of the cost" and "not always...the best estimate of costs" as the section states. The reasons listed in the section for why this might be true are not valid because actuarial techniques can adjust the data according to actuarial principles to account for such problems. PO, as a tool to depart from cost-based pricing, can not be considered part of the calculation of indicated costs.

g. – The concept of a broad definition of a rating variable as not in the insurer's class plan and that "any piece of quantified data" can be used to determine rating variables is very dangerous and impossible for a regulator to regulate. While the

paper explains that the narrow version is what has been used historically, it does not explain when this broader version has been used.

Paragraphs 13 to 16: For these paragraphs, CFA and CEJ believe that CASTF should provide examples of instances in which each is used. Is rate book Optimization what CASTF thinks Earnix sells? Is hybrid optimization what CASTF thinks Allstate used in its CRG filings? Are any insurers in the USA using individual PO?

Paragraph 17 – 20 -- CFA and CEJ have no comments on these Paragraphs.

Paragraph 21 – The table shown under the narrative part of this Paragraph is incomplete and misleading. For example, under the traditional approach the adjustment should be shown as "almost never upward," where under the PO approach the adjustment should be shown as "intended to raise profits, so often upward." Under traditional it should state "elasticity of demand never utilized." Under PO it should state "elasticity of demand always utilized." Additionally, as is further explained in the Paragraph 22 analysis below, it is incorrect to suggest that the "basis for adjustments" under PO does not involve judgment. The output may be automatic, but the model is the implementation of a series of judgments. We cannot overstate the importance of regulators and policymakers understanding that the use of a computer model does not equate to objectivity. A model reflects the biases in the data used in the model (e.g., credit histories reflect historical racial discrimination), the selection of data to be used, the selection of variables to be used, the selection of the desired outcome and the purposes of the model. In a review of the impact of insurance credit scoring, the Missouri Department of Insurance found that the percentage minority population in a ZIP Code was the single best predictor of the average insurance credit score in that ZIP Code – proving that the use of an "objective" pricing model may reflect and perpetuate historical discrimination. In addition, the Supreme Court of the United States has just ruled that disparate impact – actions which have the effect of discrimination against protected classes (e.g., race, religion, national origin) even in the absence of intentional discrimination are valid claims under the federal Fair Housing Act. The Supreme Court has affirmed the rulings of four decades of court decisions since Congress passed the Act. This opinion further confirms that computer models do not equal objectivity.

Paragraph 22 – The Paragraph overstates the prior to PO condition as if some sort of consumer behavior adjustments were commonplace. They were not. PO presents a departure from previous adjustments through elasticity modeling, never before used in insurance ratemaking. This should be stressed, not minimized as this Paragraph does. It is also incorrect to imply that PO is an objective practice, see above. The models are not derived from the laws of physics; they are algorithms built on subjective interpretations of data regarding, for example, the relative importance of one's retail shopping habits as compared with the importance of complaining to insurance agents. PO models reflect the biases found in the data

sets, model variables, model specification and model outcomes selected by the insurer.

Paragraphs 23 – 25 – CFA and CEJ have no comments on these Paragraphs.

Paragraph 26 – The reason that "state regulators report receipt of few rate filings specifically identifying the use of PO" despite Earnix reporting that about half of major auto insurers are using it[4] is that the insurers are hiding the fact that it is being used. The White Paper should include the fact that companies using PO are not disclosing its use to regulators. In fact, Earnix states, in its presentation before CASTF that PO models need not be filed with the states as CAT Models and Credit Scoring Models must be (Slide 10). CFA has undertaken the study of recent rate filings in several states to try to find filings where PO occurs. The Allstate CRG filings are clearly using it. For other filings it is very difficult to be sure which ones use PO and which ones do not (see a discussion of our research in Appendix 1 to this document). We know several companies that are using PO and, even focused on those companies, we can never be really sure which filings use it and which do not. We are 90 percent sure on some of the filings we have reviewed but we can never get to 100 percent certainty since we have to guess at the intent of the actuaries and managers in making selections. Plus, the PO adjustments can be contained in many different rating factors, or spread among several, further making the job of finding it difficult if not impossible. A filing with many rating factors can have a huge PO impact on certain insureds even if only a few tenths of a percent is in each rating factor (e.g., a five tenths of one percent adjustment in 10 rating factors can impact certain individuals by over five percent). CFA and CEJ strongly urge regulators – and the White Paper – to set out explicit disclosure requirements for insurers of all the data and models used for pricing (whether through underwriting, tier placement, rating factors or other mechanism) so regulators can identify the use of inappropriate and illegal factors – such as price elasticity of demand..

Paragraph 27 – The first sentence states that PO "often affects the selected rates or rating factors," rather than the indicated ones and historically selections were often based, in part, on judgment. This sentence contains two unrelated issues, both of which are inaccurately described. First, PO always impacts selected rates and not indicated rates because PO is a non-cost based adjustment to indicated rates. Second, there is no equation between the judgment used historically – downward deviations from indicated overall rates or broad class factors – to "judgment" used in price optimization – a computer model predicting individual price elasticity of demand coupled with individual competitive options. We agree with this Paragraph that the detection of insurers' use of PO by regulators is almost impossible. CFA and CEJ believes that, as this Paragraph indicates, the regulator's job of finding PO and regulating it is really impossible today. Thus, state regulators individually and

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[4] See Paragraph 26 of the Draft White Paper for the Earnix survey discussion.

through the NAIC must prohibit PO and require disclosure of data sets and models used for pricing, as discussed in the prior paragraph..

Paragraph 28 – The White Paper should make clear that there is no evidence (or logic) behind the CAS claims. First, it is unclear how rate stability is enhanced by utilizing PO to select rates greater than indicated rates. PO is not needed to select rates less than indicated rates, as evidence by decades of rate filings. Second, it is unclear how an insurer's long-term cost for providing coverage is improved by PO, since PO is a non-cost based adjustment to cost-based rate indications. This bogus claim illustrates the "flexibility" of the concept of cost-based pricing used by the CAS and insurers: when useful, cost-based pricing considers expenses over many years, but when not useful, cost-based pricing eschews such multi-year considerations. Third, whatever one's view of "policyholder disruption," cost-based regulatory standards do not permit unfair discrimination in the name of "avoiding policyholder disruption." Surely, the experience with insurance credit scoring and the National Flood Insurance Program have shown how important it is to present consumers with the true cost of insurance and the role of markets to allow consumers to address policy holder "disruption" by shopping around. It is profoundly anti-competitive to allow insurers to mask cost-based prices through PO. Finally, it is truly absurd to argue that consumers who do not like to shop regularly for insurance benefit from a pricing tool that systematically increases the prices for these consumers above cost-based prices.

Paragraph 29 – CFA and CEJ have no comments on this Paragraph.

Paragraphs 30 and 35 – CFA and CEJ cannot find the "survey" III claims it did on their website. The numbers III claims to have found in the survey make no sense. III claims that 68 percent of persons with incomes of under $35,000 compared prices "when most recently buying auto insurance, a higher percentage than any other income group." III also claimed that 61 percent of respondents with incomes over $100,000 had so shopped. Compare these numbers to the published study by Deloitte[5] that found that only 18 percent of auto insurance policyholders "shop for alternatives to their current personal lines insurer when their policy is up for renewal" and only 9 percent more shop every other year. 58 percent never or rarely shop. TransUnion says that, for the last 3 years (2012-2014) only 16.8 percent shopped for auto insurance.[6] (This makes the III non-published numbers absurdly high). Clearly, so-called "research" by the III and industry trades must be rejected and not cited without some form of independent verification. This lesson should have been learned by regulators in the early 2000's when the AIA produced a "study" – which could not be tested or verified – that insurance credit scores were not correlated with income. When regulators – after several years of battling

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[5] "The Voice of the Personal Lines Consumer," a Deloitte Research Survey of auto and homeowner insurance policyholders, 2012.
[6] "What Unique Data Assets Reveal about Auto Insurance Shopping and Consumers," TransUnion, May 5, 2015.

insurers – were finally able to obtain data sufficient to test this claim, the reality was and remains that insurance scores are highly correlated with income.

Regarding the Brookings Report and the claim that it was "not about insurance," we let the Report speak for itself, "Lower income consumers are generally much less likely to compare prices before buying goods and services, which likely makes them more susceptible to bad deals. At the very least, this weakens the buyer's position when shopping for cars, car loans, and car insurance... Similarly, lower income consumers are less likely to understand credit scores—an important factor in what sellers charge for loans and insurance—which may needlessly drive up the prices these consumers pay. For instance, one recent survey found that only 56 percent of the respondents with a low educational attainment, and 64 percent of respondents with a lower income, indicated that they knew that their credit rating weakened when they missed a credit card payment."[7] The sentence that "Some disagree with the applicability of the study to insurance stating that the study was...not about insurance" should be removed.

Paragraph 31 – CFA and CEJ have no comments on this paragraph

Paragraph 32 – CFA and CEJ have commented earlier on the claim that PO is business as usual; it is not (see our comments related to Paragraph 1).

Paragraph 33 – The use of PO violates the actuarial Standards for Ratemaking of the CAS.

Paragraph 34 – All forms of PO result in unfair discrimination and can result in excessive prices as well. The idea that PO "does not abandon the core principle of risk-based pricing" is something that an industry spokesman would claim, but it is simply untrue.

Paragraph 35 – CFA and CEJ covered this above, as apart of Paragraph 30.

Paragraph 36 – The last sentence of this Paragraph should be struck. This is what the profit provision of actuarially sound rates, including analysis of investment income, assures, and it has nothing to do with PO. PO is not devised to assure profit consistent with the cost of capital but to increase profits above that for the insurer. (Earnix's advertisements claim a 1 to 4 percent addition to the bottom line, for instance)

Paragraph 37 – CFA and CEJ's only comment is that Florida's ban on PO needs to be added and explained as an addition to this Paragraph.

Paragraph 38 -- As we discuss above (paragraph 26), regulators are unable to find PO in the filings before them because of the lack of transparency about its use by

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[7] "From Poverty, Opportunity," Brookings Institution, 2006

insurers, despite the fact that we know that such filings exist from the Earnix survey, from the CVs of persons working for certain insurers, and from the responses to the Maryland ban. That some states feel they need no 'bulletin or other public statement" appears to be a dereliction of duty by those states, and we believe that, just as you list those states to have taken action, the White Paper should identify those regulators who specifically assert that no action is needed.

Paragraph 39 -- We have comments on the following sections of this Paragraph:

b. – You should define "cost-based indicated rate" to exclude any consideration of PO or any other non-actuarial items. Any "confidence interval" should be defined precisely as to width and calculation. CFA and CEJ believes that use of a confidence interval is inappropriate (see Appendix 2). Define "relationally logical." Should the ratings factors to which PO could be applied be identified? Should a requirement of showing the maximum cumulative impact of all rating factors adjusted by PO be part of this Draft White Paper?

d. – Strike item ii. Certainly the "indication" must be cost-based!

f. – Add the following requirements:
  v.   Disclose all data sets and models used in pricing, whether through underwriting, tier placement, rating factors or other mechanism
  vi. disclose which rating factor or factors are impacted by PO,,the size of the impact by rating factor and the the cumulative impact of PO across all rating factors for individual exiting policyholders and individual applicants for insurance.
  vii. Require a certification by an actuary that the cost-based indications do not include PO and that the current factor or rate does not include PO (if you need to compare current, indicated and selected rates or factors to regulate as Earnix proposes, current and indicated must be before PO).

MISSING FROM DRAFT WHITE PAPER

The White Paper should broaden the discussion of pricing to include any action related to establishing the price of insurance for individual applicants and existing policyholder, including underwriting, tier placement, rating factors or other mechanism. This is critical because of industry's penchant for avoiding regulatory scrutiny of risk classifications by calling them something else. We have seen this when insurers started calling some rating factors "tier placement factors" in order to claim that risk classification was underwriting and, consequently, not subject to filing. We see it again with PO as Earnix argues that PO is not risk classification because it is not cost-based, but management judgment. Again, we see industry, driven by consulting firms, arguing that characteristics of the consumer, vehicle or property used to determine the price of insurance is somehow not a risk classification. By this logic, the door is opened to any rating factor becoming management judgment. Instead of using credit information for a rating factor, an

insurer could simply use credit information as part of PO model and claim management judgment. Regulators need to stop this verbal arbitrage by insurers.

CFA Review of Rate Filings for Use of PO: HOW DOES A REGULATOR DETERMINE THE IMPACT OF
PO IN AN AUTO INSURANCE RATE FILING?

Earnix tells regulators that it is the regulator's burden to "Ensure that proposed rates are <u>reasonably consistent</u> with the indicated rates." (Presentation to Casualty Actuarial and Statistical Task Force (CASTF) of the NAIC, Slide 11) In the response to CASTF questions, Mike Miller states, on behalf of Earnix that there are "two questions for the regulator to answer when reviewing any rate filing: 1) Is every rate factor in the premium calculation algorithm risk-based? In other words, is the rate factor predictive of expected losses and expenses?   2) Are the values assigned to each risk-based rate factor <u>reasonably consistent</u> with the expected losses and expenses for the class?" (Emphasis added in both quotes)

This is a huge burden on the regulator since Earnix also tells you that the PO models need not be filed with the regulator, saying only models that impact the cost estimates such as catastrophe models and insurance (credit) scoring models need to be reviewed (Slide 10). It is arrogant, if not surprising, that Earnix acknowledges that other models should be reviewed, just not the type they sell.

CFA actuaries and analysts have reviewed several recent auto insurance rate filings from major insurance companies and believe it would be extremely difficult for a regulator to determine the consumer impact of undisclosed PO. There are many factors that make the regulator's ability to fully understand the impact of PO so difficult, if not impossible:

1. Where, when and how is PO applied? Some insurers show the current, indicated and selected rating factors for some factors but not all. Some show those for no factors, some only show the selected. Which of the rating factors have been impacted by optimization? One, several, all? In the case of a filing with 40 factors (some filings have more, most less), what is the overall impact on a specific consumer of "reasonably consistent" factors? Could not a specific consumer with a one-point "reasonably consistent" adjustment to all 40 factors suffer an impact on final price of 49%?

2. Is the "indicated" factor truly risk-based or has PO and/or other non-risk-based adjustments been made in developing the "indication"? At least one insurer appears to develop "indications" with non-risk-based factors included, which means that even the starting point is not risk-based.

3. How is the regulator to determine the compounding effect of many rating factors being optimized? In order to make sure final prices (after application of all factors, discounts and so on) are reasonable, it seems that the regulator might need to review information for all insureds showing the indicated premium, the risk-based indicated premium and the selected premium? This presents an impossible task for the regulator because the interaction of 40 factors each with several relativities could lead to a huge number of final premiums.

CFA has spent considerable time looking at rate filings in several states and our research confirms that finding PO is akin to searching for a small needle in one of several haystacks.

It is a "small needle" because, as Earnix and others have maintained, the impact on the bottom line of an insurer is an increase in profit of 1 to 4 percent. Since rate and class plan filings may be comprised of 40 or more rating classes each with rating factors used to determine an individual's rate, the PO derived selections of rating factors can be difficult to determine. Which factor selections might have been price optimized? If, say, 5 factors were optimized by a half a percent each upward on average, that 2 ½ percent impact on the bottom line is hard to weed out of a complex rate filing. This is made even more complex by the possibility that the indicated rating factor may include the effects of PO.

Which haystack is this small needle in is another issue. Once PO is in place, it can be maintained for more than one filing by the filer simply selecting no change in the affected rating factors. If, that is, you've missed it once, you may not see evidence of it again for several filings even if you knew what to look for.

A comment on the Allstate and the Earnix method:

On behalf of Earnix, Mr. Miller's responses to questions contains this statement:

> *It would be counterproductive for a POM user to allow a model to determine a rate variation for individual insureds, because rate variation by individual insureds would require a rate filing that introduces a price-elasticity rate factor into the premium calculation algorithm. A model user would accomplish nothing by introducing into the model a factor for individual rate variation, unless that factor could possibly be filed and approved by the regulator. In my opinion, rate factors that are not risk-based are inconsistent with the rate laws in every state and unlikely to be approved.*

This describes the Allstate CRG filing, suggesting that Earnix believes Allstate's filing produces illegal rates. CFA agrees.

But Earnix's method also produces unfairly discriminatory as well as excessive or inadequate rates. Here is what Mr. Miller acknowledges about the Earnix method:

> *Typically, a POM identifies the classes where the actuarially indicated rates and rate factors will likely lead to below-target conversion and/or retention ratios. To the extent permitted by the user, the below-target problems are resolved by rate factor tempering. <u>The tempering of some rate factors creates an off-balance</u> (i.e., shortfall in the overall average rate level), or <u>the need for an offsetting increase in the rates for the non-tempered classes.</u> If the model user does not permit any rate factors to go above the actuarial indications, the off-balance will be built into the base rates, and all insureds will uniformly pay an amount above the actuarial indications. <u>If the model user allows for some increase above the actuarially indicated rate factors, then the model will allocate the off-balance only to those classes that will most likely tolerate the off- balance increase in rates, without also causing a decrease in the retention ratios.</u> In the past, some regulators may not have recognized that rate tempering/rate capping was being offset by requiring all insureds in the non-tempered classes to pay rates a little higher than the actuarially indicated rates. The offsetting rate increase was embedded in the base rates and applied uniformly across all classes. With POM's, the off-balance could be made to vary by class. The variable off-balance factor will manifest itself in the rate filing by some proposed rate factors being above the indicated rate factors. Some regulators may not find the variable off- balance approach to be acceptable, which will result in the off-balance being built into all base rates as has been done in the past.   (Emphasis added)*

A hypothetical will show how unfair discrimination will occur under the Earnix approach. Assume only two classes, each of equal impact on the final rate. Also assume that both have risk-based indications for rating factors of 1.00 if the insured does not have the characteristic and 1.10 if the insured does. If the increased factor for one of the characteristics is lowered or raised away from its indicated cost-based factor by PO, the other will have to be moved in the opposite direction to correct for the off-balance according to Mr. Miller. Assume the change is 5 points in the factor. The resulting rating factors for each characteristic will be 1.15 and 1.05 rather than 1.10 each. Two identical insureds without either of the factors will pay the exact same rate (1.00 * 1.00). Two insureds with characteristics that produce the higher price will also pay the same rate (1.15 * 1.05 = 1.207, close to what the risk-based indication would have produced 1.10 * 1.10 = 1.210) But two insureds who would have paid the same rate had the indications been followed who have one adverse characteristic factor but not the other will pay quite different rates (1.00 * 1.05 = 1.05; 1.15 * 1.00 = 1.15, a difference of 1.15/1.05 = 9.5%) For this subset of insureds, the rates will clearly be unfairly discriminatory.

Earnix leaves it to the regulators to find these hidden examples of unfair discrimination and disapprove the filing. Here are several examples of how the regulators will be burdened to find and disapprove the currently hidden PO impacts, quoting Earnix:

Some model users may permit the model to produce rates that exceed the indicated rate factor for a specific class. Such a departure would be evident in the rate filing, because the proposed rate for the class would exceed the indicated rate. Regulators will deal with that situation...

Presumably, rate changes not reasonably consistent with projected costs would be disapproved by the regulator, with or without the use of a POM.

A POM could be used to make competitive adjustments to rate factors between risk classes (referred to in this question as "Ratebook Optimization"). The adjusted rate factors would not necessarily be unfairly discriminatory, as long as the rate factors are risk-based factors and reasonably consistent with projected losses and expenses.

Monitoring retention ratios, production ratios, and conversion ratios may be the more direct way to monitor how a specific rate schedule is actually performing in the market. Given the increased confidentiality afforded some information included in rate filings, it may become difficult to compare rates and monitoring these important ratios may soon become the primary source of competitive information for competing insurers.

The greater the swing in the permitted adjustments, the greater is the likelihood the rates will be disapproved by the regulator. This is because the greater the swing in the permitted adjustments, the greater will be the differences between the actuarially indicated rate factors and the proposed rate factors presented in the rate filing.

Regulators cannot allow themselves to be placed in the untenable position such as Earnix proposes in this complex list of new requirements for the state regulators to sholder.

Allstate's letter and presentation on May 11 to CASTF admits to using PO. They say, "we do not engage in PO that seeks to charge the highest price the market will bear." So they engage in some other sort of PO. They claim that they do it in a way that minimizes judgment and defines the outcome. They claim it is all legal, but it is not, as several states has already declared. They apply PO as a rating factor to groups of people put into Complementary Rating Groups by "marketplace considerations" that are not risk-based. This method absolutely results in unfair discrimination among persons of the same risk, as even Earnix points out.

The Allstate presentation is misleading, but the truth is between the lines. Note that Allstate, at slide 9, admits that the CGR factor is applied as a rating factor, impacting people's final price, individually. Tellingly, this new factor, Allstate admits on the slide, is "An additional rating calculation step (which) is added for the Complementary Group Rating Factor." Thus, this is in addition to the historic risk-based factors and is added to them. This is a critical admission since we know that this includes non-risk based elements such as competitive analysis and also

"marketplace considerations" (read: PO). Thus the resulting price is not wholly risk based. Also, the resulting price becomes the "indicated" price so when Allstate promises to keep a price between current and indicated, it does not promise to keep it below a risk-based "indicated" rate. So, if a person has a current rate of $100 and a risk-based indicated rate of $100 but the person is a poor shopper so has a CRG factor of 1.10, the new "indicated rate becomes $110. Allstate then might "generously" only raise the person's price by $8, being $2 less than the new "indicated" rate but $8 above the risk-based indicated rate. Slides 10 and 11 of Allstate's CASTF presentation show how people are put into individual slots ("micro-segments")..."hundreds of millions" of these slots. These hundreds of millions of individuals are then grouped, based on something Allstate does not disclose but includes "marketplace considerations" as we see in the filings, into 1,000 Complementary Rating Groups. Each of these CGRs has a "rating factor...applied as a new rate step" (see slide 12). The calculation of this factor is not disclosed but we know it is not just risk based since the risk is determined in the earlier rating steps in the Premium Calculation section of the Allstate filings.

APPENDIX 2

CFA and CEJ Analysis of Ratemaking Confidence Intervals: Some reasons why the use of a confidence interval rather than a point estimate is not appropriate

The Towers-Watson (" T-W") presentation is very clear that P.O. is "A process for adjusting prices away from a cost-based benchmark to better achieve business objectives. (Slide 10) The implication is that this is acceptable so long as it stays in some range of reasonableness, the statistical confidence interval. According to Slide 9, this interval is two standard errors (i.e., standard deviations) away from the mean cost estimate.

Here are some of the reasons why regulators should reject such an approach"

- By definition, the point estimate (the mean of the distribution) is the best estimate available.
- Moving away from the cost-based indication introduces subsidies and cross subsidies in the rate as Mr. Guven of T-W admitted during his oral presentation before the Auto Insurance Study Group. He stated that if the objective is zero subsidization in the rating system the actuary should "select the indication" of the cost-based analysis (i.e., the traditional ratemaking approach). By definition, P.O. leads to unfair discrimination.
- Not every point in the confidence interval is a valid estimate (i.e., the further out you go in selecting toward the edge of the interval, the more likely you have selected a number that is invalid).
- Confidence intervals vary in size depending on several factors such as the size of the sample, the choice of the confidence percentage.
- The width of the confidence interval approaches infinity as the sample size decreases toward zero.
- Confidence interval width is subject to manipulation by choices made by the actuary
- Confidence intervals are impossible to regulate (they are not filed, too much discretion in how the interval is constructed, etc.)
- There is a confidence interval around each of many rating factors. Bias in selecting within a range can cause great impacts in final answers, requiring regulators to study much more detail that currently is required.
- The confidence interval surrounds an indication that is already the product of a modeling exercise. The days of adjusting historical losses to future expected losses with frequency and severity trends is long gone, claim costs are modeled using assumptions about frequency and severity distributions with a multivariate generalized linear model. The so-called point estimate is already subject to far more manipulation with far less transparency than ratemaking in the past.
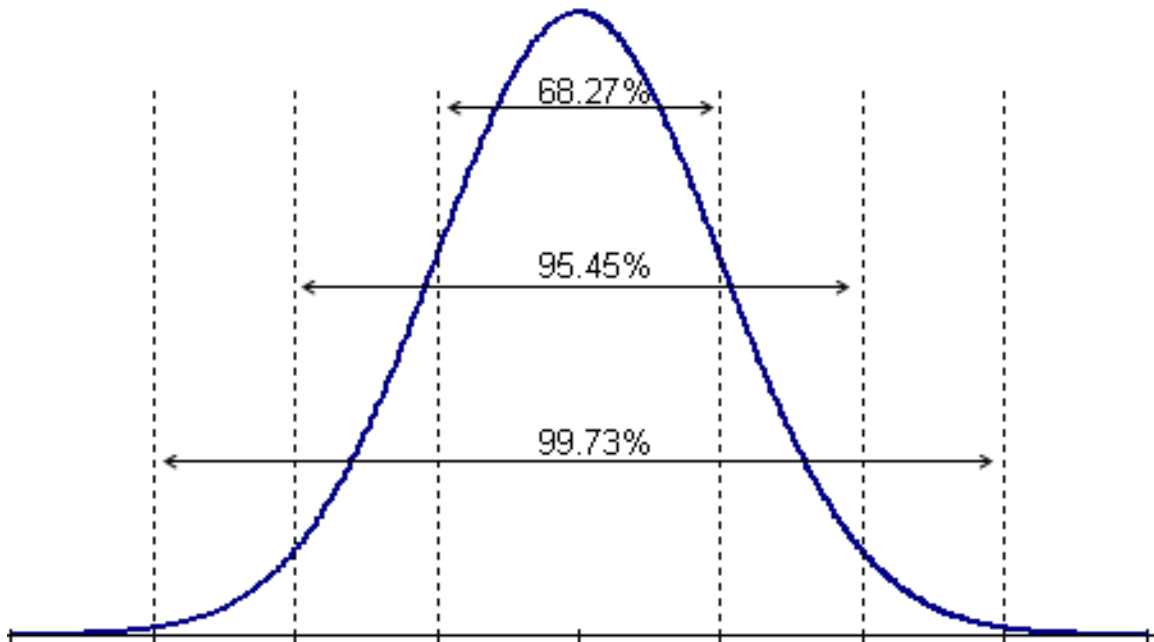
Above is a graph of a probability distribution, a normal distribution, which shows the likelihood of the actual estimate being one, two and three standard deviations away from the mean as approximately 32%, 5% and 0.3%, respectively. If, for example, the actuary chose a point two standard deviations above the mean, only 2.275 (1/2 *[100.00% - 95.34%] of the entire distribution is in the tail to the right of that selection. It is clearly unreasonable to be pricing at the tails of the distribution instead of at the point estimate (which is the mean and best estimate of the distribution).

The point estimate is, by definition, the best estimate of expected claims. Utilizing the existence of a confidence interval as both the justification for and the measurement of range for deviating from the best estimate of expected claim is a massive invitation to abuse because the size and characteristics of the confidence interval -- like the results of the modeling that produced the point estimates -- are subject to manipulation based on not only size of sample, but also probability distributions utilized in the pricing models.

Not every point within confidence interval is a valid estimate. Consider the example Towers-Watson used in its presentation to the Auto Insurance Study Group showing a range of $400 to $600 around a point estimate of $500 (Slide 15). It is impossible to say with a straight face that a price of $600 is as reasonable an estimate of expected claims as a price of $500. Indeed, if the argument of those pitching PO were that every point in the confidence interval is equally valid as an estimator, it would be incumbent on the regulator to select the lowest rate or rating factor in the confidence interval to protect consumers.

Slide 9 of the same T-W presentation gives a clear picture of how P.O. works. The

light green lines are 2 SEs (Standard Error or Standard Deviations) from the point estimate (the mean). Note that the optimized points are all equal to or higher that the indicated points, making this a very honest presentation of what is likely to happen in practice. Mr. Guven said the X-Axis points are rating factors. Thus, if these factors were applied to an insured, the final answer from multiplying the factors would be much higher than the indicated since many of the factors are inflated. For example, the factor identified as "17" has an indication about 7, an optimized selection of about 10.5, and the range of SEs is about 2 to 12, (mean plus or minus 5 points). Selecting a confidence interval of 2 SEs allows the factor to be raised in this example by 50% (10.5 divided by 7). This is clearly an unreasonable departure from the indicated, cost-based factor based primarily on price elasticity. This is an unfairly discriminatory selection in my opinion.