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CAS Reinsurance Seminar Surety

June 5, 2017

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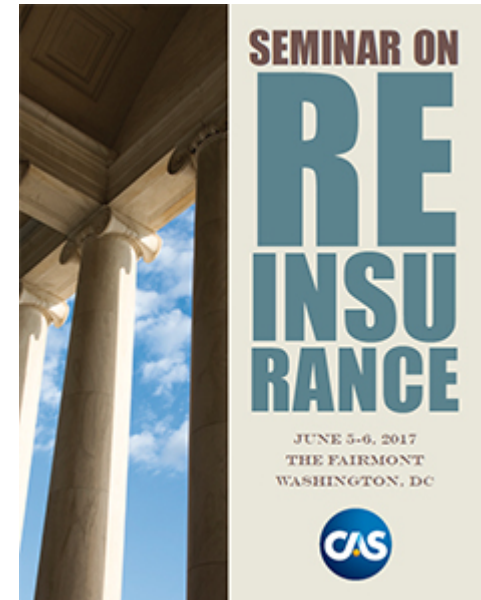
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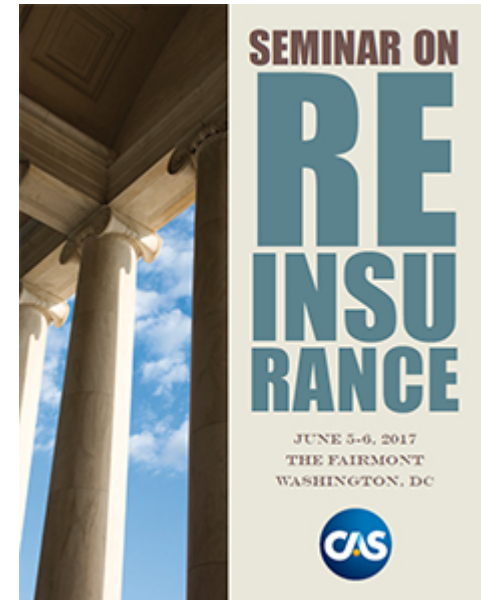
Questions & Answers

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Disclaimer

The material provided is not intended nor designed to provide business, legal or pricing advice. Rather, it is solely intended to bring to your attention the key differences between surety and traditional insurance as well as highlight many of the factors that may impact the pricing and underwriting of the surety bond business.



Panel

Daniel Greer, FCAS MAAA

- Senior Managing Director, Aon Benfield
- Actuarial Leader of Surety Practice Group

Keith Kwiatkowski, FCAS

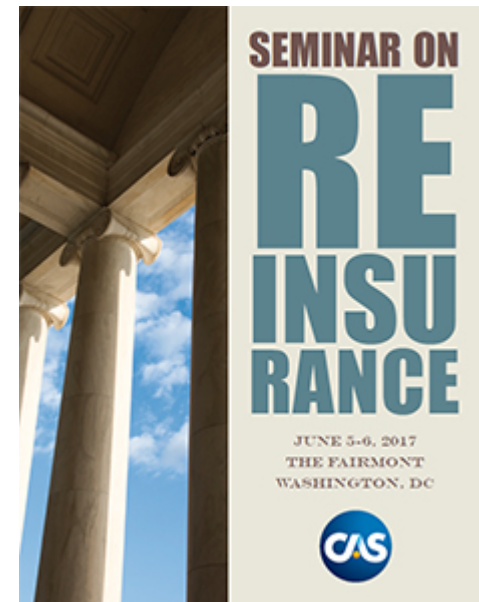
- Actuarial Director, CNA Insurance Companies
- Lead Surety Actuary

Matthew Olsen

- Senior Vice President – Surety
- Sirius Group

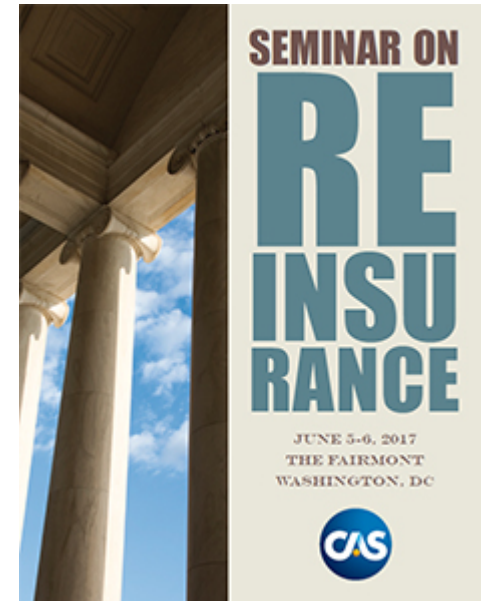
Cameron Vogt, FCAS MAAA CFA

- Senior Vice President and Actuary
- Munich Re America, Inc.





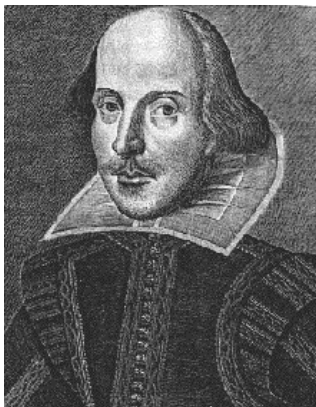
Section 1: What is Surety?



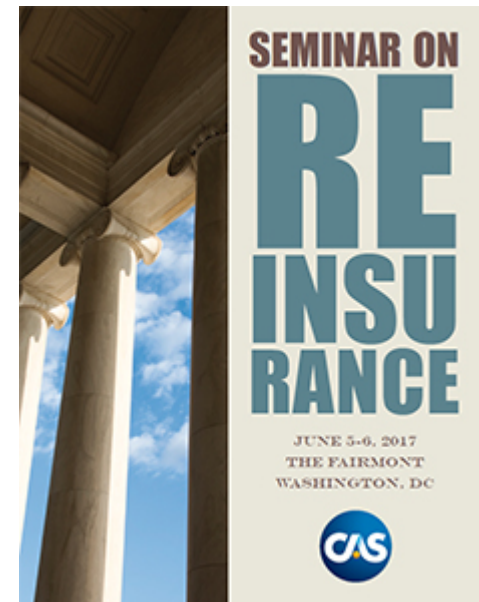
History of Suretyship

Surety has existed since earliest recorded human interaction

- Individual suretyship represented the 1st form.
 - Oldest known record of a contract of surety is a Mesopotamian tablet from 2750 BC
 - Code of Hammurabi, 1790 BC, is earliest known mention in a written legal code
 - Referenced in bible—Proverbs “He that is surety for a stranger shall smart for it.”



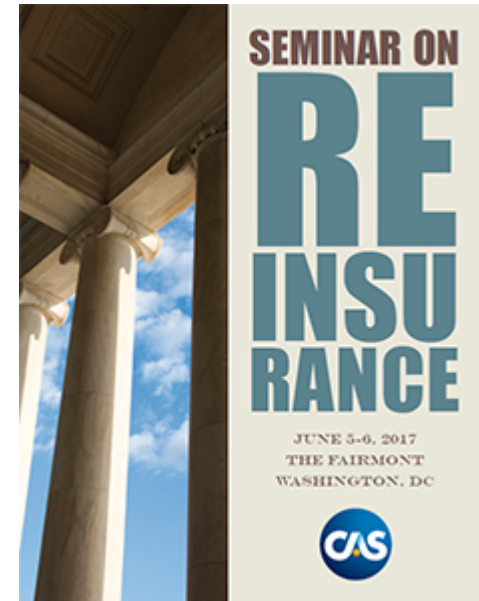
- Roman Empire—Developed technical law of suretyship as effective means of securing debts
- Referenced in Shakespeare (Merchants of Venice)—“I think the Frenchman became his surety and sealed under for another.”



Suretyship in the United States

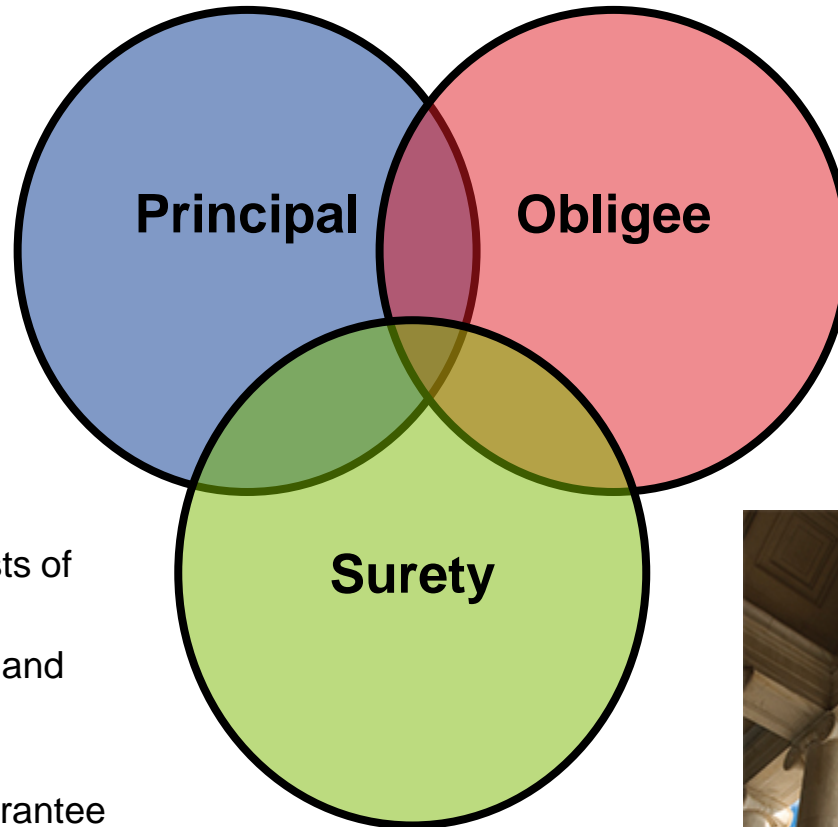


- American Surety Company—organized in 1884 to underwrite construction contract bonds
- Heard Act of 1894—Passed by U.S. Congress requiring surety bonds on all federally funded projects
- Miller Act of 1935—Replaced Heard Act and required separate performance and payment bonds on federal work to protect owner, taxpayers, as well as subcontractors and suppliers
- “Little Miller Acts”—Every state has passed similar laws requiring performance and payment bonds on state work



What is Surety?

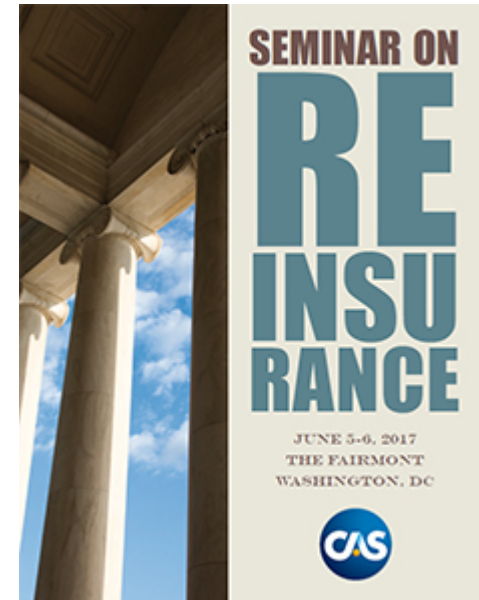
- Three-party agreement where one party (surety) guarantees the **performance** of a second party (principal) to a third (obligee)
- The underwriting that the surety completes **pre-qualifies** the principal for the obligee
- For construction work (contract surety), it allows for a competitive bidding process between pre-qualified contractors
- Guarantees protection of the interests of subcontractors and suppliers
- Provides a third-party to investigate and validate claims
- For other non-contract obligations (commercial surety), bonds can guarantee any type of performance, e.g.: Bail, Financial Guarantee, Public Official, Appeal
- Ultimately saves tax dollars



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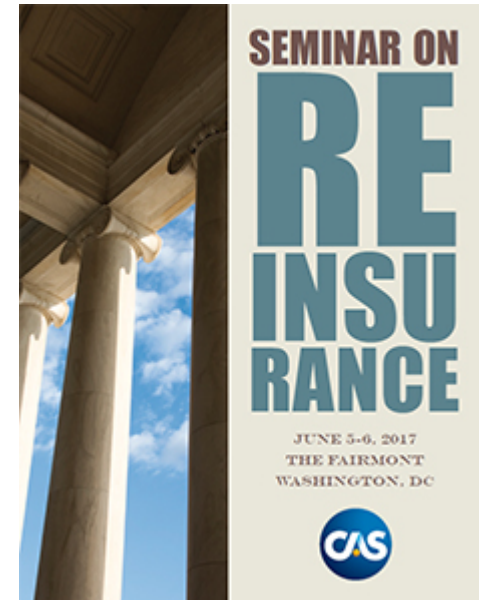
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Types of Contract Bonds

Contract Surety: Guarantee the performance of construction contracts

Bond Type	Guarantees ...
Bid	... that a contractor bidding for a contract will, if the bid is accepted, enter into the contract and furnish the other necessary bonds
Performance	... that the principal will complete the work according to the contract, plans and specifications, at the agreed price, within the time allowed
Payment	... that bills incurred by the principal for labor and materials will be fully paid
Maintenance	... that faulty work will be corrected and defective materials will be replaced
Supply	... performance under a contract to furnish supplies or materials



Types of Commercial Bonds

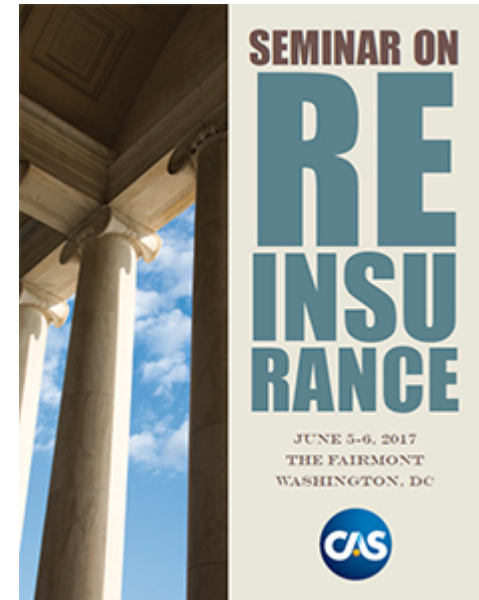
Commercial Surety: Guarantee the performance of an individual or business to operate within requirements set out by governments or other entities

Bond Type	Role
License & Permit	Required by state, municipal or federal body as a condition for engaging in a particular business or exercising a particular privilege
Court	Judicial – reserve the rights of the opposing litigant or other interested parties Fiduciary – for those who administer a trust
Public Official	Guarantee the faithful performance of public officials, typically those that handle funds
Financial	Guarantees payment of certain financial obligations such as payment of taxes, lease payments, etc.
Miscellaneous	Bond classes that do not fit into any of the above categories

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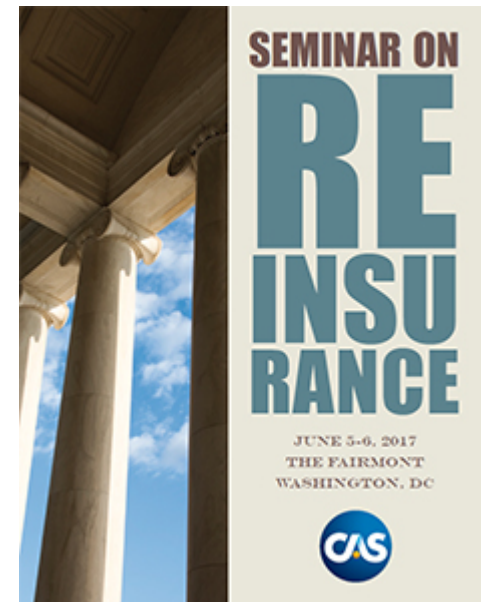
Surety

Comparison to Other Liability - Occurrence

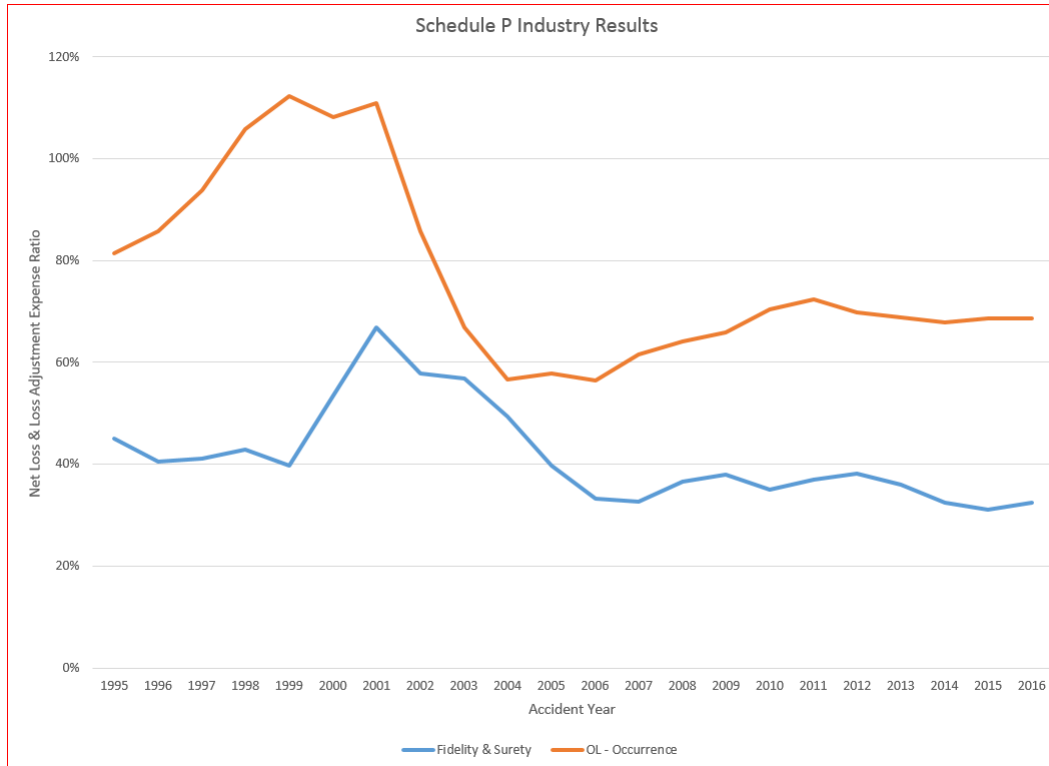


	Other Liability – Occurrence	Surety
2016 Direct WP	\$41 billion	\$6 billion
2016 Concentration Ratios:		
Top 5 Writers	26%	49%
Top 10 Writers	42%	64%
Historical Net Results (1995-2016):		
Ultimate Loss & LAE Ratio	72%	40%
Coefficient of Variation	25%	24%

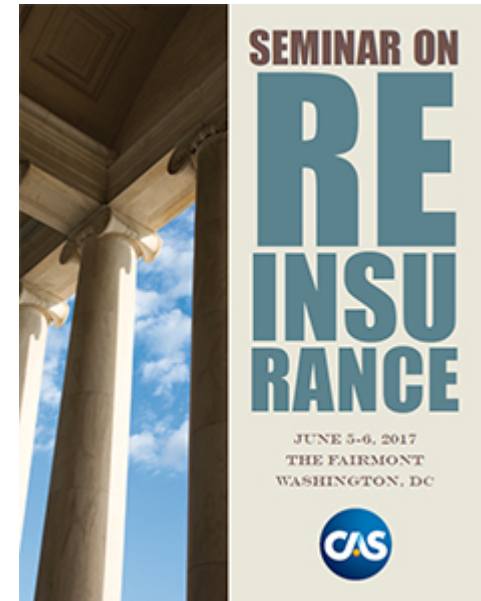
Source: SNL.com
 2016 Direct Premiums and Concentration Ratios are from the “Insurance Statutory Market Share Report”
 Historical Net Results are from the P&C Industry Schedule P – Part 1, “Net Total Losses and Loss Expenses Incurred” / “Net Premiums Earned”



Surety Comparison to Other Liability - Occurrence



Source: SNL.com
 Historical Net Results are from the P&C Industry Schedule P – Part 1, “Net Total Losses and Loss Expenses Incurred” / “Net Premiums Earned”



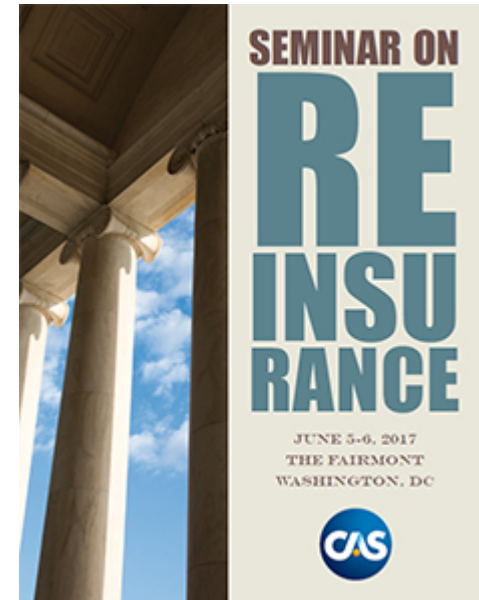
Surety Bond Underwriting

Traditional Underwriting Wisdom



- Before issuing a bond, a surety will analyze and review a number of factors grouped as the **“Three Cs”**
 - Capital: is there enough financial strength to complete project
 - Capacity: does principal have the right experience and infrastructure
 - Primarily relates to Contract Surety
 - Character: will the entity or individuals live up to their obligations
 - Primarily relates to small contractors and individuals

- Two additional Cs will be reviewed as well
 - Continuity: will there be a financial or management drain if the main principal departs
 - Contracts: is there wording including in the underlying contracts that could cause a default

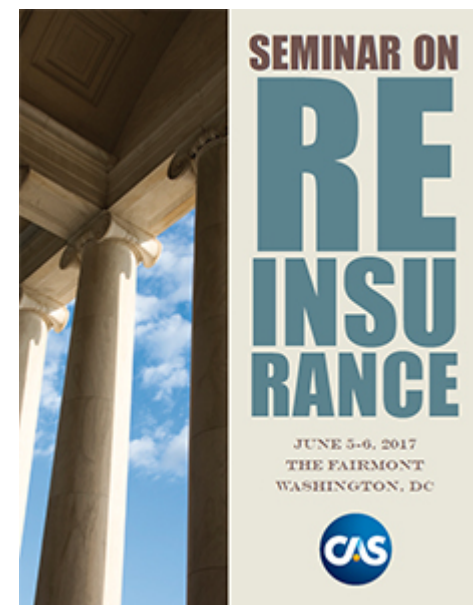


Claims

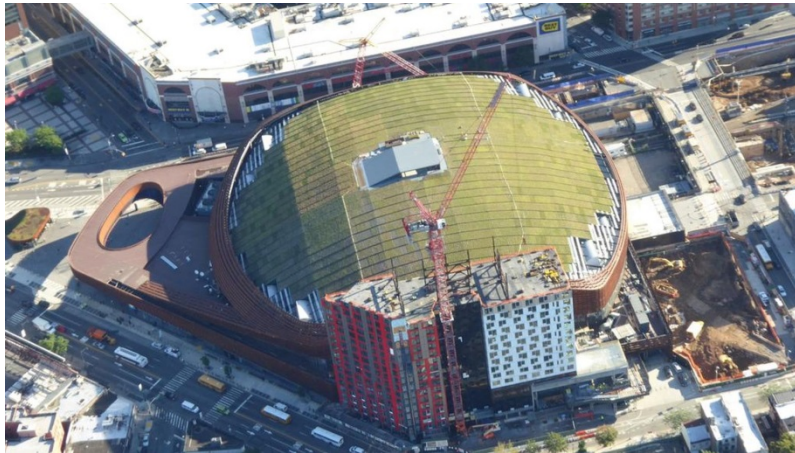


- If a contractor defaults, surety will investigate and determine if there are any defenses. If not, they have three options:
 - Complete the project, including outstanding payments due to subs and suppliers, while financing the exiting contractor
 - Complete the project using a replacement contractor
 - Pay the penal sum of the bond amount

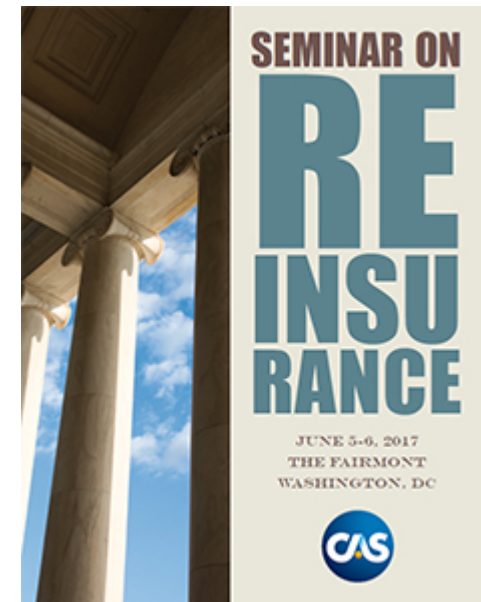
- For a commercial surety loss, typically the only option is to pay the claim which will either be the documented loss amount or the bond penalty
- Surety is an indemnity product. Once the principal is defaulted, the surety steps into their shoes and
 - Have rights to remaining contract funds and bonded account receivables
 - Can pursue reimbursement from the defaulting company of any losses paid; typically done through bankruptcy proceedings
 - If personal/spousal/3rd party indemnity was provided, can pursue further reimbursement as well
- “PML” / “PEL” percentages will differ greatly between contract and commercial surety



Claims Examples



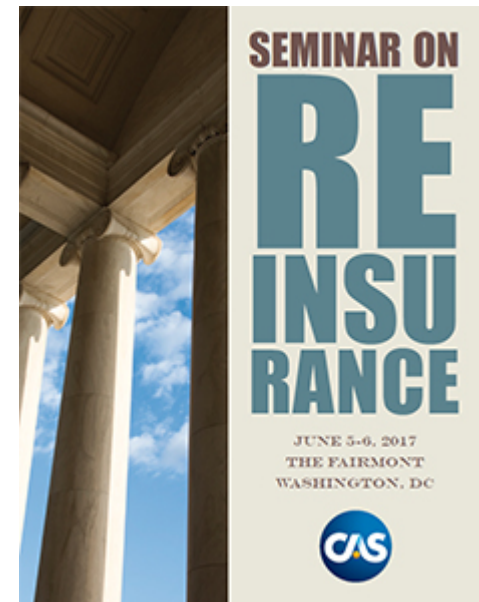
- Claims example:
 - Surety bonded contractor with expertise in steel fabrication
 - Contractor undertook a larger, more complex assignment, in an unfamiliar geography
 - Surety elected to finance project to completion rather than pay the penal sum and walk away
 - Ultimate cost to complete the project was nearly double the contract price / bond limit



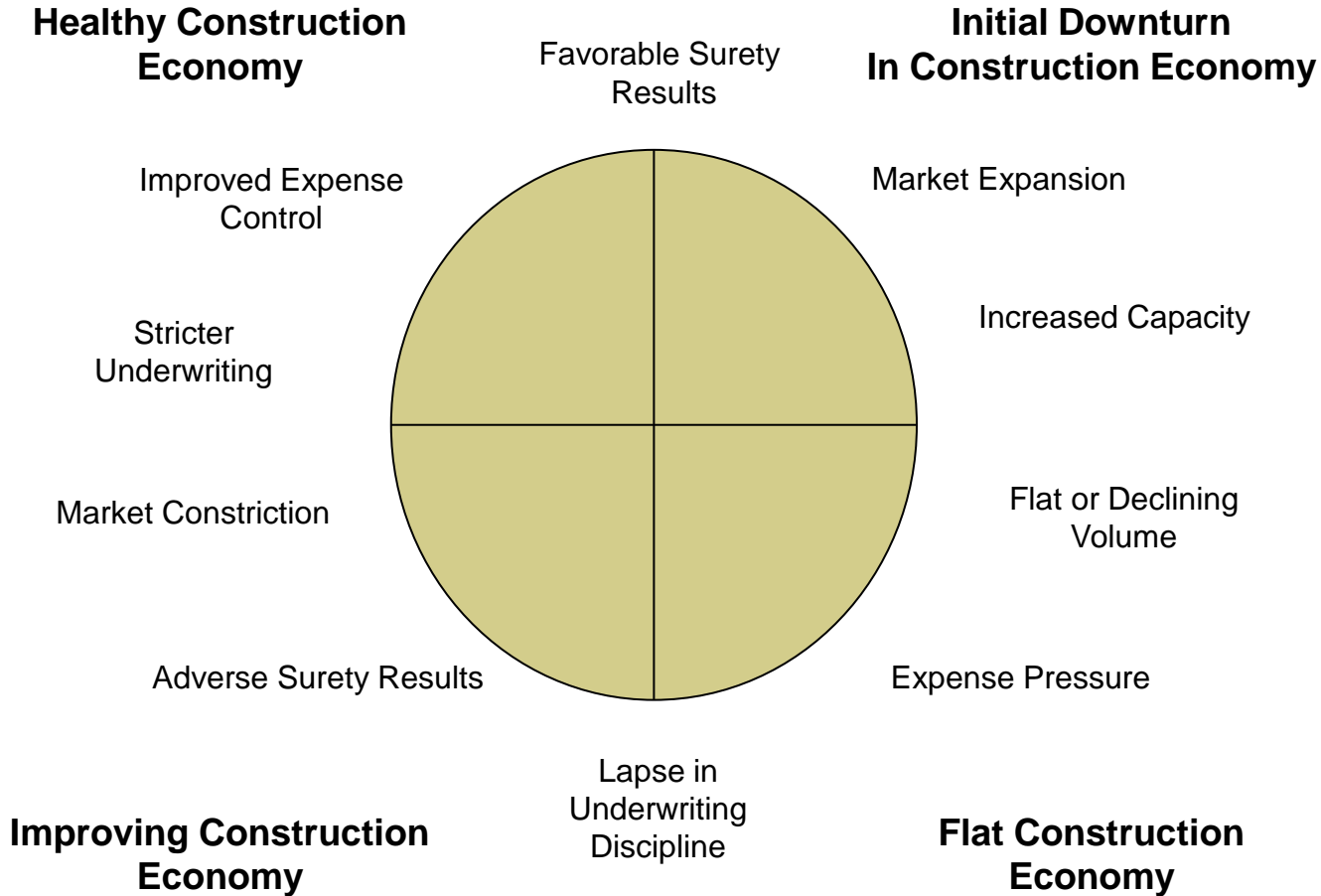
Claims Examples

- Claims example (Large Contractor):
 - Surety bonded huge diversified construction company with well over \$1b of “backlog” = the unexpired portion of its bonded projects
 - Contractor ran into financial strain and defaulted on the work
 - Over several years, the surety worked to manage the uncompleted work by hiring replacement contractors and to manage the remaining assets of the contractors
 - Ultimate loss to the surety was approximately 10% of the backlog

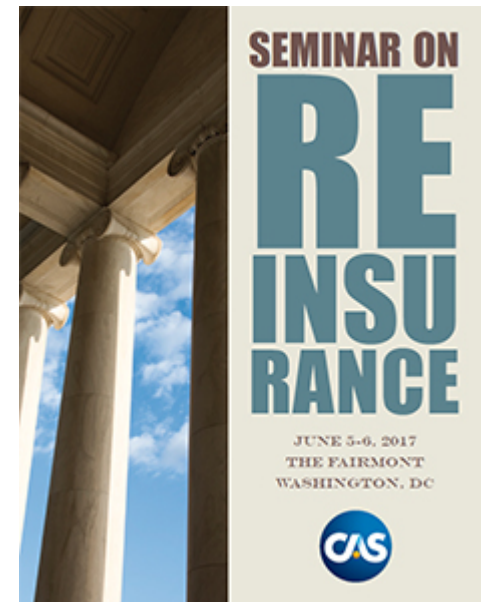
- Claims example (Commercial / Reinsurance):
 - Advance Payment Bonds were used as a form of loan guarantee through 2001
 - Surety managed its claim with a slow, methodological legal process
 - Reinsurer asked to commute its treaty with respect to that claim and negotiated a settlement
 - In the end, the Surety was able to resolve the claim with no direct loss, and became the only surety to make money on that principal



Basic Surety Market Cycle

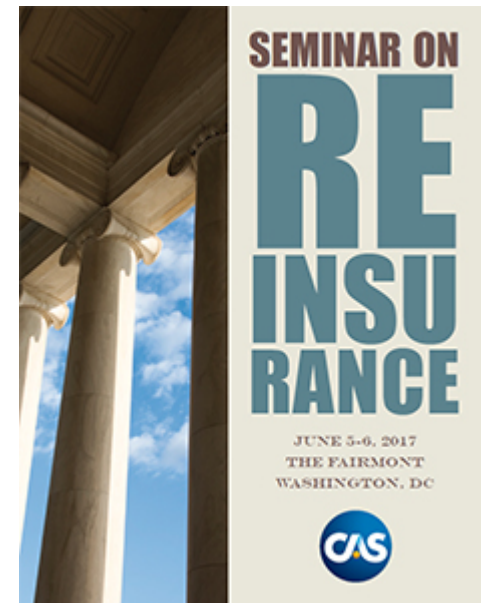


... although it doesn't always work out this neatly



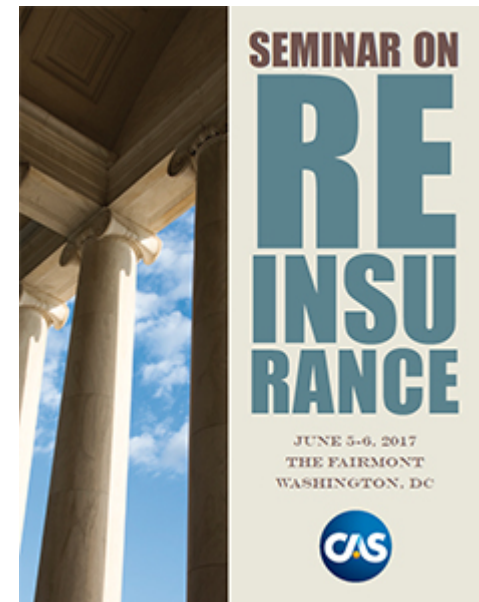


Section 2: Role of the Actuary



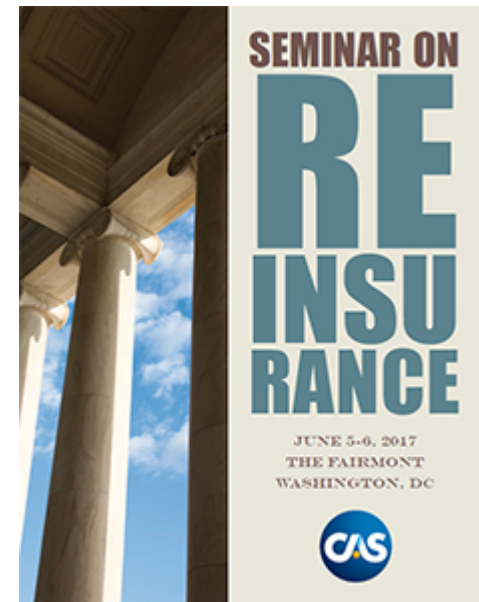
“Zero LR” Line of Business

- Historically, surety underwriters were taught to underwrite to a “zero loss ratio”
- Surety is “account business” not “bond business”
 - Underwriting focuses on quality of the account
 - A portfolio of 30,000 bonds generated from 100 accounts is not diverse
 - Therefore a small-to-midsize surety can hit a zero loss ratio for a few years, but give back all its profit in a single bad year
- Extended belief that product’s expected loss were too difficult to measure
- In fact, most sureties have non-zero loss ratios, so what does that really mean?
 - It’s a useful mindset: *Be conservative*
 - Surety prices are so low that a company can’t have frequency of loss and still be successful
 - An approach that doesn’t work is “Yes this might go bad, but we’ll charge enough to pay the losses”



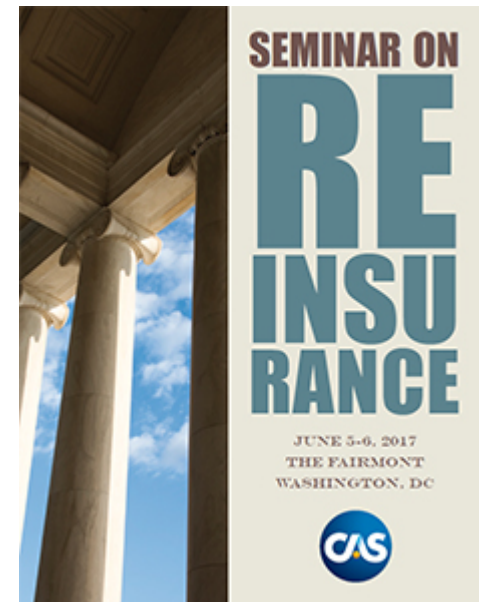
Surety vs. Insurance

	Insurance Policy	Traditional Surety Bond
Regulated by	State insurance departments	
Agreement	Two-party	Three-party
Protects	Insured	Obligee (Surety has obligations to both the obligee and the principal)
Premium	Actuarially determined	“Fee for qualification services” based on a percentage of the contract amount
Coverage	Term-specific	Project-specific
Forms	Vary by insurance company	Standard or may be negotiated by owner or surety
In a claim	No right to the insured’s assets	The surety has the right to the contract balance



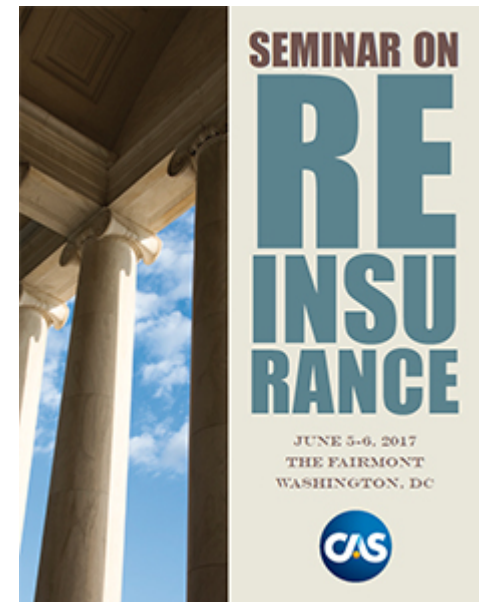
Actuarial Analysis for Surety

	Insurance Policy	Surety
Earning Premium	Policy inception to expiration <ul style="list-style-type: none"> For an occurrence policy, claim can be reported long after policy expiration, especially for long tail lines 	Bond inception to expiration May be elements of responsibility that extend beyond the bond term: <ul style="list-style-type: none"> Maintenance period Non-cancellable bonds
Layering	By policy and claim	Since principal distress, need to aggregate to principal level
Loss Year	Date of Occurrence or Claim Made	Ground up or per bond analysis: <ul style="list-style-type: none"> Date of default on bond works For severity / by layer analysis, may need to group claims by principal <ul style="list-style-type: none"> Sample loss trigger date: first bond default for that principal



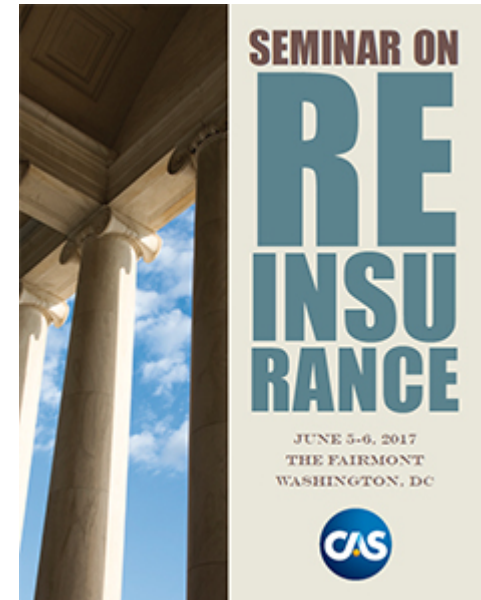
Actuarial Analysis for Surety

	Insurance Policy	Surety
Rate changes	Extensively monitored	Not a focus, partly because most bonds are not renewed Surety rates not traditionally viewed as flexible, although they can vary based on competition, credit quality, and bond characteristics
Trend	Studied extensively for frequency lines such as Auto, GL and WC For specialty lines may be sector based, or follow jury verdicts	Long term: Consistent with inflation Short term: May be fluctuations Biggest impact: Labor and material costs Regional differences Exposure trend reflects the same costs as loss trend
Loss Dev.	Long tail lines: Can be significant for many years Short tail lines: Typically done after 2-3 years	Loss known about quickly, and in the short term, payments often exceed final cost <ul style="list-style-type: none"> • Demand bonds • Payments needed early to avoid / mitigate ultimate cost





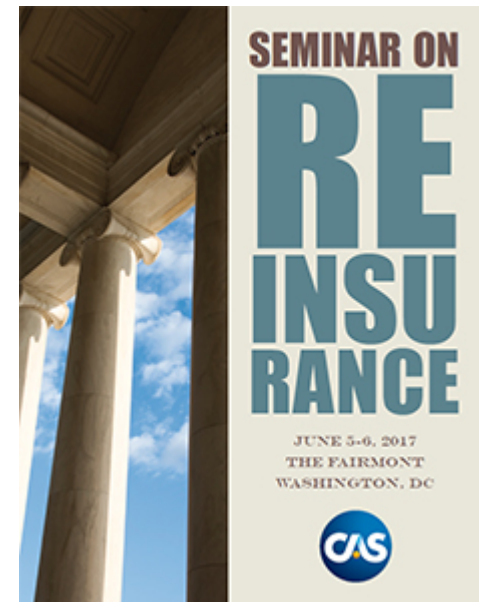
Section 3: Surety Severity



Surety Exposure Bases: Various Approaches

Various approaches to exposure have been used

- Bond Penalty
 - At least in title, it’s a measure of the surety’s risk
 - While it works for Commercial bonds and for Contract Percentage bonds, it does not reflect the maximum possible risk inherent in completion bonds (most typical in US Contract surety)
- Active Bond Penalty + Expired Past 12 Months
 - The most conservative approach – if everything would go wrong
- Cost to Complete
 - Reflects the trailing off of risk as projects near completion
- Other



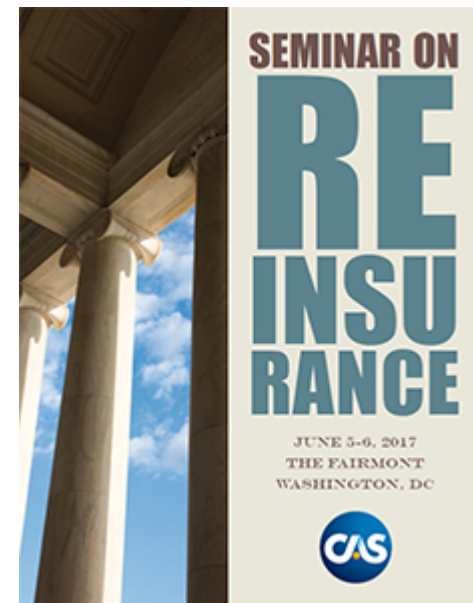
Surety & Fidelity Association of America (SFAA) Construction Loss Severity Study: Goals

1. Identify and quantify contractor characteristics that impact loss severity.
 - Type of Contractor
 - Region
 - Maximum individual bond limit
2. Define an exposure base for estimating loss severity in current book of business on a prospective basis
3. Support member companies' risk management measures, capital allocation by contractor and reinsurance cost-benefit analysis.



Source: The Surety & Fidelity Association, Construction Loss Severity Study, Fifth Edition March 1, 2015. The information, images, and data contained in the Study is copyrighted by SFAA and may not be distributed, modified or reproduced in whole or in part without the prior consent of SFAA.

The Study is freely available to SFAA members and subscribers. The Study is available to non-members and non-subscribers for purchase. Please contact Alan Clark, SFAA Actuary, aclark@surety.org.

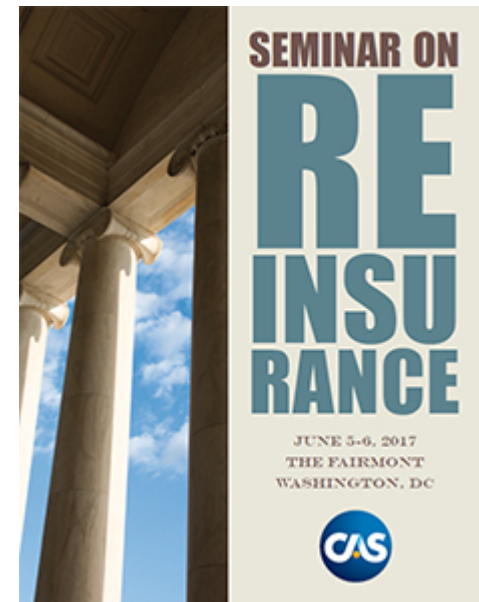


- Data voluntarily provided by SFAA members
- Fifth edition released March 1, 2015
- 2,626 losses included (+47% over prior edition)
- 85% surety market participation (+10% over prior edition)
- Losses & exposures on a per-principal basis
- Loss threshold of \$250,000 based on total incurred loss plus incurred expense minus salvage
- Next edition due late 2017



Source: The Surety & Fidelity Association, Construction Loss Severity Study, Fifth Edition March 1, 2015. The information, images, and data contained in the Study is copyrighted by SFAA and may not be distributed, modified or reproduced in whole or in part without the prior consent of SFAA.

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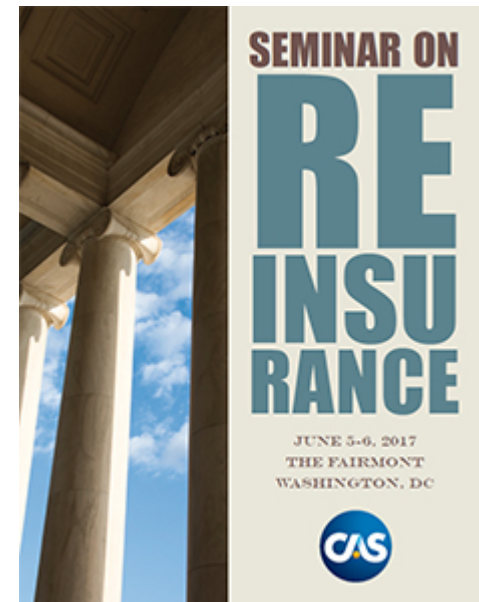
SFAA Construction Loss Severity Study: The Model

- Iterative process that minimize the difference between the actual and modeled losses.
- Some smoothing where data elements are limited.
 - Example – Only 23 losses on exposures > \$400M
- Output:
 - Probable expected loss (50th percentile)
 - Probable maximum loss (90th percentile)



Source: The Surety & Fidelity Association, Construction Loss Severity Study, Fifth Edition March 1, 2015. The information, images, and data contained in the Study is copyrighted by SFAA and may not be distributed, modified or reproduced in whole or in part without the prior consent of SFAA.

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SFAA Construction Loss Severity Study: Exposure Base (Goal #2)

- Exposure base criteria:
 - Should vary in magnitude directly with the underlying exposure to loss
 - Should be readily available in company systems
 - Should be objective and measurable by the surety

- Total Open Bond Limit =
in-force + expired in last 12 months

Work on Hand

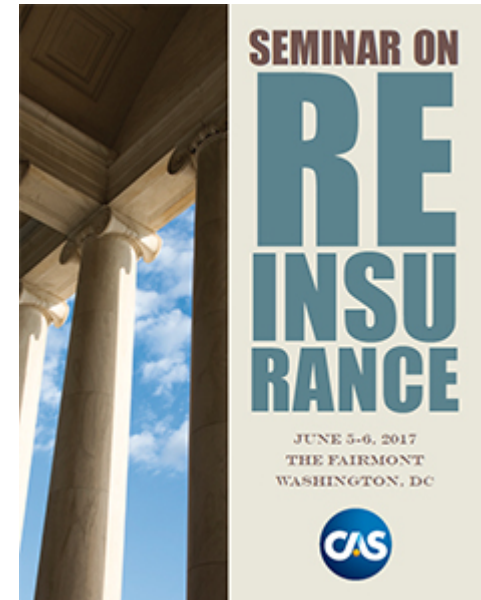
vs.

**Total Open
Bond Limit**



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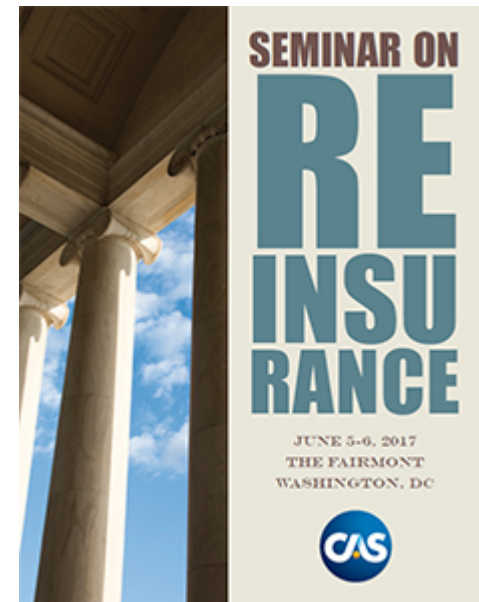
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Surety Severity: Variations on the Theme

What can impact expected claim parameters?

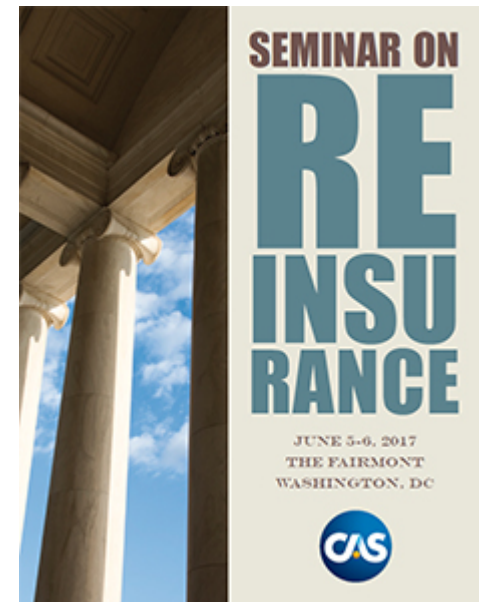
- Collateral
 - If a principal is unable to qualify for the bonding it needs, it may be able to qualify by posting collateral, such as assets held in trust, or a letter of credit
 - This collateral is designated for the use of the surety and is protected from other creditors
 - Impact on loss parameters: decreased frequency, reduced expected loss
- Cosurety
 - It is common for more than one Surety to jointly guarantee bonds for very large contractors
 - Helps keep aggregation of risk for that individual surety within acceptable limits
 - Impact on loss parameters: Use full work program to determine PEL / PML percents, but each surety's exposure is limited to its percent of the liability



Surety Severity: Variations on the Theme

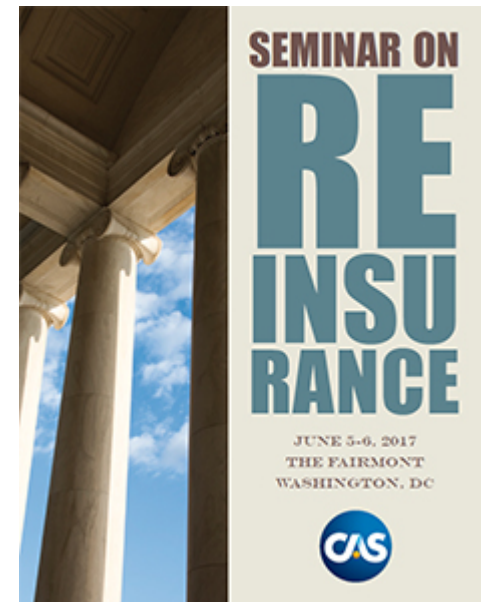
What can impact expected claim parameters?

- Percentage Bonds
 - Outside of the US, it is common for a surety bond to have a value that is less than the full project cost
 - Convention varies by country, e.g. 50% in Canada, 10% in many Latin American and European countries
 - Given common PEL and PML ranges, it is sufficient in many cases to protect only 10% of the project
 - In these countries, Surety is more of a banking / insurance product and less of an indemnity one
 - Severity and overall result is less dependent on the skill of the claims department
 - Impact on loss parameters: increased severity (relative to the bond penalty amount)



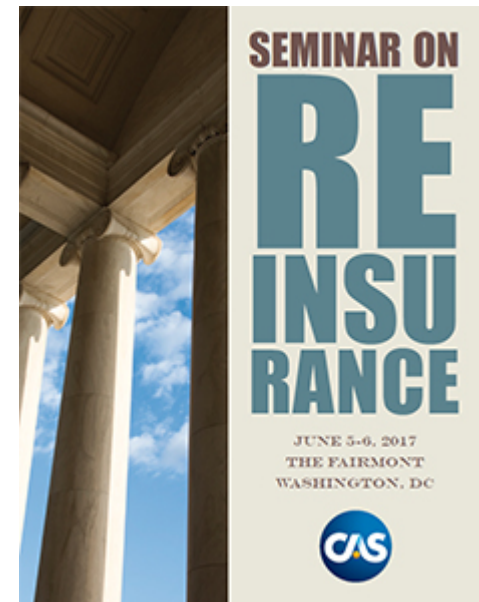


Section 4: Surety Frequency



Surety Modeling

- Insufficient data exists
- Surety and Fidelity Association of America (“SFAA”) data does not capture credit metrics of principals
- Proxies for default frequency needed
- Significant amounts of data available regarding debt instrument defaults and credit scores
- Not all debt defaults would create surety losses
- High correlation with financial guarantees, poor correlation with compliance guarantees



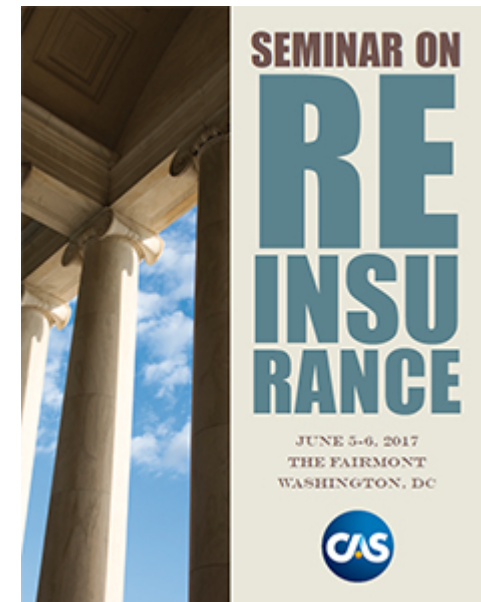
Reinsurance Pricing Exposure Rating - Frequency

▪ Two potential sources:

1. Surety Claims Data

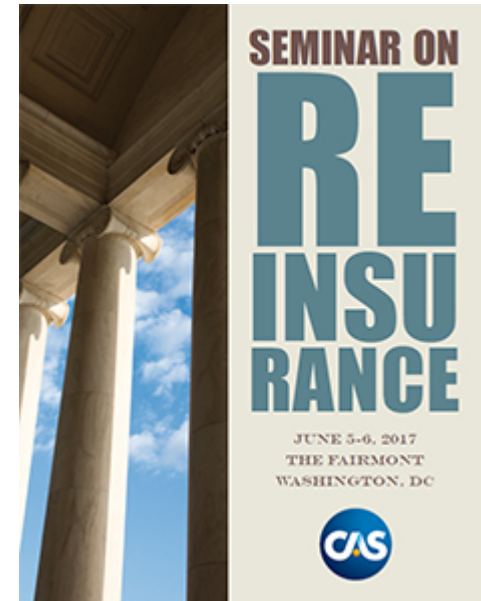
2. Financial Instrument Probability of Defaults (e.g. Moody's)

- Need to adjust reflect Probability of Loss as a Surety Product / Probability of Default as a Financial Instrument = α
- See “Credit & Surety Pricing and the Effects of Financial Market Convergence” (Alwis, Steinbach)



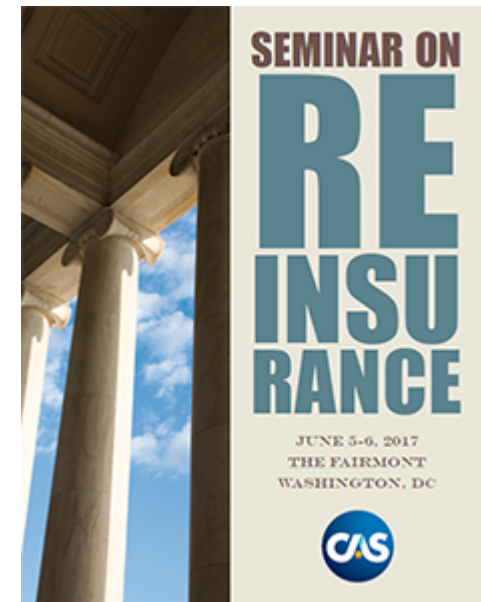


Section 5: Correlation and Volatility



Reinsurance Pricing Exposure Rating - Correlation

- Most excess of loss reinsurance programs include limited reinstatements with additional premiums = increased importance on loss distribution and correlation assumptions.
- Correlation within and between:
 - Regions
 - Contractor Types
- Test resulting ground-up loss distribution versus historical experience as a reasonability test.

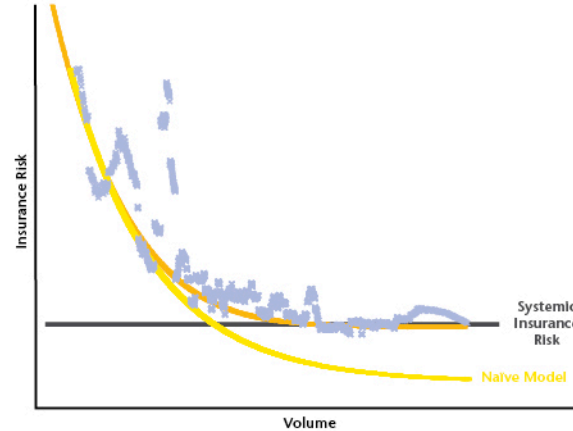
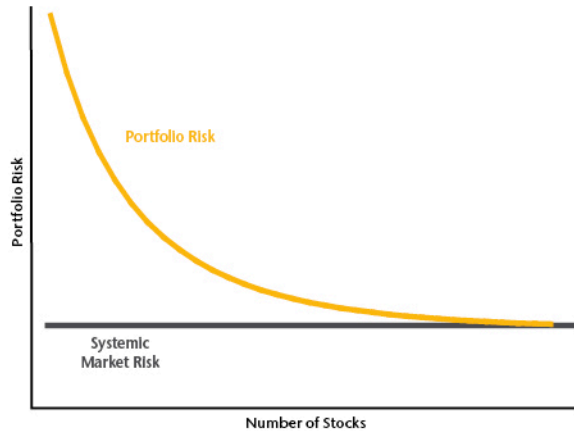


Aon Benfield Insurance Risk Study: Systemic Risk

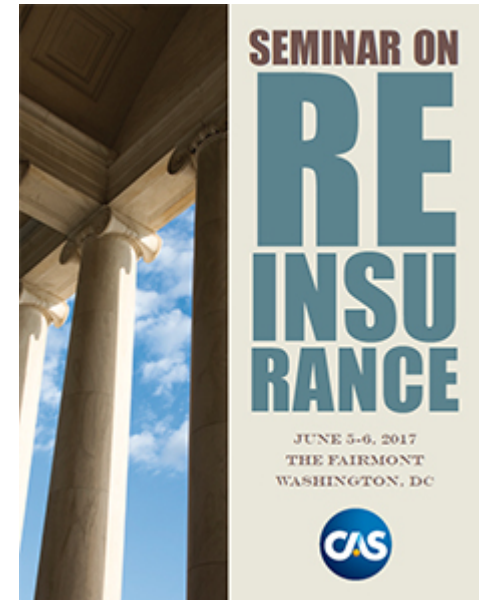
In addition to process risk, each LOB has underlying volatility that is not diversifiable

Asset Portfolio Risk

Insurance Portfolio Risk



- Insurers can reduce UW volatility to a large degree by increasing volume
- Systemic insurance risk remains due to factors such as:
 - Underwriting cycle
 - Macroeconomic trends
 - Legal changes
 - Weather

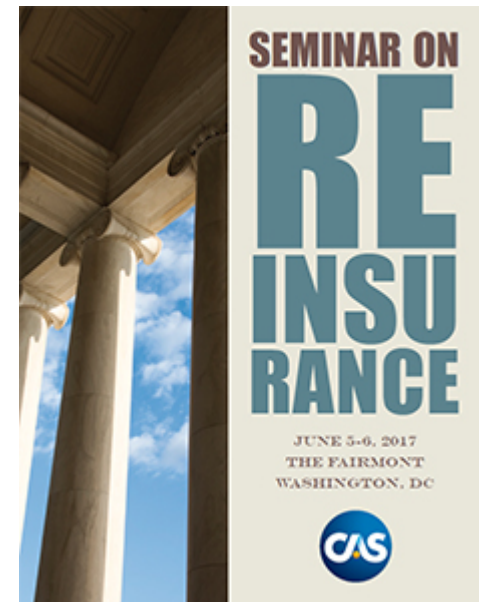
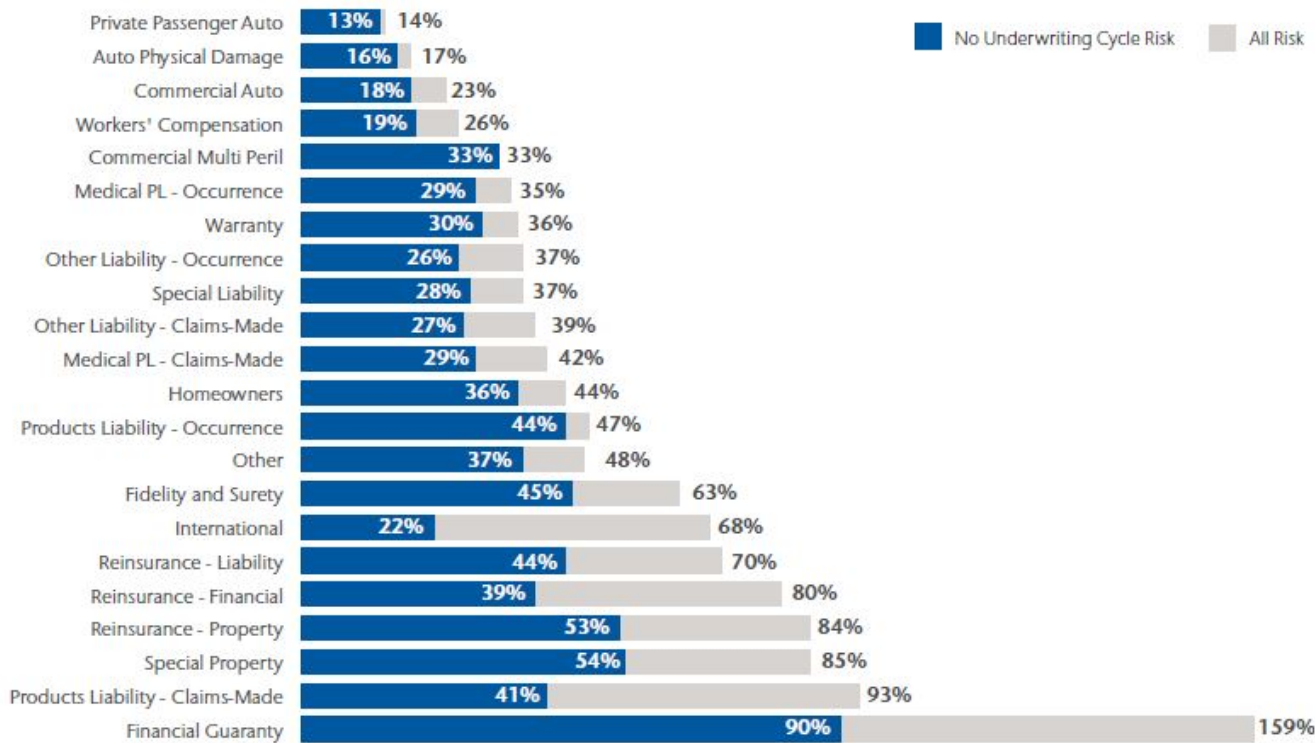


U.S. Risk Parameters

Systemic Risk can be measured relative to the UW cycle, and independently

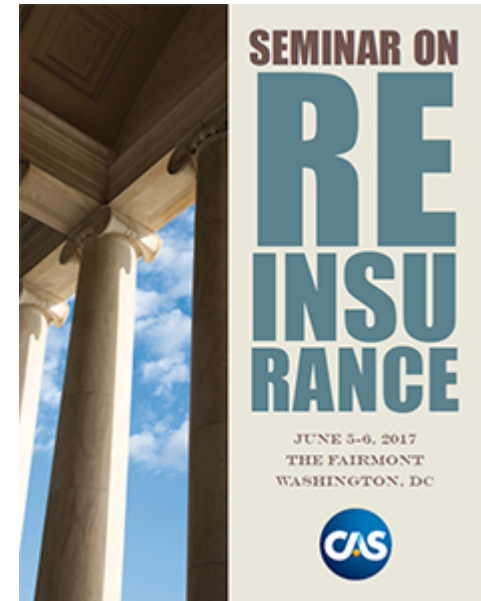


Coefficient of variation of gross loss ratio (1987-2015)



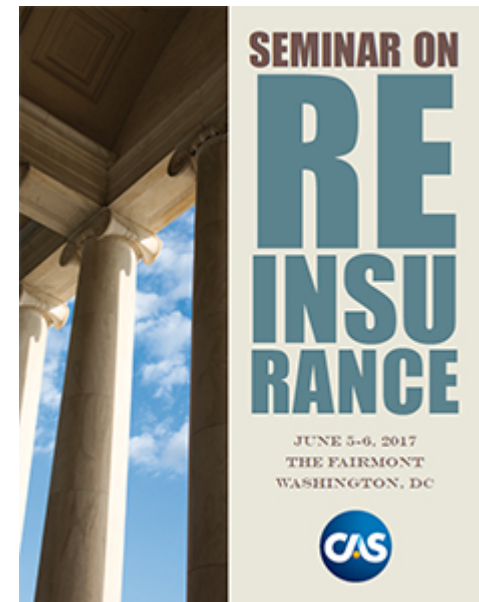


Section 6: AM Best Surety Approach



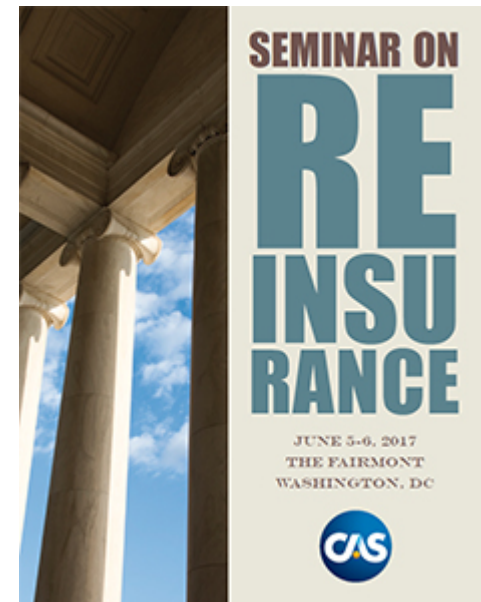
A.M. Best Surety Methodology

- In 2014, A.M. Best incorporated feedback from the SFAA and its member companies into its evaluation of [Surety Companies](#)
- The methodology includes both qualitative and quantitative factors.
- For Contract Surety, A.M. Best reviews calculates the company's two largest potential after-tax losses using factors from the SFAA's Construction Loss Severity Study. These after-tax losses are used to create a Stressed BCAR (Best's Capital Adequacy Ratio).



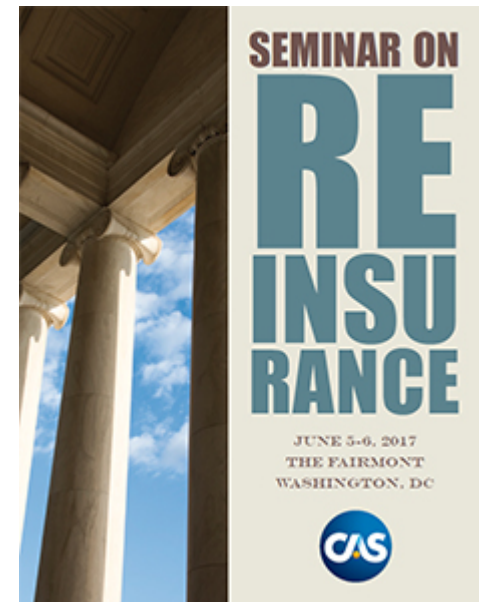


Section 7: State of the Market



State of the Surety Market in 2017

- Competition and Rates
 - Many new entrants since 2010, especially for commercial surety
 - Rates are filed with each individual state, which have varying degrees of flexibility
 - Internal company methods to determine rate adequacy vary widely
 - Not uncommon for rate indications to have extreme variance
- Surety capacity in marketplace is at an all time high
 - Wide variety of underwriting appetites
 - 2015 industry loss ratio approximately 18%
- Growth opportunities can still be found
 - National infrastructure initiatives
 - Mining and reclamation
 - Letter of credit replacement
 - International placements





Questions and Answers

