



UNDERSTANDING AND QUANTIFYING SYSTEMIC RISKS IN CASUALTY RESERVES

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Research and Analysis for Insurance and Investment Professionals



OUR ESTIMATE OF INDUSTRY RESERVE ADEQUACY

Assured Research estimates industry reserve redundancy on Accident Years 2006 and subsequent at \$12.5 billion (est. \$17.1 billion at YE14 and \$17.5 bil at YE 2013)

	Indicated Loss & DCCE Reserves	Stated Loss & DCCE Reserves	Indicated Reserve Redundancy/ (Deficiency)	Redundancy/ (Deficiency) as % of Stated Reserves
Homeowners	17,284,991	19,974,690	2,689,699	13.5%
PP Auto Liab	96,930,417	97,872,158	941,741	1.0%
Comm Auto Liab	28,969,394	27,838,972	-1,130,422	-4.1%
Workers' Comp	143,554,369	144,451,637	897,268	0.6%
Comm Multi-Peril	33,432,697	34,744,707	1,312,010	3.8%
Medical Professional Liability - Occ	8,946,958	10,516,134	1,569,176	14.9%
Medical Professional Liability - CM	13,784,077	16,539,538	2,755,461	16.7%
Special Liability	4,691,103	5,438,050	746,947	13.7%
Other Liability - Occ	90,188,146	89,610,166	-577,980	-0.6%
Other Liability - CM	40,159,684	38,447,516	-1,712,168	-4.5%
International	112,707	151,458	38,751	25.6%
Reinsurance - Property	5,325,692	7,722,643	2,396,951	31.0%
Reinsurance - Liability	28,803,614	30,978,826	2,175,212	7.0%
Reinsurance - Financial	300,379	405,995	105,616	26.0%
Products Liability - Occ	15,306,489	13,999,951	-1,306,538	-9.3%
Products Liability - CM	1,033,248	1,232,905	199,657	16.2%
Two Year Lines	41,344,860	42,790,609	1,445,749	3.4%
Totals	570,168,826	582,715,955	12,547,129	2.2%



OUR ESTIMATE OF INDUSTRY RESERVE ADEQUACY

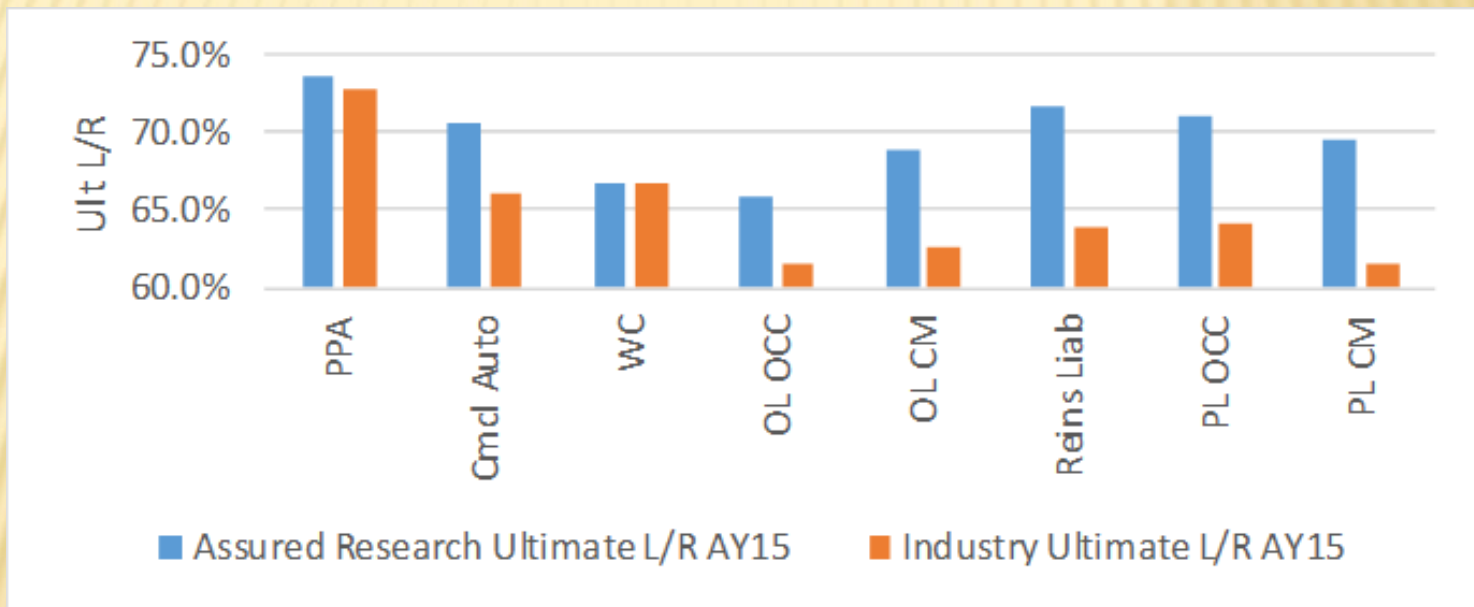
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	Net Earned Premium	Indicated Ult	Carried Ult	Redundancy/ (Deficiency)	Indicated Ult LR	Carried Ult LR	Redundancy/ (Deficiency)
2006	441,033,305	241,384,718	241,351,943	-32,775	54.7%	54.7%	0.0%
2007	444,049,127	265,565,563	265,116,834	-448,729	59.8%	59.7%	-0.1%
2008	441,421,080	303,788,002	303,428,849	-359,153	68.8%	68.7%	-0.1%
2009	424,520,191	278,496,417	278,933,832	437,415	65.6%	65.7%	0.1%
2010	421,793,043	282,484,883	284,031,002	1,546,119	67.0%	67.3%	0.4%
2011	433,429,641	312,277,866	314,621,588	2,343,722	72.0%	72.6%	0.5%
2012	448,105,853	298,520,186	301,775,378	3,255,192	66.6%	67.3%	0.7%
2013	463,729,769	289,212,829	292,415,041	3,202,212	62.4%	63.1%	0.7%
2014	499,668,207	305,646,297	307,667,013	2,020,716	61.2%	61.6%	0.4%
2015	509,476,334	321,746,884	322,329,295	582,411	63.2%	63.3%	0.1%
Total	4,527,226,550	2,899,123,646	2,911,670,775	12,547,129	64.0%	64.3%	0.3%



OUR ESTIMATE OF INDUSTRY RESERVE ADEQUACY

Sign of trouble? In 8 of the 12 liability lines we reviewed our estimate of the ultimate loss ratio for AY15 was higher than the industry carried – by an average of 500 basis points!





RESERVING TROUBLE AND SYSTEMIC RISKS

Definition of systemic: adjective meaning *of or relating to a system*

Physiology: *pertaining to or affecting the body as a whole*

Interesting: word does not appear in the Statement of Principles (Loss Reserving)

Example: *The **systemic** risk of Merrill's folding like Lehman had was far too devastating for either Ben Bernanke or Hank Paulson to imagine.*

In sentence above the catalyst for a systemic risk (domino effect within financial firms) was the failure of Lehman and then, possibly, Merrill. An external shock caused the failures which, in turn, created a systemic risk within the financial system.

Patients in an ICU may experience multi organ failure (systemic organ failure) as a result of an external catalyst...the flu, pneumonia, UTI.

Point is that **systemic risk in casualty reserves** can have external or internal sources; not uncommon to have an external shock or catalyst spark a systemic risk...under reserving.



RESERVING TROUBLE AND SYSTEMIC RISKS

Focus on external sources of systemic reserving risks:

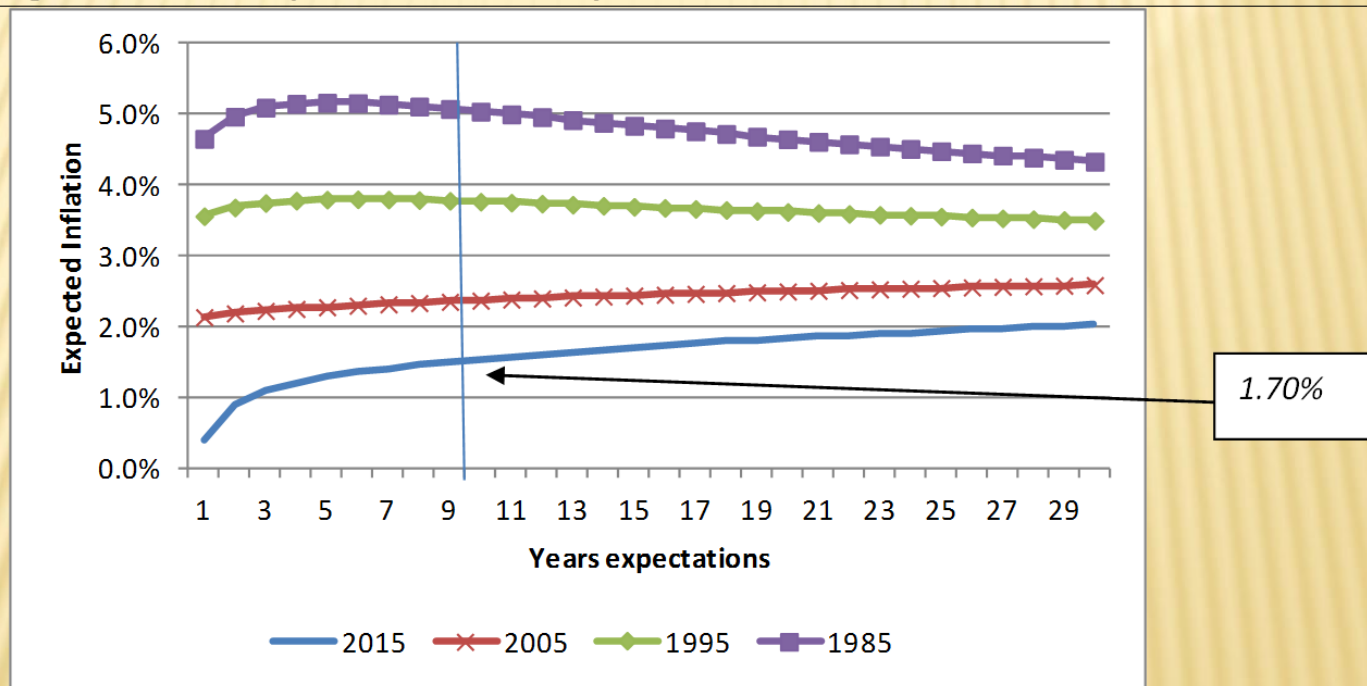
- Inflation
- HIPPA
- Advancements in science and medicine: Asbestos
- Advancement in science and medicine: Hepatitis C



RESERVING TROUBLE AND SYSTEMIC RISKS: INFLATION

Inflation expectations have been systematically (!) declining since 1985. Unanticipated external events lead to downward revisions; Asian production capacity; productivity rates, monetary policies...

Figure 4 Inflation expectations: Selected years 1985-2015



Source: Cleveland Federal Reserve, Assured Research



RESERVING TROUBLE AND SYSTEMIC RISKS: HIPPA

Many companies have struggled with adverse development and poor results in **Commercial Auto**

HIPPA is to blame. Or, Why commercial auto reserves develop adversely because of the 2009 economic stimulus package.

What? HIPPA was passed in 1996 when a Clinton was president....Bill, not Hillary.

According to the CEO of one writer of commercial auto (following a series of reserve charges):

“changing economic and societal influences related to claim settlements...such as limited access to medical information due to HIPAA regulations.” (cited as a reason for adverse development)

“the flow of information in to insurance carrier claims adjustors has materially changed. That really impacts the commercial auto liability line of business a lot.”

National Interstate CEO David Michelson (2Q and 3Q14)



RESERVING TROUBLE AND SYSTEMIC RISKS: HIPPA

If passed in 1996, why would HIPPA cause problems nearly 20 years later?

HIPPA, passed in 1996, HIPAA included new privacy regulations that sought to regulate the use and disclosure of PHI (protected health information) by covered entities and the exchange of that information between covered entities and their business associates.

Everything was fine until:

2009 with the HITECH Act (or, the Health Information Technology for Economic and Clinical Health Act, which in turn was part of the 2009 Stimulus Bill). The **privacy section** of the HITECH Act extended **newly updated civil and criminal penalties to business associates**. In addition, the Act established the need for business associate agreements (or BAA), which impose certain safeguards and usage restrictions of the PHI on the business associate.

And again in 2013 with a new omnibus rule:

The final omnibus rule greatly enhances a patient's privacy protections, provides individuals new rights to their health information, and **strengthens the government's ability to enforce the law**. (taken from DHHS press release at the time).



RESERVING TROUBLE AND SYSTEMIC RISKS: HIPPA

In other words:

Gaining access to the healthcare records of bodily injury claimants got harder (not impossible nor prevented under the law), but harder.

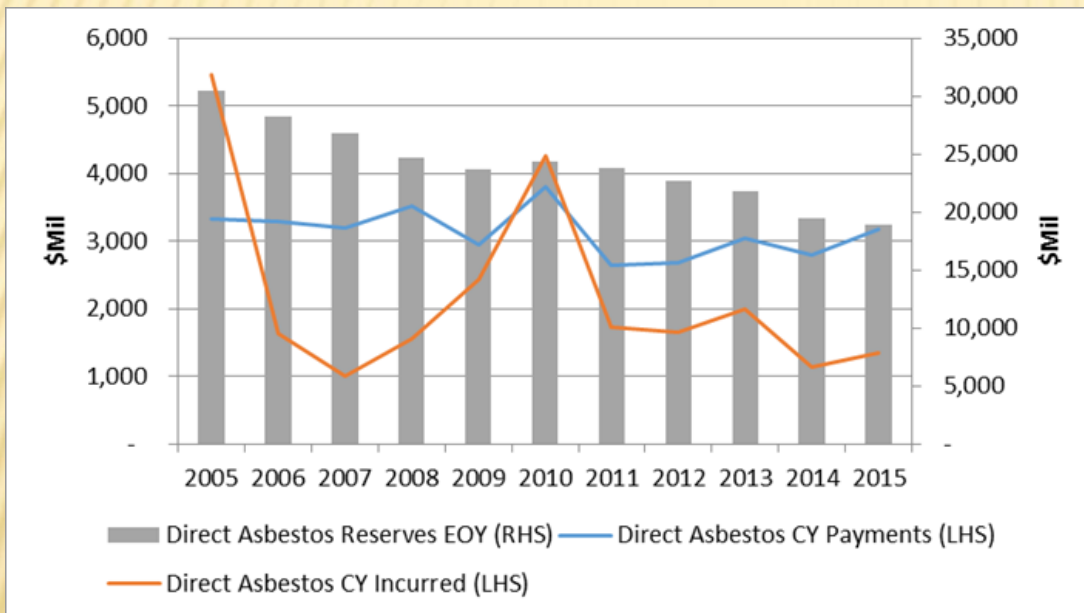
Increased time lags, perhaps less robust information (at first request), throws off loss development patterns and maybe assessment of BI severity.

An external shock, more than a decade after a law was passed, set off a systemic reserving problem.



RESERVING TROUBLE AND SYSTEMIC RISKS: ASBESTOS

Industry has strengthened asbestos liabilities by more than \$50 billion since 1996



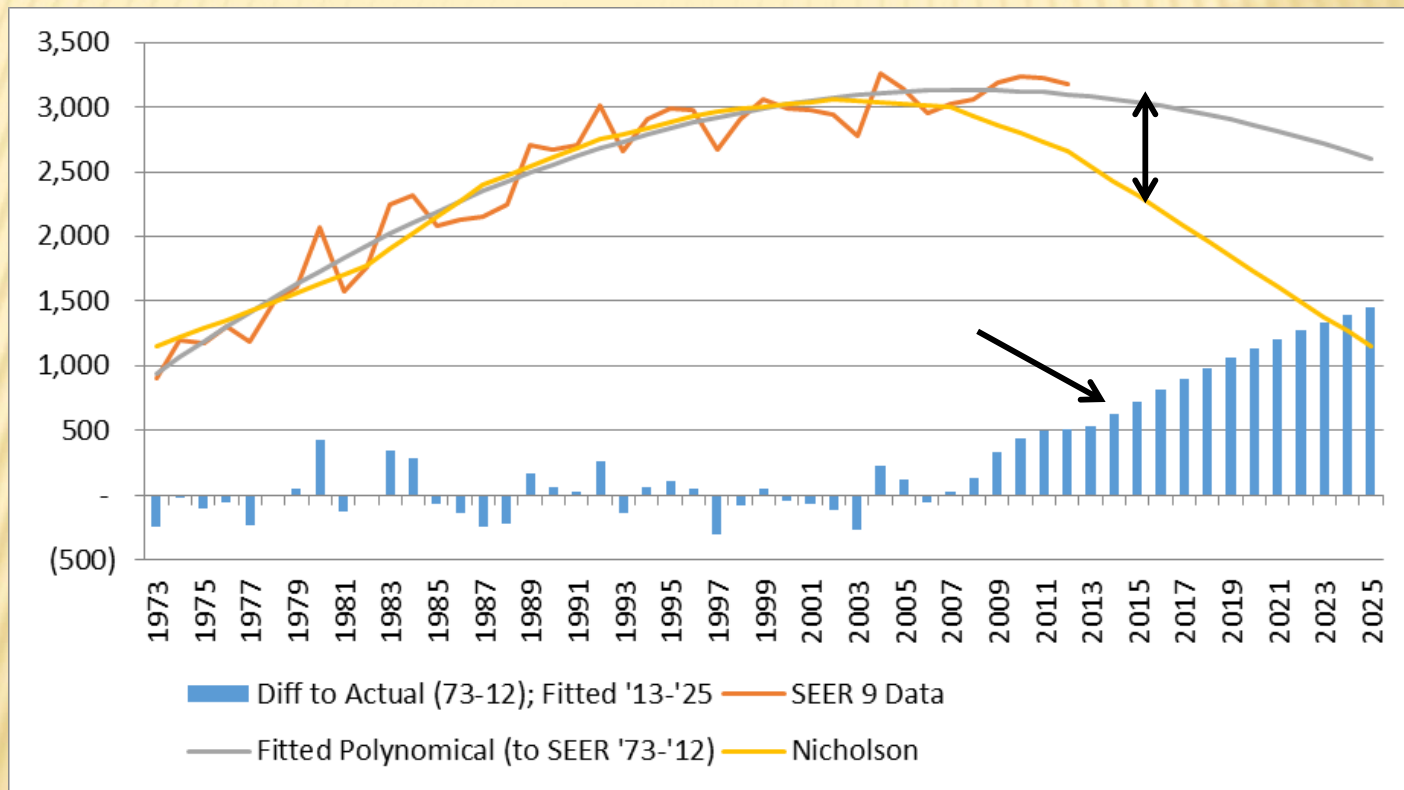
Incurred losses have averaged about \$2 billion per annum.

Mesothelioma claims are driving this liability; why isn't this going away as predicted by the actuarial models in the 1990s and subsequent?



RESERVING TROUBLE AND SYSTEMIC RISKS: ASBESTOS

The widening gap between observed and projected mesothelioma cases is a leading cause of insurance reserve charges.



The industry may be on the leading edge of a dramatic escalation in forecasting error

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RESERVING TROUBLE AND SYSTEMIC RISKS: ASBESTOS

What is going on?

People are living longer and living into the asbestos-induced disease:

Incredible advancements in treatment of diseases co-morbid with asbestos exposure: heart disease, lung cancer, prostate cancer,...

Revolution in molecular biology.

Science is tying asbestos exposure to other cancers (e.g., digestive tract and ovarian), revealing Disease-inducing levels not previously thought possible, and revealing genetic susceptibility (BAP1)

Translating into claims and \$:

Mesothelioma filings rose by 5% 2015/2014. A first of its kind case was settled on science: BAP1 and genetic susceptibility.

Insurers not willing to invest \$ to stay abreast of this research will be blindsided in years ahead!

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RESERVING TROUBLE AND SYSTEMIC RISKS: HEP C

Hepatitis C: viral disease affecting the liver; 3.2 million Americans; leading reason for liver transplants

New breakthrough drugs: Some 90-95% effective but costly at \$80-\$160K; predictions that costs will reach 10% of drug spending, bust Medicaid budgets and shock self-funded plans

Health actuaries warned CMS in November 2014; great, but...

Drugs hit the market in 2013 under a new program called Breakthrough Therapy Designs

Contributed to 13% increase in drug spending in 2014. Demand for drug is HUGE; falls disproportionately on Medicare/Medicaid, VA, state budgets (prison)...rationing is the result.

Hindsight is 20/20; but...

Articles on specialty Hep C drugs with great potential began to appear in 2009/2010

Literature search on the drugs begins to grow exponentially by 2012

Review of SOA Health Meetings or Papers in 2011 and 2012 reveals nothing.

Did the health actuaries serve as a useful early warning system?



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RESERVING TROUBLE AND SYSTEMIC RISKS: HEP C AND CONCLUSION

*The **systemic** risk of spiraling drug prices and social unrest caused by medical rationing was far too devastating for either the Secretary of Health and Human Services or the President to imagine.*

Conclusion: *Risks can come from unexpected sources; sometimes they carry forewarnings but oftentimes not. Best advice is to keep an open and inquisitive mind and to work with professionals in other disciplines...we can't know everything!*