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Insurance Concepts for the Non-Insurance Practitioner

The subjects of insurance, reinsurance and tax are complex subjects in and of themselves. Combine them and one has the equivalent of a 33,600-piece jigsaw puzzle with a detailed picture, to put together in a dimly lit room. Further complicating the matter is the fact that each of the 50 states is charged with regulating insurance on a decentralized basis, and foreign jurisdictions have entered the game, creating inconsistent oversight and wide variance as to what constitutes insurance in the common sense of the word.

The purpose of this paper, which has been prepared by a group of practitioners, is to add insurance context (accounting, actuarial, legal, and commercial insurance) and experience to some statements that were made by the Tax Court in *Swift v. Commissioner*, T. C. Memo. 2024-13 ("Swift"), *Keating* v. Commissioner, T.C. Memo 2024-2 ("Keating"), and Patel *v. Commissioner*, T.C. Memo 2024-34 ("Patel"). We believe this may be beneficial given the complexities noted above and knowing that the docket remains active with several hundred cases before the court. We are not here to criticize the court's ultimate decisions, but rather as a friend of the court to provide additional information which may be informative for upcoming cases, especially given that the decisions and opinions of the tax court are becoming somewhat repetitive and have broad impact on all captives and even possibly the commercial insurance market at large.

This paper will specifically address:

- Exposure Units
- Risk Shifting
- Risk Distribution
- The Law of Large Numbers
- Risk Pooling
- The Circular Flow of Funds and The Accounting Thereof

Background

Captive insurance companies, also known as captives, have been around since the 1950s. Captives are licensed insurance companies that insure the risks of their owners and other related parties. Due to the liability insurance crisis of the 1980's, Congress enacted section 831(b) of the tax code in 1986 to help businesses obtain affordable liability insurance. Additionally, as explained below, during the recent COVID-19 pandemic, many businesses benefited from having captive insurance companies because they had purchased certain insurance coverages from their captive which were otherwise unavailable in the commercial insurance marketplace.

Interestingly now in 2024, the insurance industry is facing a property insurance crisis where deductibles and premiums have increased for the last 25 quarters, or 6+ years, while capacity (coverage limits) and breadth of coverage have decreased, leaving hundreds of thousands of property owners unable to obtain appropriate insurance coverage, and potentially placing themselves in default with their mortgage companies[1]. A corollary of this current property insurance crisis can also be seen in the transportation sector, specifically in primary and excess liability, where prices have increased, and capacity has decreased. As one of the bedrocks of our Nation's economy, these cost increases are directly impacting the prices paid by consumers for everyday goods and food.

Underwriting itself is a process of not merely deciding whether to insure a risk in an insurance company, but how to insure it and at what price. Underwriting requires the recognition and distinction between possibility and probability. Anything is possible, but not everything is probable. A hurricane damaging 20

locations in the same geographic area is very possible. The probability that all 20 locations owned by a single owner could be damaged from the same hurricane when they are spread over a 10 or 30-mile radius is lower due to a number of factors, including individual building characteristics, construction type, age, surrounding exposures, etc. Hence "the probability of a loss from any given risk is almost never known".[2]

To measure the underwriting performance of an insurance company, one can look at underwriting income. Underwriting income is Gross Premiums – (Losses + Expenses). Underwriting performance can also be measured by the combined ratio, which is (Expenses + Losses) / Premiums. A combined ratio of 82% means that losses and expenses total 82% of every premium dollar collected. A combined ratio of 105% means losses and expenses exceed the premium dollars collected. Note that underwriting performance is calculated without consideration for investment income and tax expenses. Captives that elect to be taxed under section 831(b) are unique because the captive has an annual premium limitation, and assuming there are few losses, the underwriting income is not taxed, allowing the insurance company to retain earnings and build its capital base (rather quickly) to ensure the company can sustain larger losses. Captives that make the 831(b) election are very good for insuring property/casualty risks that have high severity (such as hurricanes or excess liability) but where losses may be infrequent and where capital can be replenished quickly. One drawback of the 831(b) election is that it does not allow tax loss carry forwards when an underwriting loss occurs in a given tax year.

Exposure Units

An exposure unit is the way the insurance industry measures the amount of risk facing an entity, relative to other entities facing the same risk. Per the American Academy of Actuaries Actuarial Standard of Practice 53, the exposure base is, "a basic unit that is used to measure the future cost of risk transfer and risk retention." Further, "…the actuary should select an exposure base that bears a strong relationship to the cost of risk transfer or risk retention and is practical. Characteristics of a practical exposure base may include that the exposure base is objectively measurable and easily verifiable."

The underwriting process also involves identifying the type of risk to be insured and the correlating exposure units to price the risk. Exposures change frequently, as do the costs associated with providing insurance for those exposures. For example, materials and rebuilding costs when it comes to property coverage can increase or decrease in any given year as a result of the cost of underlying materials and labor expenses, while jury verdicts and legal judgements for liability coverages also change due to things such as societal attitudes and media impact. The terms Social Inflation and Nuclear Verdict are recent descriptors created to illustrate the rising costs of claim settlements. Over time, and in some classes of business, exposure units have become more finite and thanks to the use of technology are reported in real time to appropriately measure the amount of risk being assumed.

For example, in automobile insurance there are a significant number of insurance companies which use the number of miles driven as the exposure units to determine the risk profile of a particular driver (personal insurance) or class of business (commercial trucking), as opposed to just the number of automobiles scheduled on the policy. Mileage as an exposure basis could be a few thousand miles per year for an individual, to millions of miles for commercial trucking fleets. Assuming the base rate was identical for each mile, one can easily see how there could be significant premium differences between personal accounts and commercial accounts.

In the recent Swift case, the Tax Court case attempted to examine the exposure units in consideration of the law of large numbers. In doing so, the opinion revisited the 2014 *Rent-A-Center, Inc. v. Commissioner* ("Rent-A-Center") and the 1992 *Harper v. Commissioner* cases; in each of those cases the captives insured thousands of independent risks. In Swift, the taxpayers argued that the standard for exposure units as it relates to the law of large numbers should consider the "millions of doctor-patient interactions covered by the medical malpractice tail policies." The Court, however, ruled that the doctor-patient interactions was the wrong metric to evaluate the risks being distributed, adding that, "Indeed, it

strikes us that using the doctor-patient interaction as the appropriate unit of measurement for risk exposure would be tantamount to treating as the correct unit of measurement for risk exposure in the automobile insurance context every time a car is put into gear."

While that may have been true looking back 10 years ago, as the insurance industry evolves, the Court's statement may be less accurate going forward as there are now state approved rating plans for automobile insurance based on miles driven. Also, many insurance companies are now using technology (known as telematics) that monitors driving habits (i.e. mileage, speed, and braking time) [3], which requires the automobiles to be "put into gear." Insurance companies then utilize this data when pricing automobile premiums for those insureds. This demonstrates that the commercial insurance marketplace has accepted that having a car "put into gear" is precisely the measurement for risk exposure for automobile insurance.

Looking forward, the number of doctor-patient interactions very well could be the appropriate measurement for determining units of risk, especially in a captive insurance company where the doctors are trying to reduce insurance costs based on accurate exposures. For example, a dermatologist may see 12-16 patients per day whereas an OBGYN may see 4-8 patients per day. In each situation a doctor's risk for misdiagnosis or an inappropriate treatment plan increases based on the number of patient visits, which increases the potential for a malpractice claim in a similar fashion to the number of miles driven by a driver increasing the odds of an automobile accident.

Risk Shifting

As mentioned earlier, insurance and reinsurance are complex issues. There are many different types of insurance and reinsurance. IRS Revenue Ruling 2002-89 outlines in four sentences the essence of what qualifies as insurance for income tax purposes and this ruling is one of the few pieces of guidance offered by the IRS on the subject.

Risk shifting as quoted in 2002-89, ".. occurs if a person facing the possibility of an economic loss transfers some or all of the financial consequences of the potential loss to the insurer, such that a loss by the insured does not affect the insured because the loss is offset by the insurance payment." This is one of the easier facts to evaluate by asking the question, "Did the insured purchase an insurance policy (a contract) from an insurer?" Given the regulatory regimes in place, we assume therefore that an insurer is a licensed (implying it is regulated by a state or foreign governing body) entity.

The conditions required for a contract to be legally enforceable include an offer, acceptance, and consideration. In an insurance transaction, insurers are offering to accept a given risk based upon the terms of the insurance contract (i.e. premium, deductibles, and coverage descriptions) and the insured parties are willing to accept this offer from the insurer and in turn pay premiums for said insurance contract (consideration). Two points worth mentioning here:

1. Unlike insurance offered from the commercial market, captives typically (or should) offer much broader coverage (and hence charge different pricing than the commercial market) given the narrow coverage commercial insurers offer. The COVID-19 pandemic is a good example where captives paid for insured claims, whereas the commercial market did not due to coverage exclusions.
2. In an earlier case, *Caylor Land & Development, Inc. v. Commissioner*, T.C. Memo 2021-30, it took the insurer/captive manager some time to issue the insurance contract, which is a breakdown in the basic conditions for a contract/commercial transaction. Imagine the difficulty in settling a claim without knowing how the insurance coverage applies given there is no coverage description, terms, or conditions.

We believe the courts are getting this one right.

Risk Distribution

Risk Distribution as quoted in IRS Revenue Ruling 2002-89 states, “Risk distribution incorporates the statistical phenomenon known as the law of large numbers. Distributing risk allows the insurer to reduce the possibility that a single costly claim will exceed the amount taken in as premiums and set aside for the payment of such a claim. By assuming numerous relatively small, independent risks that occur randomly over time, the insurer smooths out losses to match more closely its receipt of premiums. *Clougherty Packing Co. v. Commissioner*, 811 F.2d 1297, 1300 (9th Cir. 1987).”

There is a distinction that needs to be made between Risk Distribution and the Law of Large numbers, which to the non-insurance practitioner can be easily glossed over. Risk as defined by Websters dictionary is “a person or thing that is a specified hazard to an insurer”, while distribution is defined as “the position arrangement or frequency of occurrence over an area or throughout a space or unit of time i.e. the distribution of the country’s population.”

To put it in the very simplest terms, Risk Distribution is the spread of risk or diversification. Similar to an investment portfolio, one might purchase a diversified portfolio of CD’s, bonds, stocks, or currencies. Each asset class has varying degrees of risk (probability for loss or gain). Hence if one asset class performs poorly in a given year, others may perform at or above the industry average, allowing the whole portfolio to still grow over time. This investment risk is diversified and spread over the total portfolio and calculated by the average rate of return on the portfolio.

The same concept applies to insurance companies and thus the statement in IRS Revenue Ruling 2002-89 that, “Distributing risk allows the insurer to reduce the possibility that a single costly claim will exceed the amount taken in as premiums and set aside for the payment of such a claim.” Think of risk distribution as a bump in the road (claim) which gets spread over a larger population. So, the speed bump becomes a speed hump, and is not as shocking as the former.

Furthermore, and specific to insurance, “risk-based capital formulas promulgated by the National Association of Insurance Commissioners include credits for diversification in underwriting, which mean that an insurance company with diverse underwriting is required to maintain less capital with respect to a line of insurance business than it would if it wrote only that line of business. Thus, an insurer (including a captive insurance company) that writes a variety of insurance business lines, e.g., general liability, auto liability, workers compensation and property insurance (even for insureds within a specific industry sector) benefit from the reduced capital requirements.”[4]

Case law also provides clarity on the subject, “Risk distribution was present based on the diverse, multifaceted, and substantial unrelated business of the insurer” (emphasis added). *Ocean Drilling & Exploration Co. v. U.S.*, 988 F.2d 1135, 1149 (Fed. Cir. 1993), referring to the Tax Court opinion in *AMERCO, etc. v. C.I.R.,* supra, 96 T.C. 18,41 (1991) (“AMERCO”).

In AMERCO the Court stated, “The concept of risk-distributing emphasizes the pooling aspect of insurance: that it is the nature of an insurance contract to be part of a larger collection of coverages, combined to distribute risk between insureds. Risk distribution was clearly present in the transactions at issue: Republic Western’s insurance business was diverse, multifaceted, and, as stated, involved a substantial amount of outside risks. More of the money in its pool came from outside unrelated insureds than came from AMERCO and subsidiaries.”[6]

From an actuarial point of view, there is no bright line test on risk distribution. Risk distribution begins when a loss impacts one person/entity and is shared with a 2nd, and then a 3rd person/entity For a single entity with a diversified portfolio of different insured independent risks, risk distribution can still be present as premiums are paid for each insured risk and losses are spread out over the various premiums collected. In *Securitas v. Commissioner,* T.C. Memo 2014-255, Dr. Neil Doherty, explained in his expert report: “it is the pooling of exposures that brings about the risk distribution—who owns the exposures is

not crucial." The tax court memo goes on to state that, "We agree and find that by insuring the various risks of U.S. and Non-U.S. subsidiaries, the captive arrangement achieved risk distribution." [7]

It is also important to note that with a diversified group of different risks, losses generally do not all happen at once and thus are not only distributed over the premiums, but also over time. In Exhibit 1 and under these assumptions, the model's risk distribution begins to be achieved with roughly 30 to 50 independent risks, while this is not a bright line test, 50 is a much different number than R.V.I's 754,532 automobiles referred to in Swift (see *R.V.I Guar. Co., Ltd. V. Comm'r,* 145 T.C. at 214).

The Law of Large Numbers

The Law of Large Number is different than Risk Distribution, and in simple terms it is how risk is priced. Technically the Law of Large Numbers is a statistical term that says the larger the sample size, the more accurate one can measure the mean and the variance thereof, thereby allowing an insurer to price the risk more accurately and hopefully less expensively. Said another way, using loss and exposure data, it is the ability to accurately estimate the expected losses relative to the number and type of risks insured. Hence, the larger the pool of data (sample size), the more accurate the estimates can be relative to accurate exposure data, legal climate, costs, etc.

In Swift and other captive cases, the courts have "focused on both the number of insured and the total number of independent risk exposures". Emphasis on "the total number of independent risk exposures."

Interestingly in IRS Revenue Ruling 2002-90, the ruling focused on the (significant volume of independent, homogeneous risk), "professional liability of risks of 12 operating subsidiaries are shifted to S. Further, the premiums of the operating subsidiaries, determined at arms-length, are pooled such that a loss by one operating subsidiary is borne, in substantial part, by the premiums paid by others. The 12 operating subsidiaries and S conduct themselves in all respects as would unrelated parties to a traditional insurance relationship, and S is regulated as an insurance company in each state where it does business. The narrow question presented is whether P's common ownership of the 12 operating subsidiaries and S affects the conclusion that the arrangements at issue are insurance for federal income tax purposes. Under the facts presented, we conclude the arrangements between S and each of the 12 operating subsidiaries of S's parent constitute insurance for federal income tax purposes."

Under this Revenue Ruling, 12 operating subsidiaries with a significant volume of independent, homogeneous risks is enough to constitute insurance for federal income tax purposes, provided that none of the subsidiaries accounted for more than 15%, nor less than 5%, of the total risk.

We do not know how the number 12 was derived in Revenue Ruling 2002-90. That said, in statistics a random sample may be 12, 15, or 20 different opinions of whatever is being tested. In a captive, 12, 15 or 20 different risks with proper actuarial analysis – where the pricing of risks can be compared to larger data sets available from sources such as ISO[8] rating classes, the pricing of risk may be fairly accurate even though it is not "large" as the court defined it in Rent-A-Center. Thus, an insured with 12 different unique risks can have Risk Distribution, and the application of the Law of Large Numbers can be applied to the pricing of the risks, based on individual historical performance and industry rating data for classes of business to be insured.

Risk Pooling

Most mid-sized businesses, defined here as those with revenues of between $50 to $250 million annually, will likely not have 12 operating subsidiaries to qualify as an insurance company for federal income tax purposes under Revenue Ruling 2002-90. Hence it is necessary for these businesses' captive insurers to join a reinsurance pool, whereby premiums and losses are shared with other participants in order to properly distribute risk.

Risk distribution necessarily entails a pooling of premiums, so that a potential insured is not in significant part paying for its own risks. See *Humana, Inc. v. Commissioner*, 881 F.2d 247, 257 (6th Cir. 1989). Note that this comment is reinforcing the spread of risk, as opposed to the pricing of said risk.

Pooling is an arrangement that originated in the earliest insurance markets and is common today. One of the most well-known pooling arrangements is Lloyds of London, where underwriters subscribe to an individual risk by literally signing their name and a percentage to accept a given risk. And through the International Group of P&I Clubs, today approximately 90% of ocean-going tonnage is covered for liability risks by 12 protection and indemnity "clubs" that pool their risks through a pooling agreement.[9]

What we don't see in the background is all the accounting and bookkeeping that takes place to account for these transactions. Three aspects of pooling are worth mentioning:

1. If an individual risk is actuarially sound, meaning it is priced adequately for the risk being assumed, then when this risk is assumed or pooled with other actuarially sound risks, it solidifies the Law of Large Numbers – two risks may be very different, but the individual pricing is adequate and over time the losses will revert to the mean.

2. Because risks and insurers are different (but actuarially sound) they can participate in a pooling arrangement where the size and complexity of the insured risks are accounted for based upon the premiums. For example, if there was a pool with 10 insurers and if the exposure units were identical and the premiums therefore identical, then each member would be responsible for 10% of any covered loss. If a single member of a pool was 3 times the size of each of the other 9 single members (due to either larger exposure units and or risks with a higher probability of loss), then the larger member would be responsible for 25% of a loss, whereas the other 9 member would be responsible for 75% of the loss (or 8.3% per member = 75%/9 members)

3. Pooling is beneficial to an insurer if done correctly because the pool creates risk diversification and independence, similar to the investment portfolio diversification example referenced earlier. Pools that contain a single type of risk, such wind or earthquake for example, may have some geographic diversity, but fail to provide broad enough risk diversification unless the insurers are able to charge enough premium to be financially sustainable over time given the premiums generally cannot sustain the losses.

   Put another way, in the absence of independence there would likely be positive correlation of risks. Positive correlation arises from common exposure among risks (frequently called "contagion risk"), such as many insured buildings being in close geographic proximity. As an example, if there was one claim for losses due to hurricane damage, there would likely be multiple claims. Positive correlation creates fluctuation and unpredictability in an insurer's claims experience, effectively reducing risk distribution. Negative correlation, on the other hand, would mean properties located in a geographically dispersed manner would distribute the risks and minimize claims[10]. This is why it is difficult, even for commercial insurers, to provide catastrophic coverage in certain geographic areas, e.g. California earthquake or Florida wind, and hence why the commercial insurance market continues to reduce its exposures to accounts with wind (hurricanes) and earthquakes and hence why insureds turn to captive insurers to provide coverage and finance these risks.

The Circular Flow of Funds and the Accounting Thereof

In Swift, the Court states that they are called to determine, ""whether [each] quota share arrangement was a true arrangement for the distribution of risk" *Reserve Mechanical v. Commissioner, 34 F.4th at 912*." In this evaluation of Swift, the first topic the court discusses is the "circular flow of funds" factor.

Insurance pools, for accounting purposes, have a circular flow of funds between the insurer and the pool (reinsurers). This occurs through ceded premiums to the pool (and its respective members) and retroceded premiums back to the insurers. Without this accounting methodology, it would be impossible to determine the economic participation of each insurer/member as described earlier. This is directly addressed in the American Institute of Certified Public Accountants' Auditing and Accounting Guide, Pursuant to Chapter 6, Paragraph 610,

> "Pro rata reinsurance is a sharing, on a predetermined basis, by the insurer and reinsurer of premiums and losses on a risk, class of risks or particular portion of the insurer's business. For a predetermined portion of the insurer's premium(s), the reinsurer agrees to pay a similar portion of loss and loss adjustment expenses (LAE) incurred on the business reinsured. The reinsurer's participation in the claims is set without regard to the actual frequency and severity of claims…. For example, under a 50% quota share treaty, the reinsurer receives 50% of the insurer's premiums…, and is obligated to pay 50% of each claim and claim-adjusted expense incurred by the insurer."

(See also Statutory Statement of Accounting Principles ("SSAP") No. 62R, Paragraphs 32, 34(b), the response to Q31 within the SSAP as well as Paragraph 7 of SSAP 63.) Furthermore, this accounting creates the mixing/diversification of risks within the pool, and ultimately back to the insurer.

A lynch pin of a reinsurance pool is what happens when there is a loss?

1. Are claims submitted to the pool?
2. Are members paying their proportional percentage of losses for participation?
3. Are these claims reviewed at arm's length to protect all the pool members paying the claim? After all, there is a fiduciary responsibility on the part of the reinsurance pool manager and claim adjusters to protect members against fraud (intentional or not) and the general self-serving interest of the insurer submitting the claim.

Interestingly the circular flow of funds referenced in the Rent-A-Center case involved the insurer (Legacy) purchasing the treasury stock of Rent-A-Center[11]. The Court stated:

"B. There Was No Impermissible Circular Flow of Funds
Respondent further contends that Legacy was "not an independent fund, but an accounting device". In support of this contention, respondent cites a purported "circular flow of funds" through Legacy, RAC, and RAC's subsidiaries. Respondent's expert, however, readily acknowledged that he found no evidence of a circular flow of funds, nor have we. Legacy, with the approval of the BMA, purchased RAC treasury shares but did not resell them. Furthermore, petitioner established that there was nothing unusual about the manner in which premiums and claims were paid. Finally, respondent contends that the netting of premiums owed to Legacy during 2003 is evidence that Legacy was a sham. We disagree. This netting was simply a bookkeeping measure performed as an administrative convenience."

Further, there seems to be confusion as to what constitutes a "circular flow of funds" when considering the tax posture of a captive insurance company. In FSA 199945009, the IRS National Office chose to concede a captive insurance case in which, "a significant portion of the premiums paid…to C were borrowed by H, thereby raising concerns about circular flows of cash."

In other situations, however, "circular flows of funds" has been used to describe the mechanism by which participants in an insurance pool exchange those risks in order to distribute those risks amongst all of the participants, which is not only prudent, but also necessary for the viability of the reinsurance pool's financial health, regardless of the tax consequences associated with doing so. Further, these flows of funds are the only mechanism for distributing risk in a pooled arrangement.

What seems to be missing in the Rent-A-Center opinion and the discussion of the "circular flow of funds" is the question: Are funds from the insurance company being circulated back to the insured (as opposed to other insurers/reinsurers as illustrated by the accounting principles referenced above) for other reasons

than a claim payment, policy dividend, or qualified loan? If so, there very well could be a "circular flow of funds" and the facts are necessary to determine if the transaction has moved beyond what is common in the notion of insurance.

In closing

We note in *Keating* the Court's application of final of the three standards first articulated in *AMERCO & Subsidiaries v. C. I. R.*, 1991 WL 4981 (T.C. Jan. 24, 1991), aff'd sub nom. *AMERCO, Inc. v. C.I.R.*, 979 F.2d 162 (9th Cir. 1992); whether the transaction meets "commonly accepted notions of insurance." While legitimate captive insurance companies are operated in many respects similar to traditional insurance companies from a procedural and practices point of view, it is important to note that captive insurers exist to "meet the unique risk-management needs of the owners or members."[12] It follows that the coverages written, premiums charged, premium to surplus ratios[10] and investments can be expected to deviate to at least some degree from what is typically found in the traditional insurance industry.

Insurance, reinsurance and the taxation of thereof are complex subjects. Prior case law, comparison to commercial insurance industry procedures and practices, and understanding the details of pooling can help distinguish between the good and bad insurance structures in the marketplace. The individual facts of a particular transaction and the application of the appropriate case law matter in the decision-making process of whether a captive insurance company qualifies as an insurance company for federal income tax purposes.

Captive insurers, if done right, serve their clients well by offering broader coverage, operating efficiently, and reducing dependency on the commercial insurance market. We hope this segment of the insurance industry continues to improve and prosper with clarity from the courts and without over burdensome regulations.

End Notes

[1] Hemenway, C. (2024, March 4). *25 Straight Quarters of Premium Increase for Commercial Lines: CIAB Survey*. Insurance Journal. https://www.insurancejournal.com/news/national/2024/03/04/763305.htm

[2]Vermont Captive Insurance Association. (2005, September 29) Comments in Response to Relevance of Homogeneous Risk Request by the IRS for Comments on Notice 2005-49. https://www.taxnotes.com/research/federal/other-documents/irs-tax-correspondence/captive-insurance-group-comments-on-guidance-on-single-insurer-arrangements/yb7v

[3] Progressive Insurance. Can telematics devices help you save on car insurance? https://www.progressive.com/answers/telematics-devices-car-insurance/

[4,5]Vermont Captive Insurance Association. (2005, September 29) Comments in Response to Relevance of Homogeneous Risk Request by the IRS for Comments on Notice 2005-49. https://www.taxnotes.com/research/federal/other-documents/irs-tax-correspondence/captive-insurance-group-comments-on-guidance-on-single-insurer-arrangements/yb7v

[6] Utah Captive Insurance Association Comments in Response (2006, March 3) to Relevance of Homogeneous Risk Request by the IRS for Comments Notice 2005-49

[7]Securitas v. Commissioner T.C. Memo 2014-225. https://casetext.com/case/securitas-holdings-inc-v-commr

Risk Distribution

We evaluate risk distribution through the actions of the insurer. The insurer achieves risk distribution when it pools a large enough collection of unrelated risks, those that are not generally affected by the same circumstance or event. "Distributing risk allow the insurer to reduce the possibility that a single costly claim will exceed the amount taken in as a premium ***[because] [b]y assuming numerous relatively small, independent risks that occur randomly over time, the insurer smoothes out losses to match more closely its receipt of premiums.

[8] ISO is an acronym for Insurance Services Office, Inc., an organization that collects statistical data, promulgates rating information, develops standard policy forms, and files information with state regulators on behalf of insurance companies that purchase its services. https://www.irmi.com/term/insurance-definitions/insurance-services-office-inc ISO is a wholly owned subsidiary of Verisk Analytics, Inc.

[9] International Group of P&I Clubs https://www.igpandi.org/article/about/

[10]Vermont Captive Insurance Association. (2005, September 29) Comments in Response to Relevance of Homogeneous Risk Request by the IRS for Comments on Notice 2005-49. https://www.taxnotes.com/research/federal/other-documents/irs-tax-correspondence/captive-insurance-group-comments-on-guidance-on-single-insurer-arrangements/yb7v

[11] RENT-A-CENTER, INC. (et al) v. Commissioner -142 T.C. No. 1 The Premium-to-Surplus Ratios Do Not Indicate That Legacy Was a Sham

Commercial insurance companies have lower premium-to-surplus ratios because they face competition and, as a result, typically price their premiums to have significant underwriting losses. They compensate for underwriting losses by retaining sufficient assets (i.e., more assets per dollar of premium resulting in lower premium-to-surplus ratios) to earn ample amounts of investment income. Captives in Bermuda, however, have fewer assets per dollar of premium (i.e., higher premium-to-surplus ratios) but generate significant
underwriting profits because their premiums reflect the full dollar value, rather than the present value, of expected losses. Simply put, the premium-to-surplus ratio do not indicate that Legacy was a sham.

[12] National Association of Insurance Commissioners Center for Insurance Policy and Research, *Captive Insurance Companies* (2024, January 31). https://content.naic.org/cipr-topics/captive-insurance-companies

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EXHIBIT 1

Risk Distribution

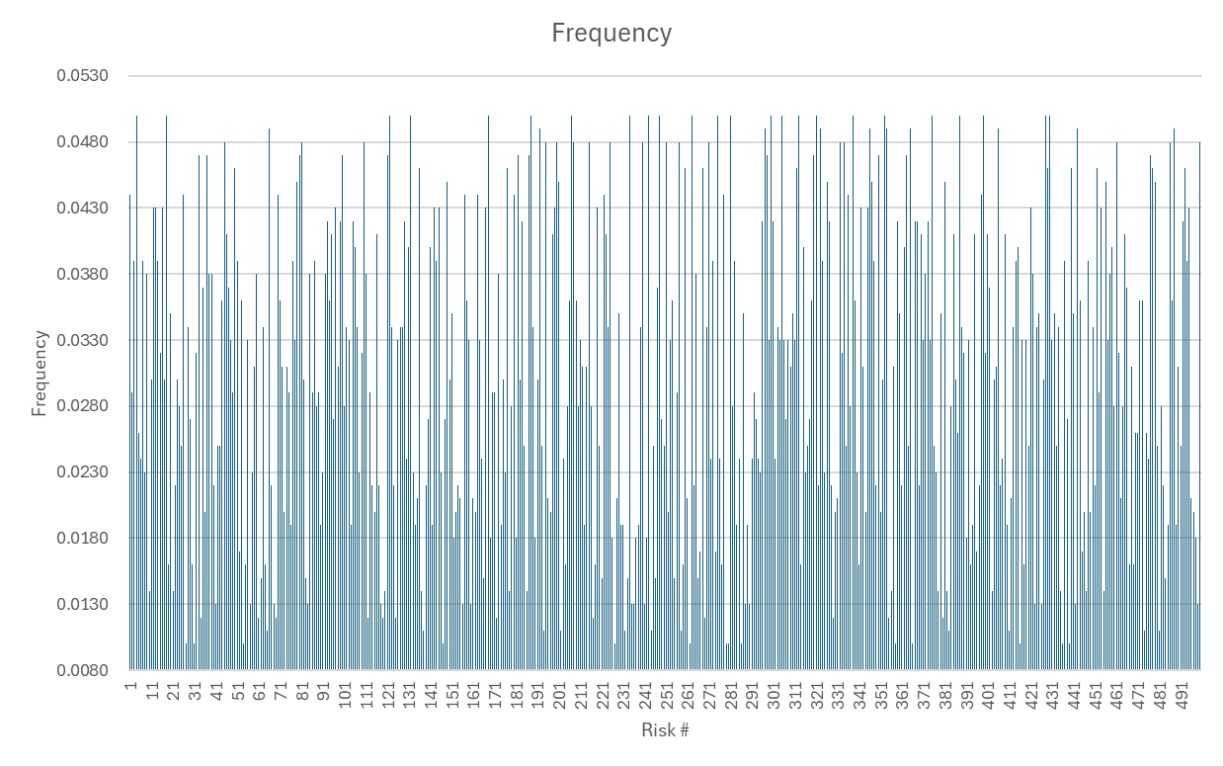
Per the United States Tax Court opinion for the recent Swift case (Swift v. the Commissioner T. C. Memo. 2024-13), "Risk distribution occurs when the insurer pools a large enough collection of unrelated risks, or risks that are 'generally unaffected by the same event or circumstance. The idea is based on the law of large numbers – a statistical concept that theorizes that the average of a large number of independent losses will be close to the expected loss.'" Further, "In analyzing risk distribution, we look to the actions of the insurer as it is the insurer's risk, not the insured's, that is reduced by risk distribution."

Insurers set premiums for their policies based upon the expected losses, grossed up for loss adjustment and underwriting expenses and profit and contingencies. Therefore, if the average of a large number of independent losses is close to the expected loss, in the aggregate, the insurer's total premium collections less losses should be positive.

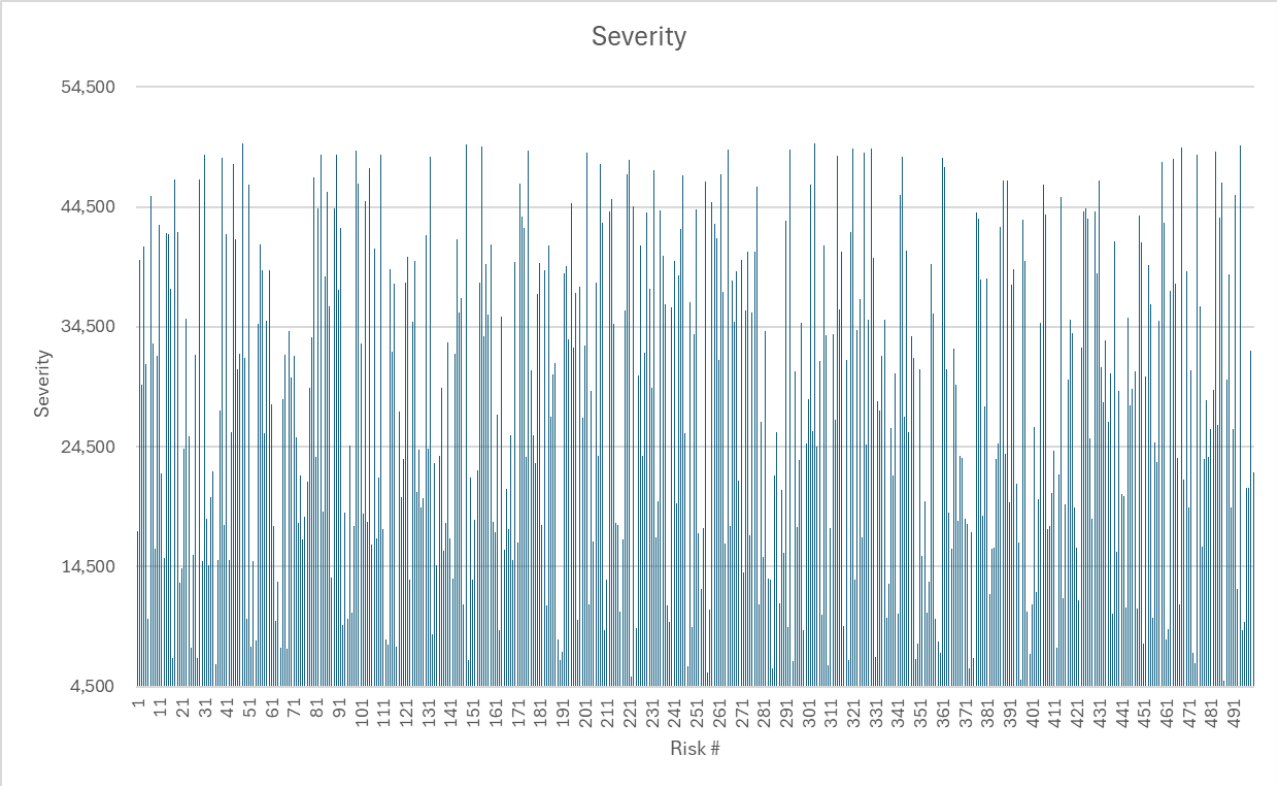
Insurance Model

To measure the difference between the average of a large number of independent losses and the expected loss, we look to the insurer's charged premium. From an actuarial standpoint, we need to examine the insurer's overall risk relative to the amount of premium collected. We developed a statistical model of an insured population of 500 independent risks.

- *Claim frequency*
  Claim frequency was assumed to have a Poisson distribution with each risk randomly assigned a mean claim frequency between 0.01 and 0.05. The Poisson distribution is a discrete statistical distribution often used to model the occurrence of an event with a constant rate of occurrence but with no apparent periodicities.[1] "In actuarial science, the Poisson distribution is commonly used to represent the frequency of insurance claims. It has a memoryless property – that is, the number of claims in any time interval should not affect the number of claims in any other interval. This is a good approximation of what we observe in real data on claim frequency." [2]



- *Claim Severity*
  Claim severity was assumed to have a Lognormal distribution with each risk randomly assigned a mean claim severity between $5,000 and $50,000. The coefficient of variation for each risk's severity distribution was assumed be 3.0, meaning the standard deviation of each Lognormal distribution was 3 times the mean. The Lognormal distribution is routinely used in the actuarial profession to model insurance loss severities.



- *Policy Limits*
  Losses were limited to $1 million per occurrence with no aggregate limit.

Monte Carlo Simulation

We performed a 5,000 trial Monte Carlo loss simulation for each of the 500 risks detailed above.

	Claim Count				Simulated Loss				Expected Loss			
Trial	**Risk 1**	**Risk 2**	**...**	**Risk 500**	**Risk 1**	**Risk 2**	**...**	**Risk 500**	**Risk 1**	**Risk 2**	**...**	**Risk 500**
1	1	0	...	0	24,023	0	...	0	770	1,161	...	1,074
2	0	1	...	0	0	2,589	...	0	770	1,161	...	1,074
3	0	0	...	1	0	0	...	19,657	770	1,161	...	1,074
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.	.	.	.	.	.	.	.	.	.	.	.	.
5,000	1	1	...	1	792	0	...	0	770	1,161	...	1,074

The results of the simulation were combined to create 500 groups of insureds ranging in size from 1 to 500 risks. The first group was the first risk alone, the second group was the first two risks combined, the third group was the first three risks combined, and so on. Therefore, for each group and each trial, we had a combined simulated loss and combined expected loss, E[x].

	Total Claim Count				Total Simulated Loss				Total Expected Loss			
Trial	**Group 1**	**Group 2**	**...**	**Group 500**	**Group 1**	**Group 2**	**...**	**Group 500**	**Group 1**	**Group 2**	**...**	**Group 500**
1	1	1	...	20	24,023	24,023	...	660,910	770	1,931	...	424,392
2	0	1	...	15	0	2,589	...	321,308	770	1,931	...	424,392
3	0	0	...	20	0	0	...	1,529,515	770	1,931	...	424,392
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5,000	1	2	...	19	792	792	...	215,526	770	1,931	...	424,392

For each group and each scenario, we want to examine whether the simulated losses exceed E[x]. For each risk and trial, we calculate the Adverse Deviation, meaning the amount by which the actual losses exceed E[x], if at all. For scenarios where the simulated loss is less than E[x], the Adverse Deviation is $0. For scenarios where the loss exceeds E[x], the Adverse Deviation is (loss – E[x]). The Expected Adverse Deviation (EAD) for each group is then the average of the 5,000 calculations.

	Total Simulated Loss				Total Expected Loss				Adverse Deviation			
Trial	**Group 1**	**Group 2**	**...**	**Group 500**	**Group 1**	**Group 2**	**...**	**Group 500**	**Group 1**	**Group 2**	**...**	**Group 500**
1	24,023	24,023	...	660,910	770	1,931	...	424,392	23,253	22,091	...	236,518
2	0	2,589	...	321,308	770	1,931	...	424,392	0	658	...	0
3	0	0	...	1,529,515	770	1,931	...	424,392	0	0	...	1,105,123
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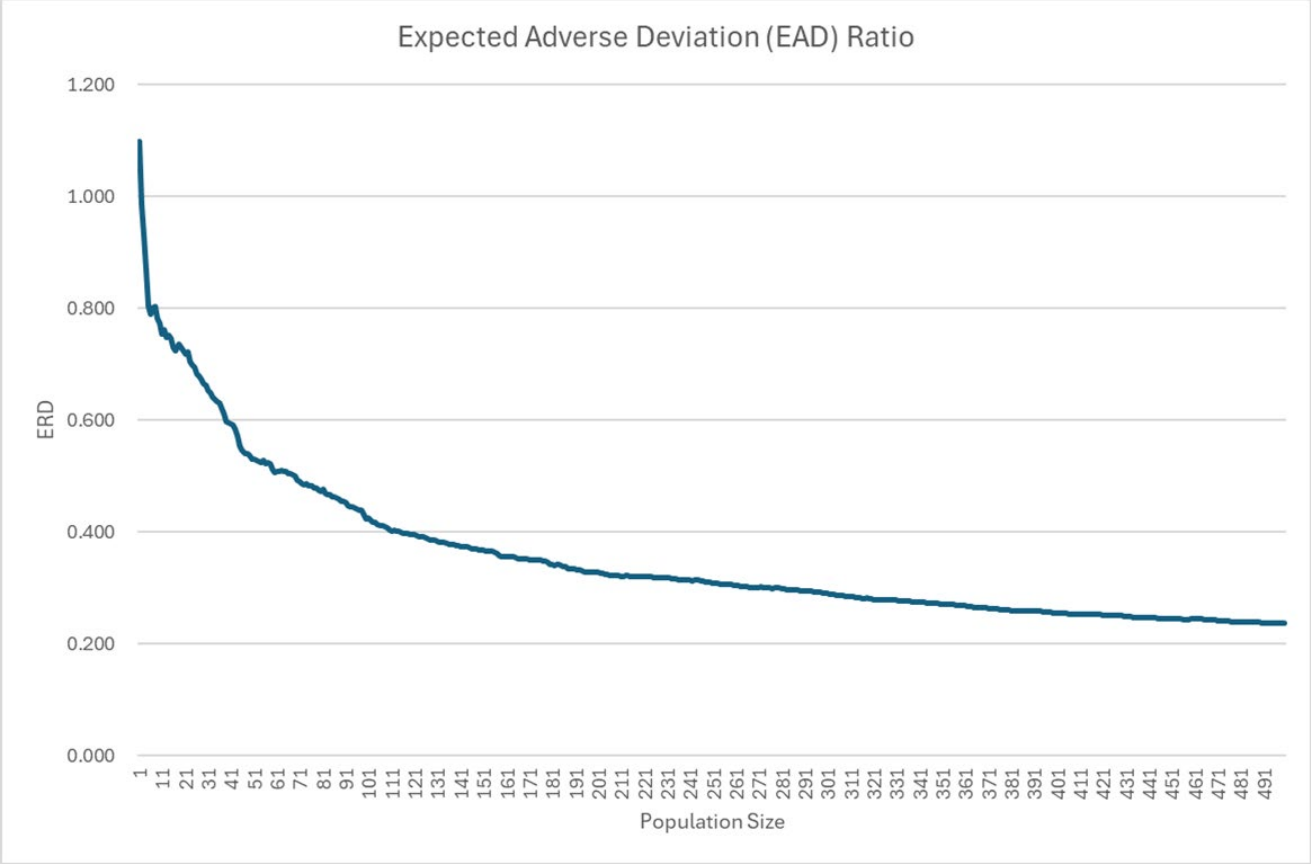
.	.	.	.	.	.	.	.	.	.	.	.	.
5,000	792	792	...	215,526	770	1,931	...	424,392	22	0	...	0
Average	798	2,297	...	413,562				**EAD**	**767**	**2,172**	**...**	**103,793**

The EAD Ratio "measures how much volatility or risk an insurance company or program is taking on relative to its expected losses. As an insurance company diversifies its risk, and increases risk distribution, we would expect to see the EAD ratio decrease." Further, "a 30% threshold for the EAD ratio demonstrates sufficient risk distribution for most applications." [3]

Scenario Results

Below is a table displaying the EAD as the group size increases. As can be seen, the EAD begins to decrease immediately. In this scenario, the EAD ratio falls below 30% when the group size reaches 251 risks, mainly due to the lower loss average severity.



As can be seen in the following tables, scenarios with lower frequencies and/or severities represent maximums with regard to the number of risks needed to result in an EAD Ratio of less than 30%. Specifically, the point where the EAD ratio drops below the 30% level decreases as the frequency of loss increases.

30% EAD Ratio	
Average Frequency Range	Average # of Risks
0.01 - 0.05	198
0.05 - 0.10	94
0.10 - 0.15	56
0.15 - 0.20	40

Similarly, this point also decreases as the average severity increases.

30% EAD Ratio	
Average Severity Range	Average # of Risks
5,000 - 50,000	137
50,000 - 100,000	113
100,000 - 150,000	83
150,000 - 200,000	88
200,000 - 250,000	80

As the per occurrence claim limit increases, the point where the EAD ratio drops below the 30% level increases.

30% EAD Ratio	
Per Occurrence Limit	Average # of Risks
1,000,000	67
2,000,000	95
Unlimited	143

Most importantly, overall, the average number of independent risks required to observe an EAD ratio below 30% is about 100. For every scenario we tested (over 60 different combinations of frequency, severity, and per occurrence limit), the number of independent risks required to observe an EAD ratio below 30% was always below 400.

References

[1] Berry, Donald A. , Bernard W. Lindgren. “Statistics: Theory and Methods”. Belmont, CA, Brooks/Cole Publishing Company, 1990

[2] Papush, Dmitry E., Aleksey S. Popelyukhin, and Jasmine G. Zhang. “Approximating the Aggregate Loss Distribution.” Variance, Volume 14, Issue 2, 2021

[3] Freihaut, Derek W., Christopher M. Holt, and Robert J. Walling. “Expected Adverse Deviation as a Measure of Risk Distribution.” Variance, Volume 14, Issue 2, 2021