Directors' School for Insurers in Costa Rica

Topic 2

The Power of Corporate Governance
+ Shop Talk: Principles of Insurance

San José, Costa Rica, April 22-26,2019

Presented by Lawrie Savage and Bruce Thompson

SUGESE
Superintendencia General de Seguros
República de Costa Rica

TORONTOCENTRE
Global Leadership in Financial Supervision

International Implications of CG Standards

Referring back to "the Canadian Experience" in Topic 1, the single most important lesson learned by Canada as a result of the significant number of financial institution failures during the 1980s and 1990s, was that *weak corporate governance leads to weak institutions.*

Canadian experience since that time seems to verify that indeed, *strong corporate governance leads to strong institutions – and strong institutions don't fail!*

The critically important roll of corporate governance in institutional stability is being recognized by many individual jurisdictions as well as by international standard setting organizations such as BIS and IAIS.

Why is Corporate Governance being strengthened?

In recent years on the international stage there has been one huge corporate failure after another, including major financial institutions, and where poor corporate governance practices have been singled out as the primary cause of the debacle.

These failures have underlined the pressing need for companies around the world to adopt higher standards of corporate governance and to ensure that internal controls, risk management and all related risk mitigation measures are actually in place and being adhered to in an effective manner.

Who's Who in the Corporate House of Ill-Repute?[1.]

- **Enron was tip of an iceberg**
- **Major implications for insurers (p/c and life)**

1. Sequence of 8 slides from "The Tragedy of Corporate Governance in America: *Impacts and Implications for the Insurance Industry." The Insurance Information Institute. Robert Hartwig, PhD*

Who's Who in the Corporate House of Ill-Repute?

Company	Problem	Potential Charges
ENRON	D&Os created complex outside partnerships that kept billions in losses off Enron's balance sheet;	• Securities Fraud • Insider trading • Perjury
ANDERSEN	Lax oversight of some client books, conflicts of interest, shredded documents	• Guilty of obstruction of justice • Individual partners may be liable
WORLDCOM	Inappropriately accounted for $3.8B in expenses, inflated profits	• Fraud

Who's Who in the Corporate House of Ill-Repute?

Company	Problem	Potential Charges
tyco	Ex-CEO Dennis Kozlowski indicted for tax evasion on art purchases	• Tax evasion • Misuse of corporate funds • SEC accounting query
Global Crossing	Bogus capacity swaps inflated revenues (Qwest did too); Dynegy = "round-tripping" to inflate revenue	• Securities fraud • Insider trading
ImClone Systems Incorporated	Ex-CEO Sam Waksal indicted June 12 for tipping off family & <u>friends</u> that FDA did not approval of cancer drug Erbitux	• Insider Trading  

Who's Who in the Corporate House of Ill-Repute?

Company	Problem	Potential Charges
Adelphia	$4.6B in undisclosed loans to founding Rigas family; Misc. unconventional transactions, questionable accounting	• Securities fraud • Misuse of corporate funds • SEC accounting query
Qwest ride the light	Questionable acctg. in sales of fiber optic capacity; Ex-CEO Nacchio under fire for excessive compensation & questionable stock sales	• Fraud • Possible insider trading
Dynegy	Complex projects exaggerated cash flow; "Round-tripping" to inflate revenue	• Possible fraud

Who's Who in the Corporate House of Ill-Repute?

IT COULD HIT 100° TODAY

SEE PAGES 2-3

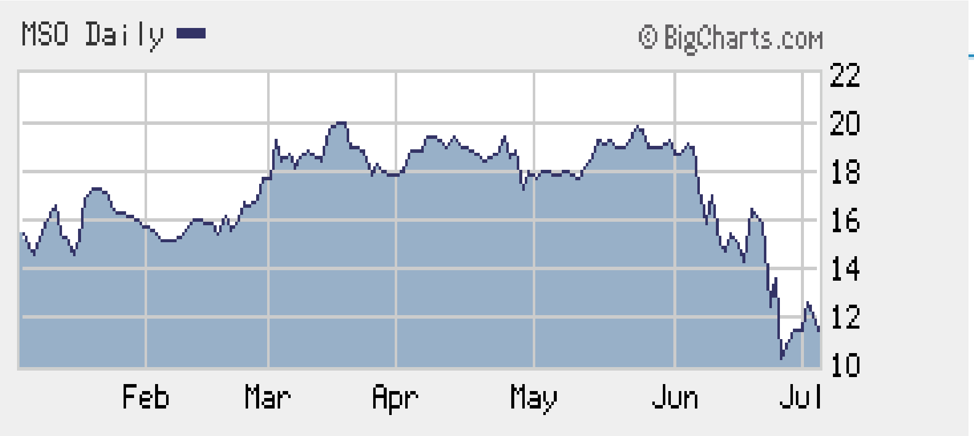
SPORTS ★ ★ ★ ★ FINAL

DAILY NEWS

New York's Hometown Newspaper

MARTHA CAN'T TAKE THE HEAT

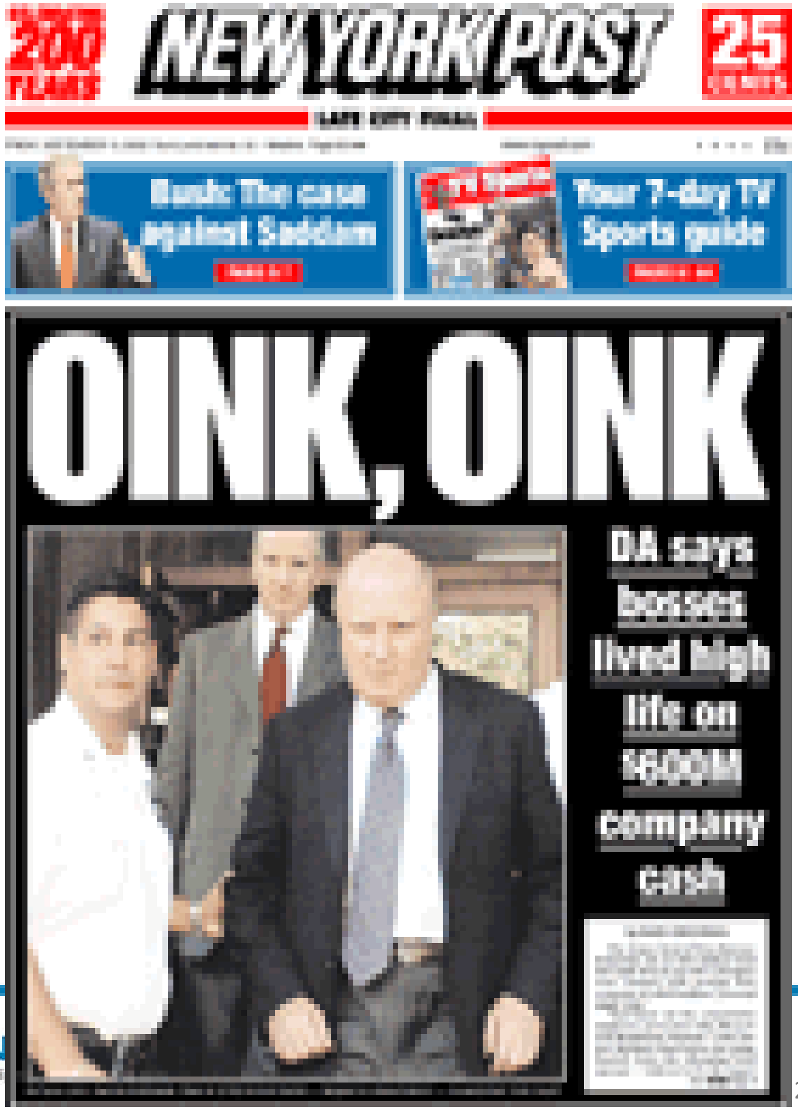
She gets out of kitchen spot on CBS to avoid questions



Martha Stewart Omnimedia fell by more than 50% after Imclone insider trading scandal broke out

This sumptuous New England lobster bake is available at Martha Stewart.com for just $250!

Living High off the Corporate Hog


200 YEARS
NEW YORK POST
25 CENTS
LATE CITY FINAL
Bush: The case against Saddam
Your 7-day TV Sports guide
OINK, OINK
DA says bosses lived high life on $600M company cash

Bernie Ebbers, former CEO of WorldCom

Dennis Kozlowski, former Tyco CEO

Cynicism was running high

Cynicism was running high

Corporate Governance is important for every business

- **In all the corporate failures mentioned, each of which involved enormous losses to the public, we see examples of profits being artificially inflated to benefit CEOs and other insiders.**
- **The global financial crisis of 2008/2009 was also largely driven by corporate greed:**
  - **Mortgage brokers and lenders generated fee income by promoting sub-prime mortgages to people who couldn’t actually afford home loans, giving them very low initial rates to sign them up;**
  - **Institutions sold blocks of mortgages for significant profit, to other investors who thought they were buying quality product;**

Corporate Governance is important for every business

- Rating agencies generated substantial fee income by not looking too closely at the real quality of security underlying huge volumes of sub-prime loans being sold by FIs;
- Some investment banks even made huge profits by creating investment vehicles backed by sub-prime mortgages which they sold short for huge profit, knowing that the investments would ultimately collapse with the unraveling of the underlying mortgages. Investors lost most of their funds.
- Across the financial industry, CEOs and other insiders gained enormous sums in bonuses, stock options, etc. while governments (i.e. the public) had to fund the losses created by the excesses.

Corporate Governance is important for every business

- **Our knowledge that if we take too much risk, we may lose what we have gained, serves as a natural constraint on risk-taking.**
- **This constraint is gone when individuals controlling corporations realize that if they take risks and generate gains, they will keep them; but if they have losses, the losses will fall on others.**
- **CEOs and other corporate decision makers can qualify for gigantic bonuses by reporting profitable operations in the short term. But when there are huge losses later on, i.e. "When the chickens come home to roost", they don't give back the profits they have made.**
- **How to minimize the possible problems from these types of situations? We do want to provide strong incentives for senior managers.**

Corporate Governance is important for every business

- **Establishing crystal clear responsibilities for directors and senior managers helps to re-establish the balance on risk-taking because directors can be held responsible if they have been negligent.**
- **It is critically important to ensure that incentives are well-aligned with factors that will be beneficial to the institution.**
- **The OECD and OSFI definitions of Corporate Governance emphasize the need for risks to be reasonably weighed and balanced, with fairness in the way risks and rewards will be allocated among various stakeholders. Stakeholders include customers, not just CEOs and shareholders.**
- **Many studies have cited weak corporate governance as the main reason the financial crisis was able to occur.**

Corporate Governance is important for every business

IT IS NOT SURPRISING that a system:

- **that "provides the structure through which the company objectives are set, and the means of attaining those objectives and monitoring performance" (OECD) and**
- **which includes "the processes, structures and information used for directing and overseeing the management of a company" (OSFI)**

turns out to be the single most powerful determinant of the success or failure of that company!

Why is Corporate Governance being strengthened?

Regulatory authorities in many countries now recognize that strengthening corporate governance for institutions, also strengthens the whole financial supervisory framework. As OSFI has indicated:

> **"Effective oversight of the business and affairs of an institution by its board and senior management is essential to the maintenance of an efficient and cost-effective supervisory system. It helps protect depositors and policyholders, and allows the supervisor to rely on the institution's internal processes, thereby reducing the amount of supervisory resources needed to meet the supervisory mandate."**[1.]

1. OSFI Corporate Governance Guideline January 2013

Corporate Governance is important for every business

- **Note that to be effective, the board of directors must act objectively and independently from senior management.**
- **If the board is a rubber stamp for senior management's wishes or a shareholder's wishes, the deck may be stacked against other stakeholders who cannot be at the table, such as public investors, depositors and policyholders.**
- **A reasonable proportion of qualified, independent directors as board members is now considered to be a basic requirement of the corporate governance framework.**
- **Note that when the CEO is also the Chair, the board tends to be strongly biased toward unquestioning acceptance of management proposals.**

Role of Independent Directors

- An independent director is a director who is not a member of management, or a significant shareholder, or affiliated with a significant shareholder.

- Modern corporate law (and certainly insurance laws that are consistent with international standards) require the board to have at least some independent members. This is to ensure there is a degree of objectivity in the board's decision making.

- In many countries the law now requires that from 1/3 to a majority of directors be independent.

Role of Independent Directors

- Independent directors have a responsibility to consider the interests of all stakeholders, including minority shareholders and customers, to make sure that the majority shareholder and/or senior managers are not taking advantage of their positions at the expense of the other stakeholders.
- In many of the “Hall of Shame” examples, the essence of the problem was that the majority shareholder was taking funds out of the company for its own benefit (i.e. related party transactions).
- Sometimes independent directors didn’t realize what was happening: they didn’t understand the complexities of the business.

Corporate Governance is in the Public Interest

OSFI expects that directors and senior management will take the interests of depositors, policyholders and other creditors into account in fulfilling their responsibilities. OSFI uses its supervisory relationship with the institution (e.g., through its discussions with the board and management) to reinforce this expectation when necessary.

OSFI – Canadian Financial Regulator

Mini-Case: Conrad Black

• Black was a Canadian citizen who built up a huge string of newspapers in countries around the world.

• He gave up his Canadian citizenship to accept a knighthood from the Queen. (He became “Lord Black of Cross Harbour”)

• He controlled the public company, Hollinger Inc, listed on the NYSE, with a small percent of the total number of shares, through various holding companies, multiple voting shares etc.

• He and his cronies began selling off newspapers and accepting “non-compete” fees as a major part of the sale price. For example, if they lined up a sale for $25 million, they might request the buyer to pay $20 million to Hollinger Inc and $5 million to them personally for agreeing not to compete in the newspaper business with the new buyer.

• He was sentenced to 6.5 years in prison in the US for fraud and obstruction of justice.

Mini-Case: Conrad Black

- **An interesting facet of the Black case was that Hollinger had a number of high profile, independent directors, including Henry Kissinger (former US Secretary of State), John Thompson (former Governor of Illinois), Richard Burt (former U.S. Ambassador to Germany) as well as other luminaries.**
- **In summing up the situation one report indicated "even a cursory skimming of the company's annual proxy statement listed directors who remained on the board even after being found guilty of a felony (Alfred Taubman); directors who barely attended any of the meetings (Henry Kissinger) and directors who were hopelessly compromised by their involvement in multiple deals with company executives. And then there were the myriad related-party transactions, the impenetrable compensation arrangements and general lack of oversight."[1.]**
- **So independent directors do not guarantee good corporate governance!**

1. Richard Grey, Canadian Business Magazine

Role of Independent Directors

- A number of researchers have been making the case that in addition to being independent, <u>it is important for independent directors to know something about the business at hand</u>. For example, Kissinger and the other "trophy" directors at Hollinger knew nothing about the newspaper business.

- An article in Euromoney Magazine[1] pointed out that the independent directors serving on the Finance and Risk Committee of Lehman Brothers, included a famous Broadway producer and the former head of the Girl Scouts of America. While these may very well be persons of high integrity, are they qualified to provide insightful guidance and direction with regard to the sophisticated risks being undertaken by a major investment bank? Evidently the answer may be "no", given that Lehman failed during the financial crisis.

1. "Board Stupid" by C. Horwood, Euromoney Magazine, February 1, 2008

Role of Independent Directors

- **The Euromoney article goes on to tabulate the number of independent directors of major European and US banks, who actually have banking experience. In many cases, NONE of the independent directors had any banking experience.**
- **Some of these institutions are the very ones who brought us the sub-prime crisis!**

Therefore it is important for independent directors to have a reasonable degree of understanding with regard to the business they are directing. (Hence our "Shop Talk" sessions in this program.)

CG is particularly important for financial institutions

The need for high standards of corporate governance, as well as the overall need for government supervision, is related to the enormous importance of financial institutions in every jurisdiction:

- **FIs are making promises for future delivery of monetary services**
- **Mostly funded by members of the public with relatively small proportion of funds from shareholders**
- **Foreign investment is dependent on confidence in the financial system, which will not be maintained if institutions are not healthy**
- **Intermediation activities carried on by healthy, reliable FIs are the foundation of the entire economy.**

CG is particularly important for financial institutions

- FIs tend to be making promises about future performance.
- For insurers this is especially noteworthy: non-performance by the insurer does not just lead to a loss of a premium.
- It may lead to life-changing circumstances for the policyholder:
  - A family loses its home to fire and the insurer does not pay. The family may have a substantial mortgage that still needs to be paid off, and nowhere to live.
  - A husband with small children buys life insurance to look after his family in case he dies prematurely. He does die prematurely but because the insurer is insolvent, his widow and children are left with no support whatsoever.

CG is particularly important for financial institutions

- Ordinary businesses are funded by knowledgeable shareholders and lenders who, under the requirements of securities laws, have been informed about the key risks to which they will be exposed.
- In the case of financial institutions, most of the financing comes from depositors and policyholders, who have virtually no knowledge of the financial activities of the FI with which they are placing funds.
- In addition, FIs tend to be highly levered, i.e. the shareholders provide only a small fraction of the required funding. For example, for banks in Costa Rica, [check] shareholders provide only about 11% of their funding[(1)], which is pretty similar to other countries.

(1) For Costa Rica: total bank equity as % of total bank assets

CG is particularly important for financial institutions

- Because of their role in financial intermediation, financial institutions play a central role in the economy.
- The failure of a large financial institution, or a number of smaller institutions, can lead to a loss of confidence in the financial markets, which in turn may have a destabilizing effect on the entire economy.
- It was this factor that led governments to make available huge amounts of public funds to support troubled banks and other institutions during the financial crisis. There was evidence that without such support, the entire global financial system could spin out of control, leading to devastating impact internationally.

CG is particularly important for financial institutions

A final reason for the importance of good governance for financial institutions:

- **Foreign investment is key to developing a vibrant and expanding economy.**
- **Confidence in the financial system is a prerequisite if the country is to attract foreign investors.**
- **Investors will not have confidence in the financial system if there are weak standards of corporate governance, because this will lead to higher rates of corporate failures and an atmosphere where there is a lack of trust in the institutions. It is also easy for corruption to flourish in jurisdictions where weak corporate governance is common.**

CG is particularly important for financial institutions

Detailed disclosure of the type required by securities laws would generally not be of assistance to depositors and policyholders because they would not be in a position to evaluate the financial strength of the institution nor the riskiness of its business operations.

For all of these reasons, it is universally agreed that banks and insurance companies must be subject to oversight by knowledgeable supervisory agencies that will be able to stand in the shoes of the public, acting on its behalf to see that the interests of public stakeholders are not overlooked.

Corporate governance is the central theme of modern financial supervision.

Corporate Governance and insurance supervision

The weaknesses demonstrated by many corporate failures are hoped to be checked by systems of CG having the following characteristics:

- Substantial proportion of independent directors, at least some of whom are knowledgeable about insurance/finance.
- Important board committees, e.g. risk and audit, have majority of independent directors and are chaired by independent directors.
- Meaningful input of full board in formulation of business strategy, risk management processes and all key business functions.
- Board approved, clearly defined and closely monitored “risk appetites” for all critical risk areas.
- Every institution to have well-developed and effective risk management systems.

Corporate Governance and insurance supervision

- **Corporate governance guidelines issued by modern financial regulators are not very different from what one would find in an MBA textbook which has the objective of improving corporate performance.**
- **When supervisory agencies focus on strengthening corporate governance they are in effect assisting supervised institutions to improve their management structures and overall financial performance.**
- **See Appendix to Topic 4 for summary of best practices and international standards in corporate governance and risk management.**

The Risk Appetite

Looking back at the Canadian situation during the 1980s, when there were numerous insurance company failures, it was typical for board members to blame senior management and operational management for the problems. They would say things like:

- ***Reinsurance? How would we know there was a problem with the reinsurance? We are not experts in that technical subject.***
- ***Don't blame the directors for the fact that the company invested too much of its funds in real estate. We are not experts in real estate, nor do we monitor day-to-day liquidity requirements.***
- ***As a board member, I had no idea that the company had excessive credit risk exposure because of lending funds to its major brokerage.***

The Risk Appetite

It is true that we can't expect board members to be experts in all fields.

However, we can expect them to provide senior managers with a framework for risk taking, so that the people making the day-to-day business decisions in the company are doing so within a framework that has been carefully considered, agreed upon, clearly stated and communicated.

The Risk Appetite Statement is the framework for balancing risk exposures across the entire spectrum of risk areas (such as insurance risk, market risk, liquidity risk, etc) and across all operational areas of the company (such as Underwriting, Investment, Reinsurance and so on)

For example, in the reinsurance area . . .

Defining the Risk Appetite

each as % of equity

- What is the maximum net exposure we are prepared to assume for any one policy?
- What is the maximum net exposure we are prepared to assume for any one event, e.g. a windstorm or earthquake?
- What is the minimum credit rating we should consider acceptable for each reinsurer we use?
- What is the minimum number of reinsurers over which we will spread our business?

Any one of these items could “make or break” the company, depending on the circumstances.

Defining the Risk Appetite

It is not appropriate for the board to leave all these types of decisions to the reinsurance department staff or even a VP of Reinsurance.

Even if that person is highly competent, he or she will not be aware of the other risk decisions that are being made for other risk areas across the company.

For example, a company may wish to take on more market risk but to do so will want to ensure that credit risk and liquidity risk are both reduced.

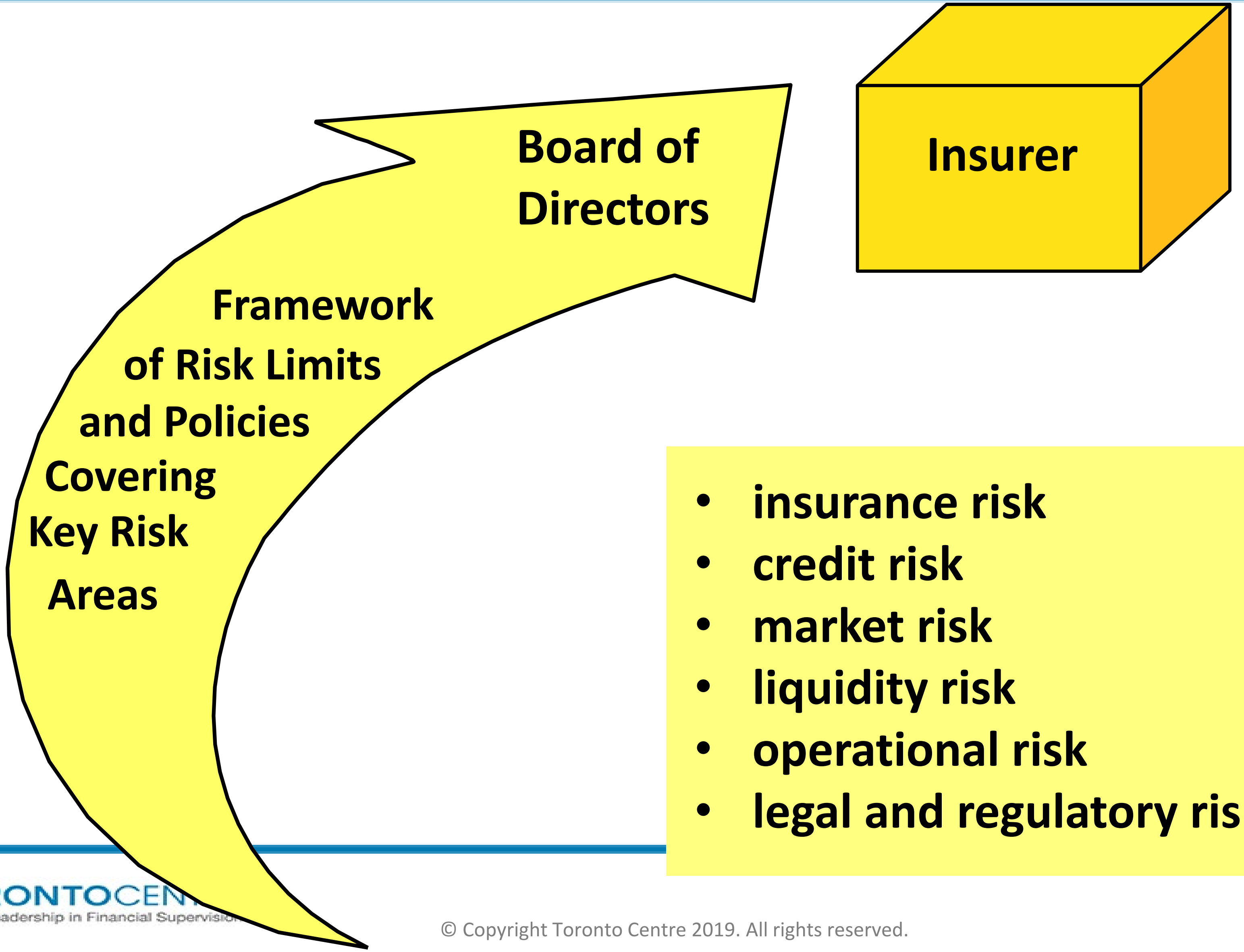
Staff at the operational level would have no idea of how their particular area might be affected by such required balancing. So in the absence of a framework that is being monitored at the board level, risks can accumulate without being noticed.

Defining the Risk Appetite

In the absence of a Risk Appetite Statement, individual managers may be incented by bonus considerations and other factors to take on more risk than is appropriate for the company as a whole.

Un-coordinated risk-taking across different operational areas has been one of the biggest causes of financial institution failure over the years.

Insurers Define Risk Appetite for Key Risk Areas



- insurance risk
- credit risk
- market risk
- liquidity risk
- operational risk
- legal and regulatory risk

Defining the Risk Appetite

Handout for review and discussion:

OSFI guideline on Risk Appetite

Read excerpts from OSFI speeches

Mini-Case: The Li Brothers

Background

1. **The wealthy Li Brothers immigrated to Canada from Hong Kong.**
2. **In Canada they obtained control of Woolite Products, a public company in the textile business, through a 51% share holding.**
3. **They also purchased 100% of the shares of a general insurance company, Maple Tree General Insurance (MTGI)**
4. **Sometime later, MTGI required $10 million of additional equity to meet its solvency requirement.**

Mini-Case: The Li Brothers

Background, continued

5. **The insurance supervisor exerted pressure on MTGI to increase its capital. The Li Brothers delayed and the supervisor increased the pressure.**

6. **Finally an additional $10 million in cash was injected into MTGI by the brothers.**

For Discussion: Any potential for trouble so far?

Mini-Case: The Li Brothers

New Developments

1. **The additional $10 million that the Li Brothers invested in MTGI was loaned to them personally by Woolite Products.**

Mini-Case: The Li Brothers

New Developments

1. The additional $10 million that the Li Brothers invested in MTGI was loaned to them personally by Woolite Products.
2. When MTGI submitted its annual financial filing to the insurance supervisory agency, the agency noted that included in its assets was a new $10m investment in Woolite Products common shares.

Mini-Case: The Li Brothers

New Developments

1. **The additional $10 million that the Li Brothers invested in MTGI was loaned to them personally by Woolite Products.**
2. **When MTGI submitted its annual financial filing to the insurance supervisory agency, the agency noted that included in its assets was a new $10m investment in Woolite Products common shares.**
3. **Canadian insurance law prohibits an insurer from investing in a related party.**

Mini-Case: The Li Brothers

New Developments

1. The additional $10 million that the Li Brothers invested in MTGI was loaned to them personally by Woolite Products.
2. When MTGI submitted its annual financial filing to the insurance supervisory agency, the agency noted that included in its assets was a new $10m investment in Woolite Products common shares.
3. Canadian insurance law prohibits an insurer from investing in a related party.
4. The Li Brothers point out that Woolite Products is no longer related to MTGI because they have sold most of their MTGI shares to their mother for $1 . "Mother" is not included in the list of related parties as defined in the law.

Mini-Case: The Li Brothers

New Developments

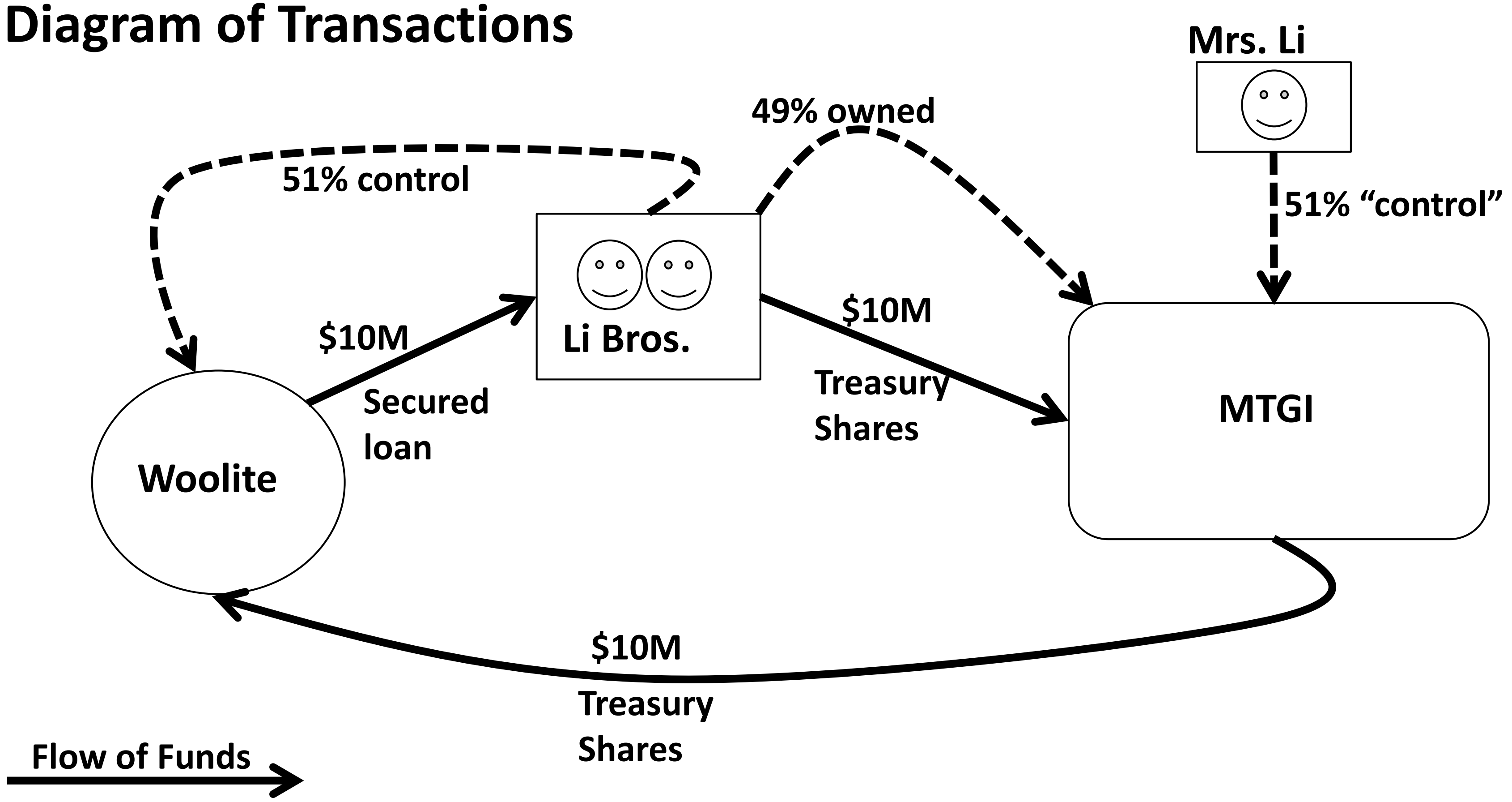
5. **Legal advisors to the insurance supervisor say "Nothing you can do. The mother is not a related party under the law".**

6. **The mother is 93 years old and speaks no English. She will obviously not be an active shareholder, board member or manager of MTGI.**

Note: The foregoing demonstrates one of the disadvantages of a rule-based approach. Rather than a detailed listing, a principle based approach defines the related party concept and then provides that "the Superintendent may determine that a particular director is affiliated with a company for the purposes of this Act if, in the opinion of the Superintendent, the director has a significant or sufficient commercial, business or financial relationship with the company or with an affiliate of the company to the extent that the relationship can be construed as being material to the director and can reasonably be expected to affect the exercise of the director's best judgment." [Insurance Companies Act Canada] Thus the Li Brothers could be deemed to be related parties to MTGI.

Mini-Case: The Li Brothers

Diagram of Transactions



Mini-Case: The Li Brothers

For Discussion:

1. **What are the implications of these transactions from the perspective of an independent board member of Woolite Products?**

2. **What are the implications from the perspective of an independent board member of MTGI?**

3. **What are the implications from an insurance supervisory and public policy perspective?**

Mini-Case: The Li Brothers

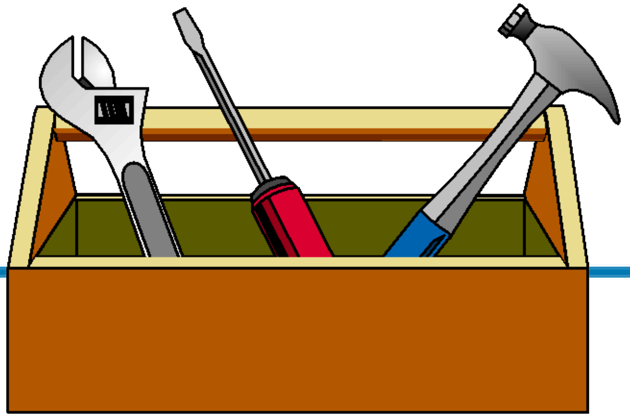
Afterword

- The supervisor was finally able to "persuade" MTGI to sell its shares of Woolite on the open market and receive close to $10m in cash.

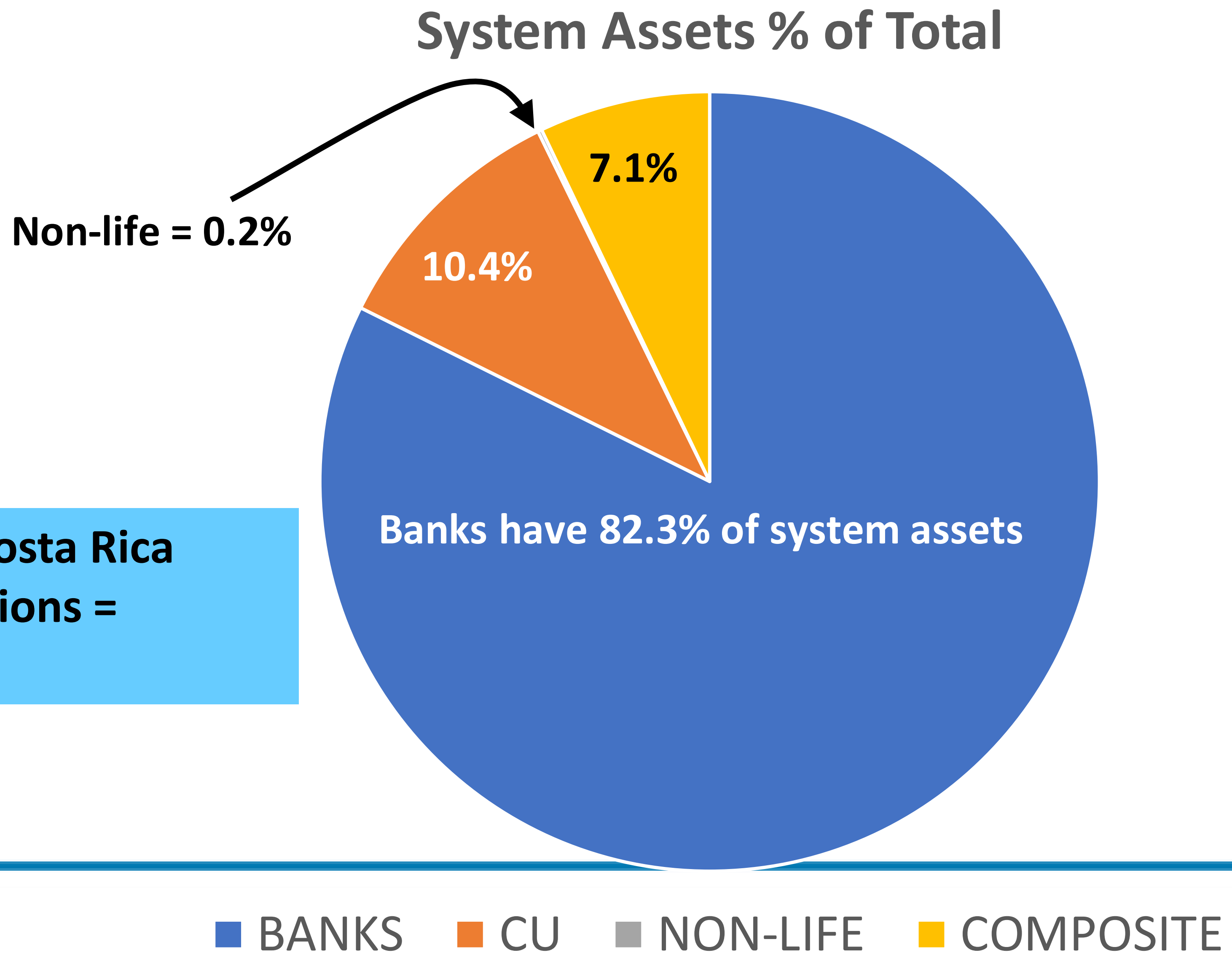
- The persuasion resulted from the supervisor calling a public enquiry into the situation, which would have exposed it for what it was and no doubt greatly depressed the value of Woolite shares.

- A few months later Woolite suddenly became insolvent as a result of questionable transactions by the Li Brothers, so if MTGI had not sold its shares, it would have had a $10m "loss", which probably would have been enough to bankrupt the insurer as well. The Li Brothers quickly moved from Canada to a new location.

Shop Talk – Principles of Insurance

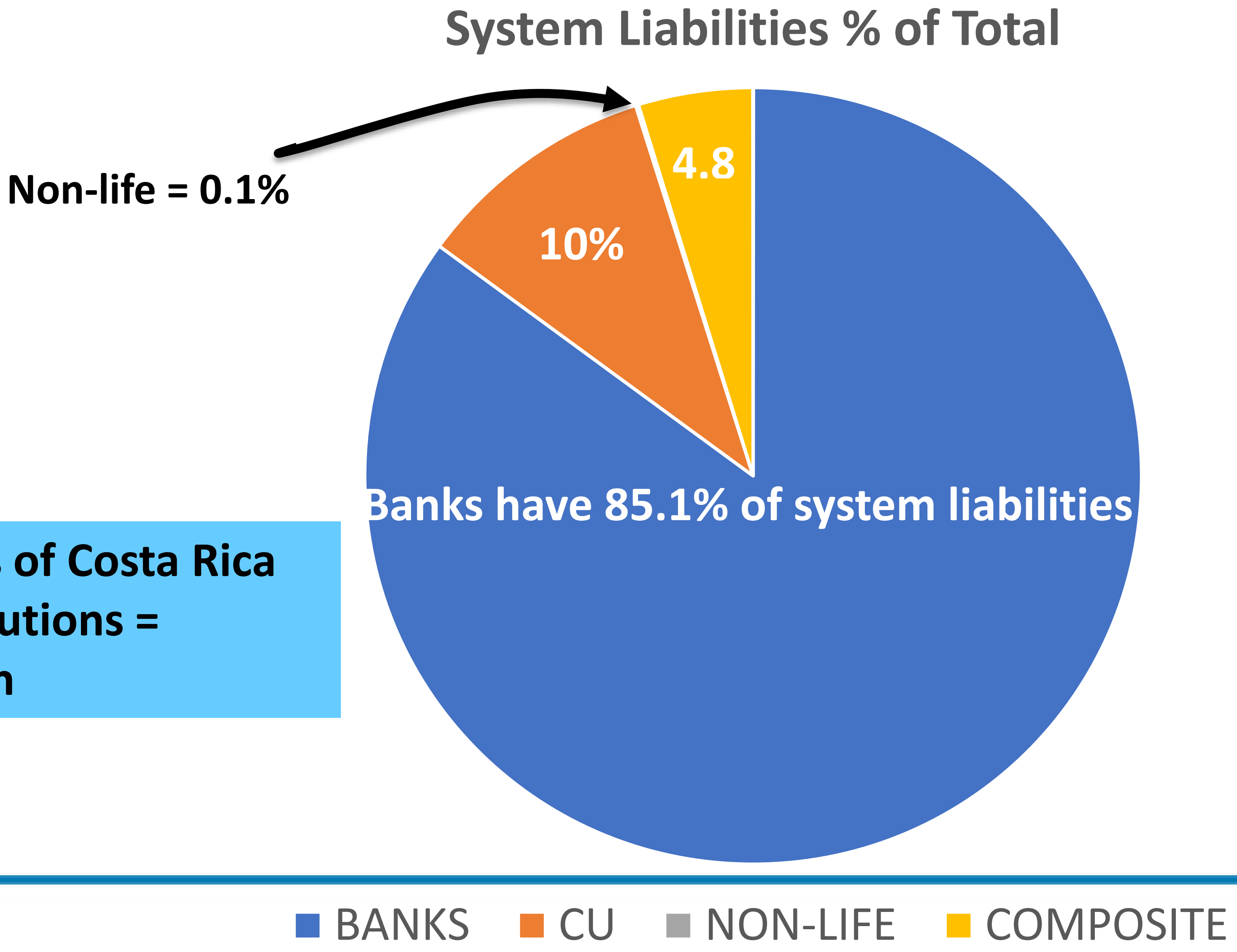


Assets of Costa Rica Financial Institutions

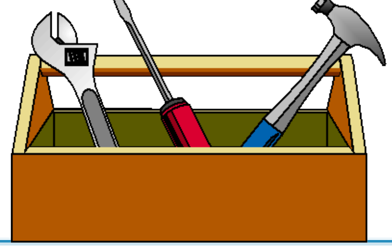


Total assets of Costa Rica financial institutions = US$54.1 Billion

Liabilities of Costa Rica Financial Institutions



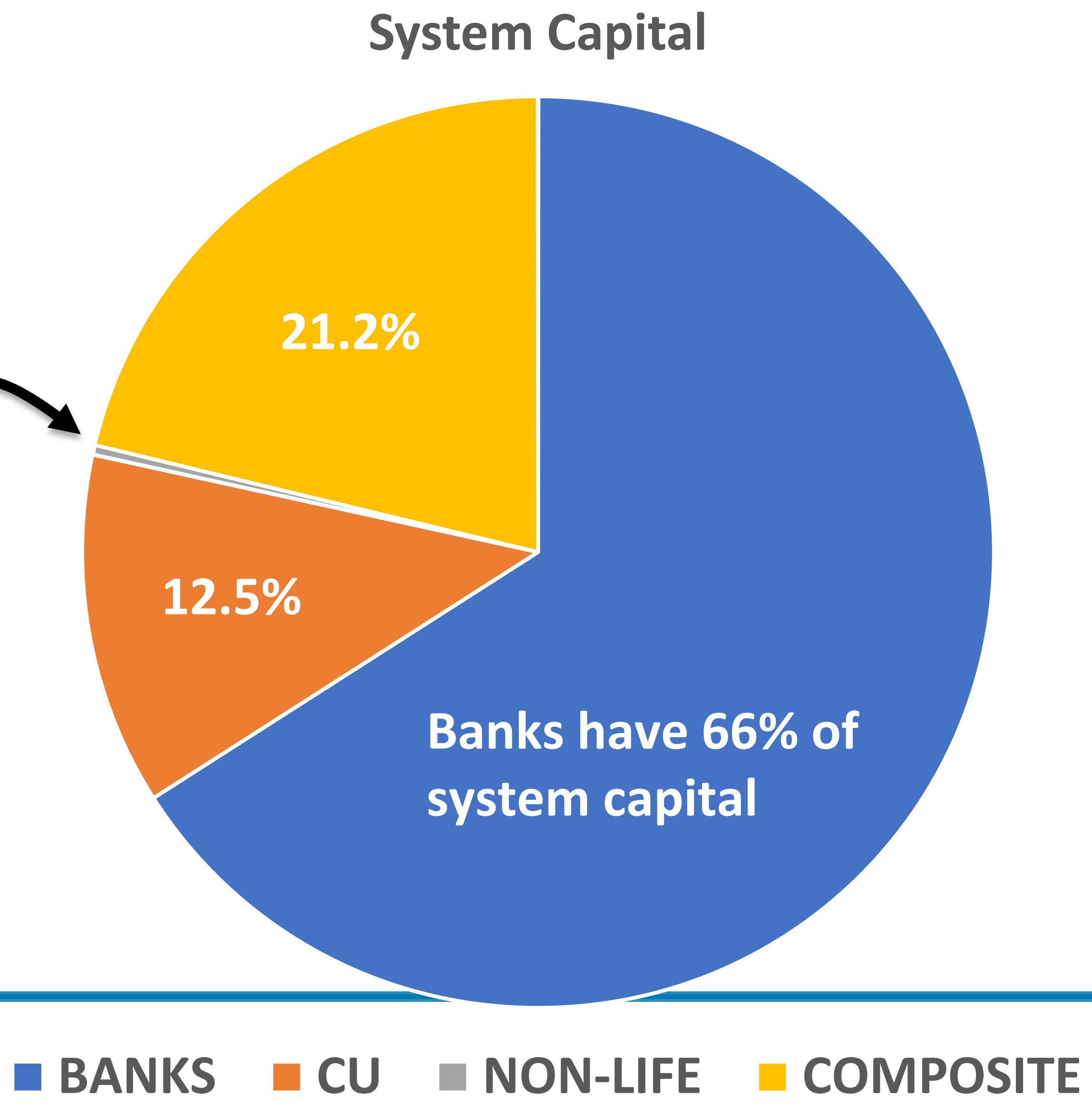
Total liabilities of Costa Rica financial institutions = US$46.4 Billion



Capital of Costa Rica Financial Institutions

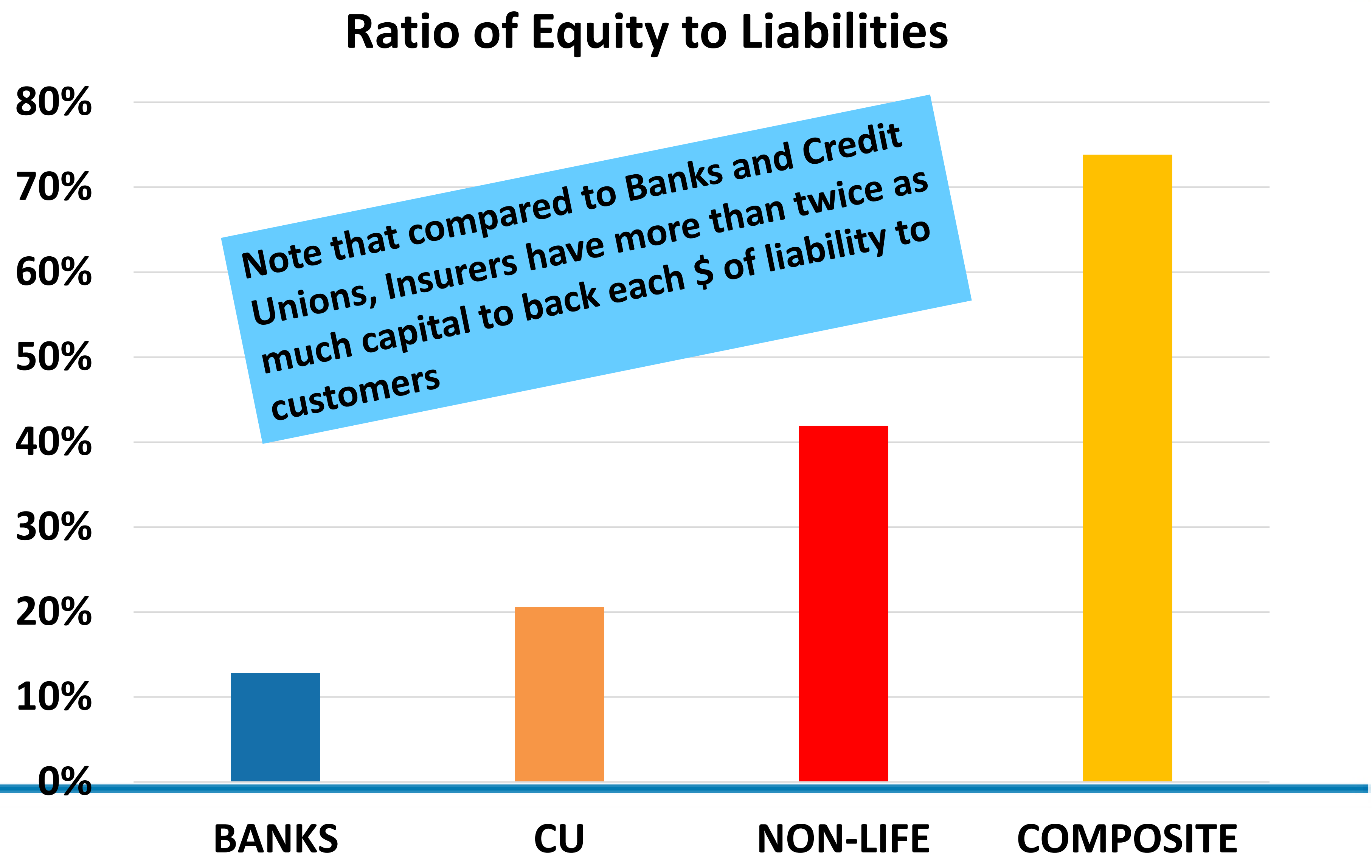
66.0%
12.5%
0.3%
21.2%

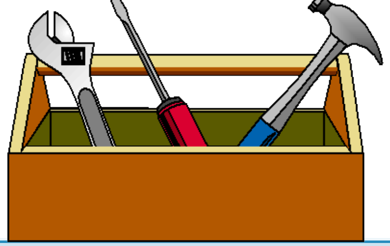
Non-life = 0.3%



Total capital of Costa Rica financial institutions = US$7.7 Billion

Liability Coverage of Costa Rica FIs





Comparison of Financial Institutions in Costa Rica

- **The financial system is risk based, which means we want to make sure that we have amounts of capital that are appropriate for the riskiness of the institutions.**

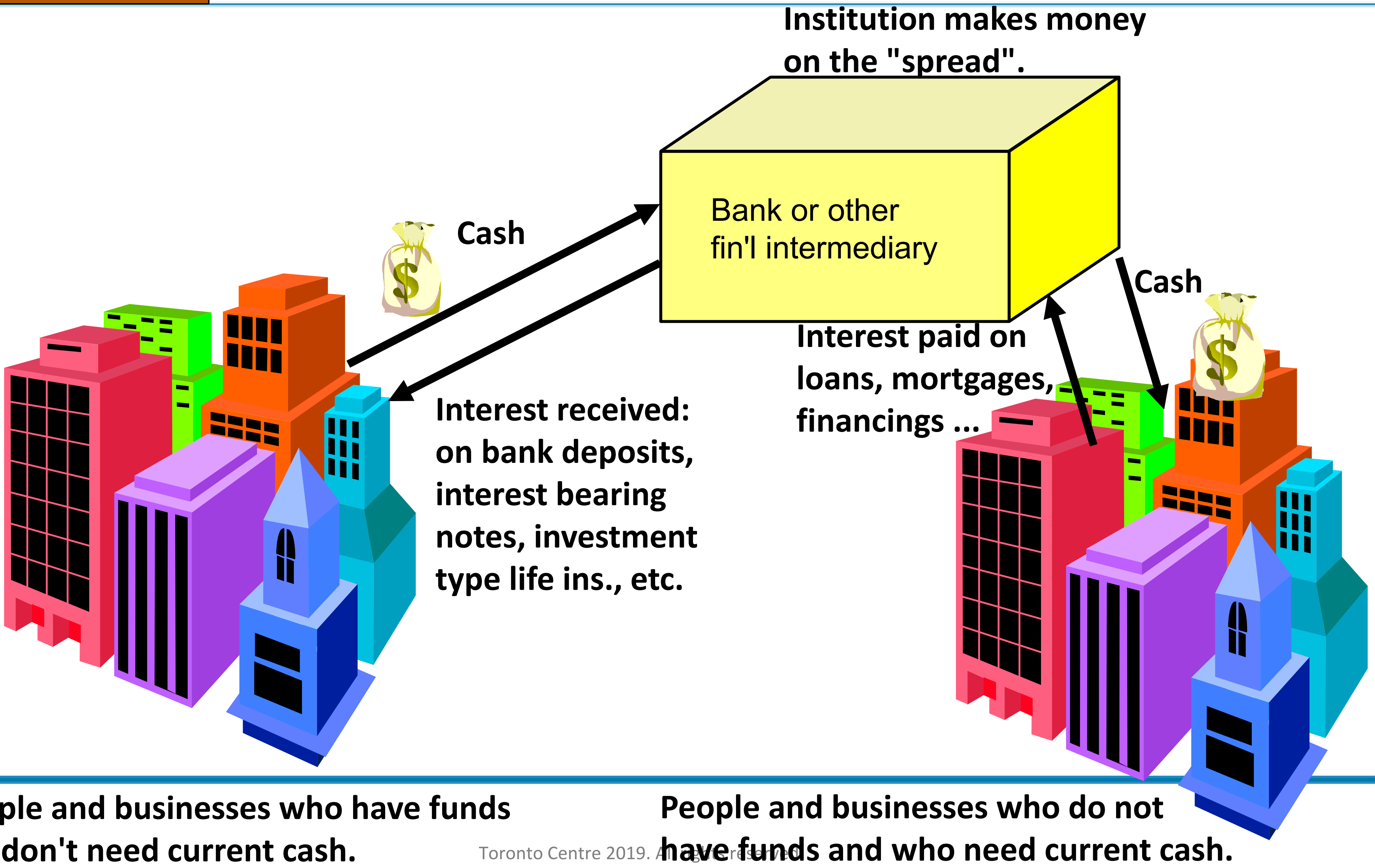
- **Insurance companies are in the business of <u>taking on risk</u>. They use their capital bases to absorb the unforeseen losses of their policyholders.**

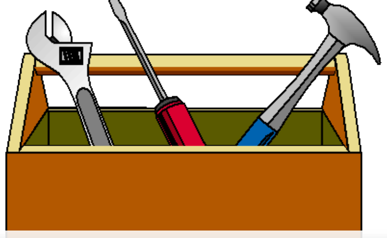
- **Banks and other DTIs are in the business of <u>avoiding risk</u>. Loans are well secured and include covenants to protect the bank.**

- **Consequently, it is universally accepted that insurance companies require much higher capital levels than banks.**

- **General insurers typically require higher capital levels than life insurers.**

Financial Intermediation





Financial Intermediation

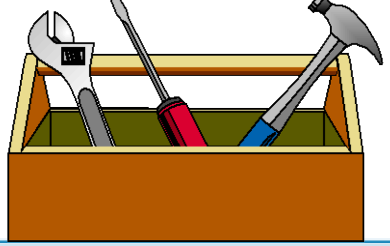
Efficient financial intermediation is one of the key drivers of the economy.

Many emerging market countries suffer economically because of not having efficient and effective systems of financial intermediation.

It is one more important reason why we must have a strong, healthy financial system.

Are general insurers intermediaries?

What about life insurers?

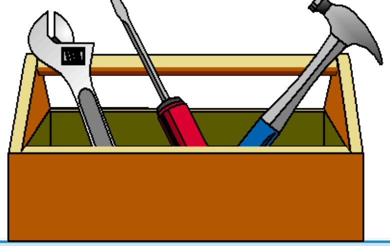


Insurance Business

Insurers are actually transacting two separate businesses:

1. **Risk mitigation by using their capital base to absorb losses and their reinsurance arrangements to spread losses, i.e. through underwriting activities, and**
2. **Investing shareholder and policyholder funds to make a profit.**

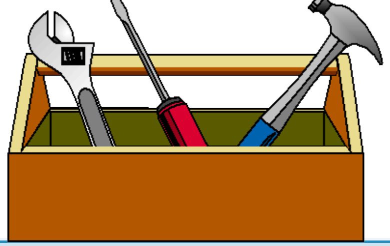
An insurer is largely defined by the interplay between the insurance underwriting business and the investment business.



Insurers' Investment Business

Uncertainty is an inherent characteristic of underwriting, especially for general insurers. Their investment portfolios must reflect this.

To balance underwriting risk, investment portfolios, especially of general insurers, must be low risk. For life insurers there is less insurance risk and therefore there can be a somewhat greater degree of investment risk.



The Insurance Principle

Insurance is based on a pooling concept.

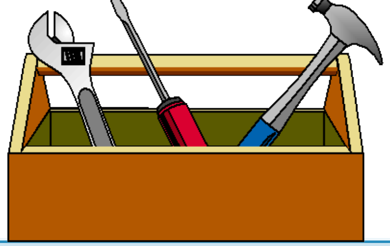
The principle is simple: "the premiums of the many pay for the losses of the few".

We replace the uncertainty of a devastating loss, with the certainty of a small loss – the insurance premium.

The premiums collected must be sufficient to pay the claims, plus the expense of running the insurance enterprise, plus an amount for profit.

Shareholders and investors would not be willing to expose their capital to the risk of loss if they were not able to purchase insurance.

There are also important social benefits of insurance.



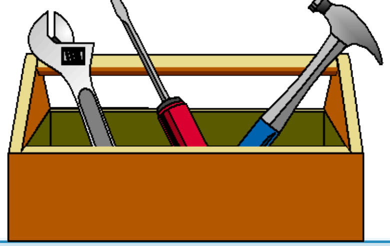
The Insurance Principle

Example

Town with 1,000 homes. We know with that on average 10 will burn every year. If each home costs $100,000, then we expect fire losses of $1,000,000 per year.

If we charge each homeowner $1,000 we will have collected enough to pay for all the losses. But it costs us money to administer the scheme so perhaps we charge $1,200 as a premium. And since we also want to make a profit, perhaps we charge a total of $1,400.

We can see there is the potential for great variability though, because what if 20 burn one year? We have collected $1.4 million to pay losses but losses are $2 million – and we may be out of business!



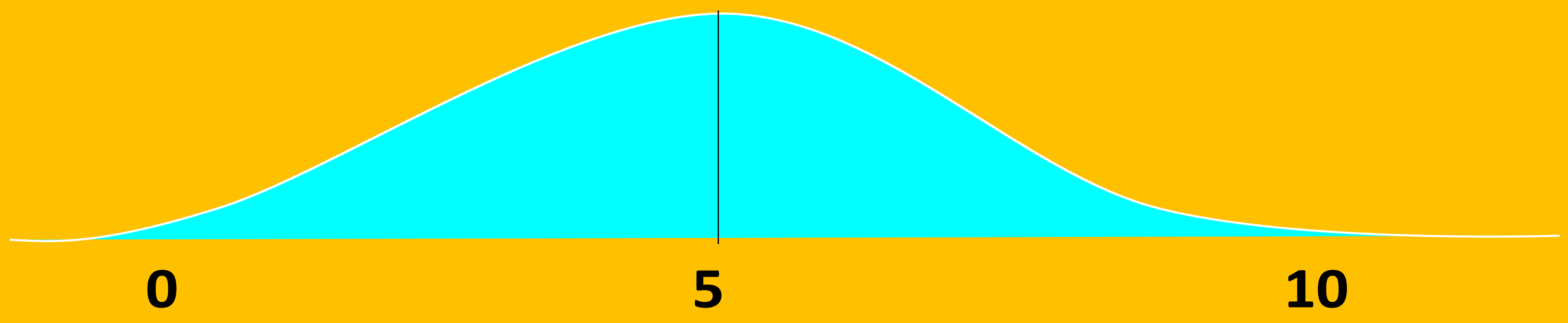
The Law of Large Numbers

A critically important way in which insurers insulate themselves from risk volatility (to some extent) is based on the Law of Large Numbers.

This Law states that for any experiment with independent outcomes and established probability of "success", the more trials that occur, the closer will be the final result to the expected result.

We can think of a normal curve:

Flip coin 10 times, keep track of number of "heads":



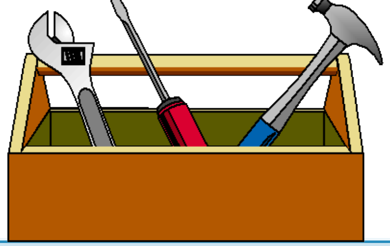
The Law of Large Numbers

We know that on average we expect to get 5 heads, i.e. 50% chance of "head" with 10 tosses of the coin.

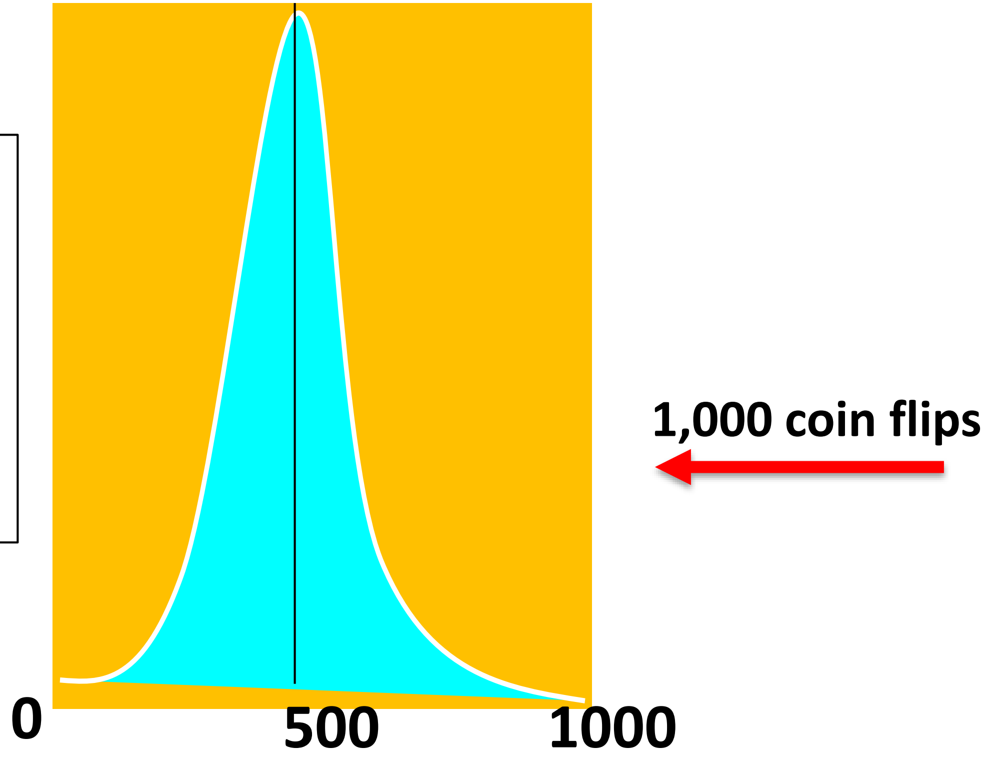
But we would not be very surprised to get 7 or 8 heads, or perhaps even 9 heads. A result of 7 would be 40% more than our expected number; a result of 8 would be 60% more than our expected number. So for small sample sizes the actual result can vary substantially from our expected result.

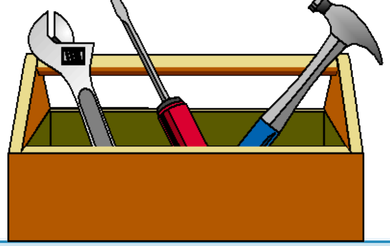
For independent events, the greater the number of event repetitions, the lower will be the percent of variation from the expected average.

The Law of Large Numbers



As the number of repetitions becomes larger, the distribution becomes much tighter, and the chance of a significant percentage divergence from the mean approaches zero.

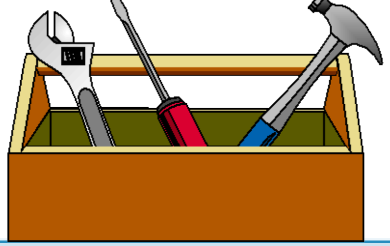




The Law of Large Numbers

The operation of an insurance company is in some ways similar to the operation of a casino. A Roulette Wheel has 35 spaces for the wheel to stop, each with equal probability of occurrence. So the probability of stopping on any particular space is 1/35 or 0.02857. Let's suppose that it costs $50 to play one turn. If the wheel stops on the space you have chosen, you win $1000.

Suppose only 10 people play the game and 3 of them actually are lucky and win. Then the casino is paying out $3,000 but only taking in $500 in revenue. It might happen.



The Law of Large Numbers

However, if 1,000 people play the game, the Law of Large Numbers says it is virtually certain that the number of winners will be close to the expected number of winners, which is 1,000 * .02857, or 29. With winnings of $1,000 each, the total winnings from the casino will be close to $29,000. But since they paid $50 each to play, the casino will have taken in revenue of $50,000 ($50 * 1,000) and will, with virtual certainty, make a profit of about $21,000 (i.e. 50,000 – 29,000).

This is why casinos always make money.

Unfortunately the same cannot be said for insurance companies!

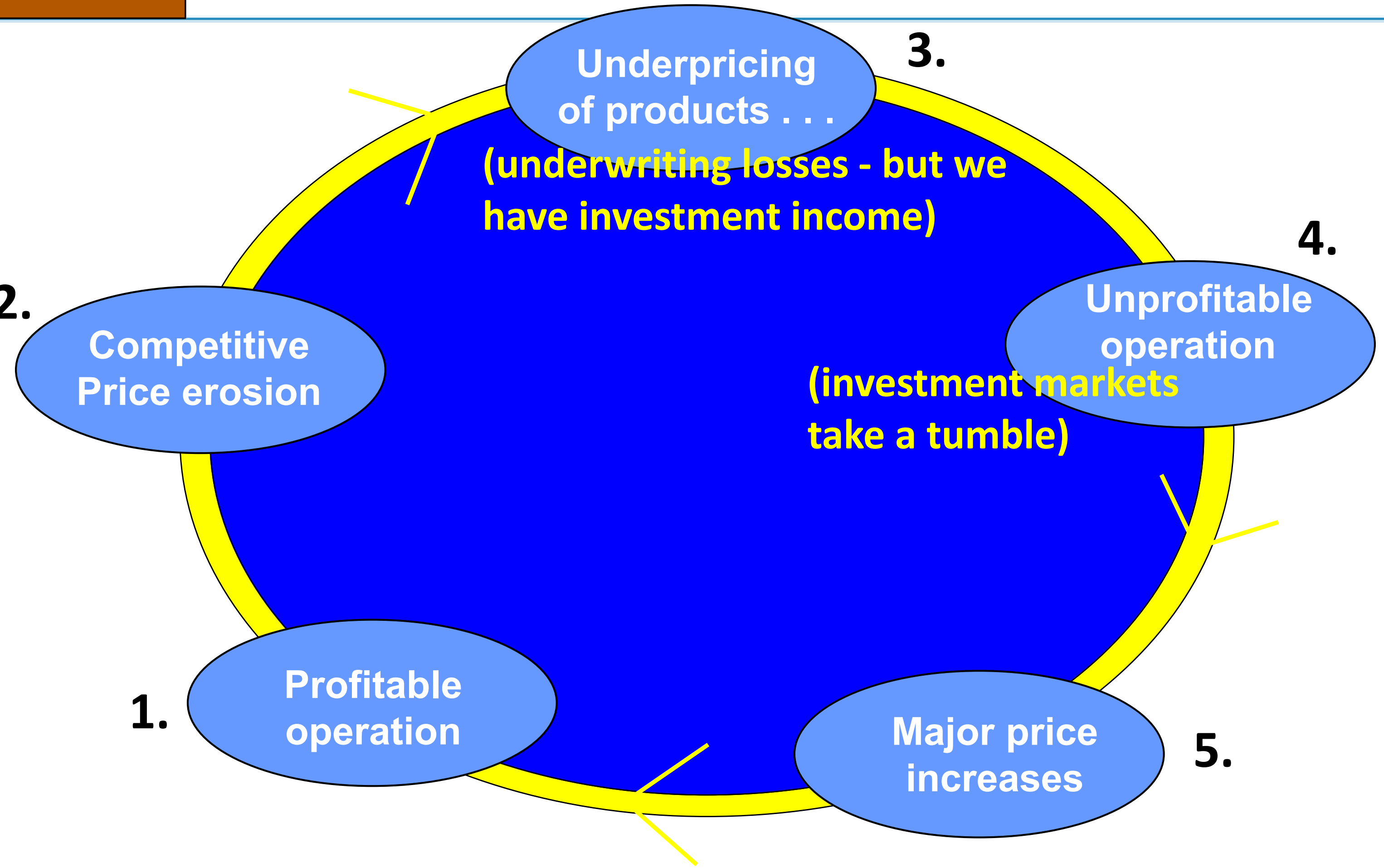
Insurance Business

The volatility of underwriting results is exacerbated, especially for general insurers, due to the fact that **insurers must price their product when they don't know how much it will cost them.** This is different from almost every other business, where you can determine the cost of your product quite precisely before you sell it. An old insurance saying:

The statistics of yesterday establish the premiums of today to pay the losses of tomorrow.

These factors often lead to under-pricing as insurers try to increase their volume of business. It is easy to rationalize a lower price when you can't determine exactly what the price should be. It looks like this:

The General Insurance Profitability Cycle



This cycle results in losses for shareholders, anxiety for managers, headaches for supervisors and also does nothing to improve the consumer image of the industry.

Mini-Case: New Costa Rica Insurer

You are the Insurance Superintendent, reviewing an application for a new insurer to be incorporated and licensed in Costa Rica. It wishes to transact the following classes of business:

- **Auto insurance**
- **Aircraft insurance**
- **Homeowners insurance**
- **Performance bonds**

Having in mind the Law of Large numbers, what are your thoughts about granting the licence?

Thank you

Program Funded by:

Global Affairs Canada   Affaires mondiales Canada