



# Insurance

Istanbul Technical University  
Air Transportation Management, M.Sc. Program  
Aviation Economics and Financial Analysis  
Module 3  
November 2014

# Outline

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**A. Introduction to insurance**

**B. Insurance for the aviation industry**

**C. War risk**

## Introduction to insurance



# Purpose

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- **Cover losses due to accident**
  - Loss of property
  - Loss of limbs
  - Loss of life
- **The idea is that “the premiums of the many will pay the losses of the few.”**

Source: Viccars (2001) cited in Hayes, Flouris and Walker (2006)

# What is being insured

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- **Businesses**
  - Liability for customers and third parties
  - Liability for employees
  - Value of assets

# How insurance works

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- **Someone who purchases an insurance policy will pay a premium to hold the policy**
  - One-time payments or a series of payments (monthly, yearly, etc.)
- **The policy is purchased from a broker**
- **The broker (acting on behalf of the insured) will find an insurer to take on all or part of the risk**

## How insurance works – cont.

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- **Depending on the type of policies, the insurer may also seek insurance (Re-insurance)**
  - i.e., insurer limits its liability
- **The insurer will go through a broker to a re-insurer**
  - Either another insurance company or a re-insurance specialist
- **The re-insurer may also seek insurance, to cover in the case of catastrophic loss**

# The simple case

Insured

Airline needs \$3b in insurance  
Will self insure for \$50mn (deductible)

Broker

Broker is expert in insurance markets  
Knows the various insurers (insurance companies). Helps choose the best one for this airline

Insurer

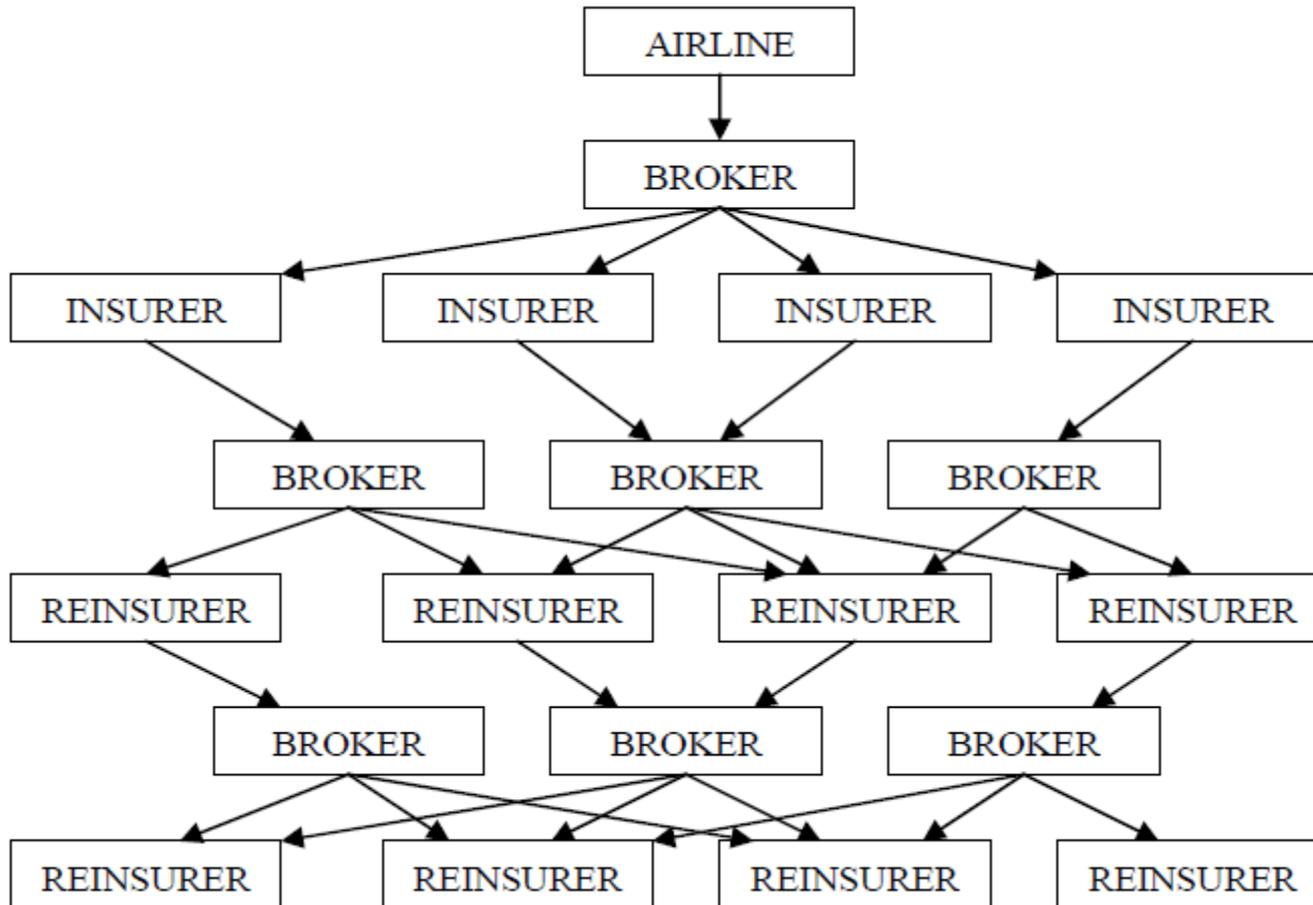
Insurance company  
takes risk on payouts of \$51mn to \$500mn

Re-insurer

Re-insurer  
takes risk on above \$501mn

- or \$501mn to \$1b, other Re takes higher risks
- or RE takes 45% of risk above \$500mn -other R

# The airline insurance market



Source: Hayes, Flouris and Walker (2006)

# Insurance vs. re-insurance

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- **Both have the same underlying idea...**
  - Spread the risk
- **Re-insurance also has the purpose of limiting exposure**
- **Re-insurance is generally used as a way to mitigate losses in the case of fluctuations and catastrophic events**
  - The form of re-insurance will be dependent on the type of risk and insurer's level of exposure

# Types of re-insurance

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- **Proportional**
  - The re-insurer takes a portion (or tier) of the risk – i.e. a portion of the premiums and losses
- **Non-proportional**
  - The re-insurer has only a tier of the risk
    - The premium paid to the re-insurer is not equal to the risk they take
  - Excess of loss – the re-insurer pays if losses are above a set amount, up to another set amount

# Insurance for the aviation industry



# Insurance in the aviation industry

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- **Insurance is important for all members of the aviation value chain**
  - Airports – liability, infrastructure, etc.
  - ANSPs
  - Manufacturers – liability (third party and employees)
  - Airlines
  - Ground Handlers/Forwarders

# Characteristics of the aviation insurance market

- **Three important differentiating characteristics**  
*(aviation is a problem industry to insure)*
  1. Limited number of risks to be insured
    - A risk is what is being insured, i.e. aircraft
      - Although there are many aircraft, many are insured in groups
      - # aircraft small relative to life insurance, autos, buildings/homes...
  2. The aviation insurance market is small in comparison to other markets
    - \$3b per year
  3. Exposure to catastrophic events
    - The “Aviation Collision” event has a \$4b liability

Source: Hayes, Flouris and Walker (2006)

# Aviation direct gross insurance premiums

Sector	2003(\$m) <sup>(1)</sup>	1994(\$m) <sup>(2)</sup>	1994 current (\$m) <sup>(3)</sup>	2003 increase above inflation
Airlines	\$3,000	1,750	2,100	43%
Products & Services	1,000	675	810	23%
Space	650	525	630	3%
General Aviation	2,500	1,960	2,350	6%
Hull (War) & other	<u>210</u>	<u>180</u>	<u>216</u>	-3%
	7,360	5,090	6,106	

<sup>(1)</sup> Estimates by 'a leading aviation insurer' (name withheld for confidentiality reasons) for the 2003 underwriting year.

<sup>(2)</sup> Sigma 1/1996, Swiss Reinsurance Company, Economic Research Department.

<sup>(3)</sup> Adjusted to 2003 \$ using US calendar year GDP inflators.

- Total global premiums (all insurance in the world), as reported by Swiss Re, were approximately \$2.9 trillion in 2003
  - Aviation accounts for well under 1% of the total premiums in 2003

Sources: Aviation - Hayes, Flouris and Walker (2006); Global – Swiss Re (2004) Sigma No 3/2004

# Insurance needs of air carriers

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- **Air carriers need insurance for:**
  - Aircraft
  - Liability
    - Passengers
    - Third parties
  - Health insurance for employees
  - Other business insurance needs
    - Will be dependent on airline and country

# Insurance policy exclusions

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- **Most airlines consolidate their insurance needs into one policy**
  - Loss of aircraft
  - Passenger liability
  - Third party liability
- **There are common exclusions**
  - Failure to perform
  - Noise and pollution hazards
  - War and allied perils
  - Nuclear risks

## Insurance policy exclusions – cont.

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- **Most exclusions can be “written back” into policies – purchasing extra insurance**
  - The availability of the extra insurance will be dependent on the characteristics of the airline
- **War and allied peril insurance can be purchased**
  - The AVN52 clause allows for this
- **Nuclear risk is the one exclusion that cannot currently be purchased as extra insurance**
  - This will be discussed later

# Pricing airline insurance

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- **A number of factors go into premium prices**
  - Airline's country of origin
  - Total reach of its network
  - Airline size
  - Safety record
  - Fleet characteristics  
(age, which manufacturers, maintenance, etc.)
  - Amount of deductible airline is willing to pay
    - Small deductible (self-insurance) – higher premium

# Pricing airline insurance – cont.

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- **There are also market factors – out of the airline's control**
  - Accessibility of capital
  - Current interest rates and investment RoR
  - Price and availability of re-insurance
    - When RE pays out in other parts of the economy all other sectors typically face higher RE premiums for a few years
  - Level of competition in the market

# Insurance costs for airlines

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- **In 2011, the cost of aircraft (hull) and liabilities insurance (“all-risk”) was estimated at US\$2 billion**
  - Estimate total for the world’s airlines
  - This is a large portion of an airline’s insurance costs
- **The additional aircraft insurance for war risk was an estimated US\$100 million in 2011**
  - Total premiums paid in the market

Source: Steer Davies Gleave (2012)

## War risk



# War risk

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- **As stated before, general airline policies exclude acts of war**
  - High risk exposure
- **This is clause AVN48B, “the War, Hi-Jacking and other Perils Exclusion Clause”**

# What additional insurance can be included

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- **Additional “War and Allied Perils” policy can be purchased to cover aircraft**
  - Separate market
  - Covers loss or damage to aircraft
- **Clause AVN52 “Extended Coverage Endorsement”**
  - Allows liability to be written back into the original all-risk policy
  - This has an additional premium added

# What is not covered

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- **Excludes nuclear or atomic weapon use**
  - This is not insured
  - Very large catastrophic loss potential
  
- **Also excludes loss or damages from “war amongst the Great Powers”**
  - UK, USA, France, Russia, China (PRC)
    - The UN permanent security council members

## Pre - 9/11

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- **Extended liability insurance was often worked into the original policies or added back for a low additional premium**
  - In some cases, free – at no additional charge
- **Allowed for full coverage for both passengers and third party liabilities**

## Post - 9/11

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- **A full review of the current policies was needed**
  - There were clearly unpredictable risks
- **The previous AVN52 policy holders were given cancellation notice**
  - A new version was quickly brought in
  - Set a limit third party liability of \$50 million
    - This is too low
- **Additional surcharges were introduced**
  - Injecting capital to the market
    - \$1.25 per pax, generates \$1.25 billion for 1 billion pax

## Post – 9/11- cont.

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- **Governments had to supply additional liability insurance for airlines**
  - Airlines would have not been able to fly after 9/11 with such a low insurance limit for liability
  - In some cases, governments gave indemnity rather than forms of insurance
- **War risk is still under review**
  - The events of 9/11 showed that there are new forms of weaponry that are difficult to predict, and therefore, insure



**Thank You!**

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