What risks do we face over the financial lifecycle and how can we manage those risks?

What risks should you insurance against (by paying premiums) and what risks should you self-insure?

How are market insurance prices determined?

How does the “smoothing consumption” objective relate to the purchase of insurance?
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The Supply Side

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- Now let us move-on to the supply (pricing) of insurance.
- We will stay-away from the actuarial details and try to provide the big picture.
Risks faced over the lifecycle: Can they be insured?

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- Decline in value of your stock/bond investment portfolio.
- Living longer than expected and running out of money.
A large Canadian Property and Casualty (P&C) company has 4,000 auto insurance customers.

How is insurance priced?

Question: How much must this company charge in auto insurance premiums on average, if it wants to make a 20% profit?

Answer: The total claims payout in one year was:

\[
\frac{5000}{500} = \$2,500,000
\]

If they want a 20% profit, they must collect \( \$2,500,000 \times 1.2 = \$3,000,000 \) from the 4,000 customers, which works out to:

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\frac{3,000,000}{4000} = \$750,000
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per customer. Obviously, not everyone has to pay this price. The company relies on the law of large numbers to price insurance and diversify risk. Make sure you understand this.
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per customer. Obviously, not everyone has to pay this price.

The company relies on the **law of large numbers** to price insurance and diversify risk. Make sure you understand this.
The above-mentioned insurance company would like to simplify pricing and charge all drivers the same $750 per year, regardless of the type of car they drive, their driving record, age or any other factors.
Would this pricing scheme work?

- The above-mentioned insurance company would like to simplify pricing and charge all drivers the same $750 per year, regardless of the type of car they drive, their driving record, age or any other factors.
- The company believes they can still earn the 20% profit margin, and will attract more customers with their simplified pricing.
Would this pricing scheme work?

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- Question: Do you think this will work?

Answer: This will probably fail (miserably) because of (1.) adverse selection, and (2.) moral hazard.
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Question: Do you think this will work?

Answer: This will probably fail (miserably) because of (1.) **adverse selection**, and (2.) **moral hazard**.
Demand and Marginal Benefit

- People value many different goods and services.
- The total benefit (value) of a good to a person is the benefit gained from the whole of the amount of the good consumed.
- The marginal benefit (value) of a good to a person is the additional benefit that consuming the last unit provides.
- A person’s relative valuation of a good is expressed in their *willingness to pay*. 
Willingness to Pay

• People have a limited budget so that purchasing one thing for $5 means not purchasing the other things that $5 could have bought.

• If I pay $5 for a unit of a good it means I value that unit of that good at least as much as (and maybe more than) the other things I could have bought for $5.

• My willingness to pay for the last unit I purchase is a measure of its marginal benefit to me.
Willingness to Pay

• Willingness to pay for additional units of a good declines with quantity for each individual

• People vary in their willingness to pay depending on their incomes and preferences

• At the level of the market will find willingness to pay will decline with quantity.
Willingness to Pay and Demand Curves

• Under most circumstances (small or zero income effects from price changes) a demand curve can also be thought of as a marginal benefit curve or as a marginal willingness to pay curve.

• The area under the demand curve to the left of the last unit purchased can be thought of as measuring total benefit or total willingness to pay.
Willingness to Pay and Demand Curves

Total benefit or total WTP for $Q_1$ (green shaded area)

$P_1 = MB$ or marginal WTP at $Q_1$
Final Comments:

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If the insurance is "too expensive" it is not worth it.
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- Think of it this way: You can lose now with certainty, or lose more – or less – later. But you always lose.
- If the insurance is "too expensive" it is not worth it.
- The greater the risk aversion, the more they are willing to pay.
- The market insurance premium must exceed the expected loss, otherwise the insurance company can’t make money.