

FN241: Session 9

Life Insurance and Liability Risk

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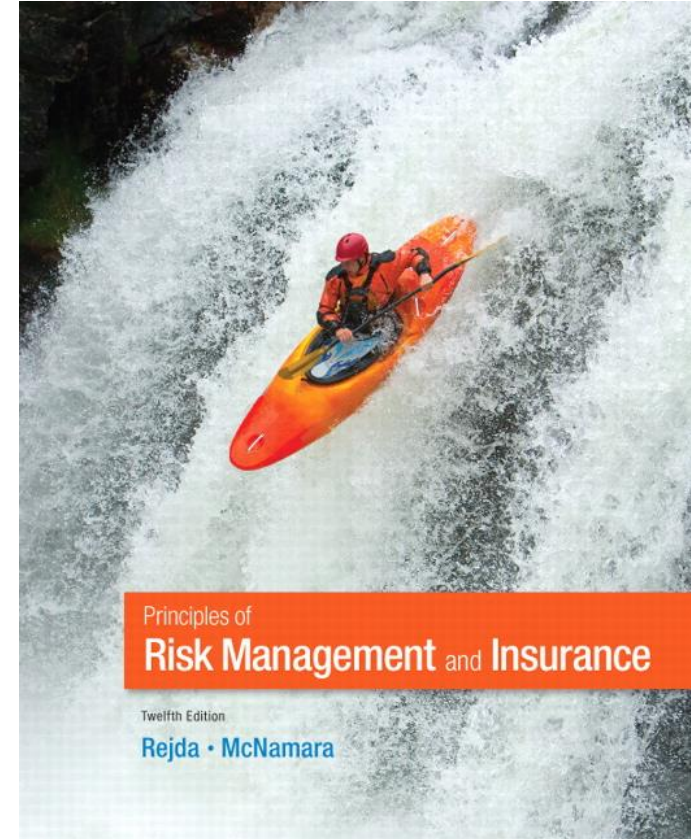
Bachelor of Economics, International Program

Thammasat University

Reading

George, E. Rejda, and Michael McNamara,
“Principal of Risk Management and Insurance”,
Pearson; 12th Edition (2013).

Chapter: 11-19



Life Insurance

Agenda

- Premature Death
- Amount of Life Insurance to Own
- Types of Life Insurance

Premature Death

- The death of a family head with outstanding unfulfilled financial obligations can cause serious financial problems for the surviving family members
- Life expectancy has increased significantly over the past century
- The purchase of life insurance is financially justified if the insured has earned income and others are dependent on those earnings for financial support

Amount of Life Insurance to Own

(1) The human life value approach

- The amount needed depends on the insured's human life value, which is the present value of the family's share of the deceased breadwinner's future earnings
- To calculate:
 - Estimate the individual's average annual earnings over his or her productive lifetime
 - **Deduct** taxes, insurance premiums and self-maintenance costs
 - Using a reasonable discount rate, determine the present value of the family's share of earnings for the number of years until retirement

Amount of Life Insurance to Own

(1) The human life value approach

Example: Assume that Richard, age 27, is married and has two children. He earns \$50,000 annually and plans to retire at age 67. (For the sake of simplicity, assume that his earnings remain constant.) Of this amount, \$20,000 is used for federal and state taxes, life and health insurance, and Richard's personal needs. The remaining \$30,000 is used to support his family. How much is Richard's human life value?

Amount of Life Insurance to Own

(2) The needs approach

- The amount needed depends on the financial needs that must be met if the family head should die
- Important family needs must consider:
 - An estate clearance fund: cash needed for burial expenses, uninsured medical bills, and taxes
 - Income needed for the readjustment period, a 1-2 year period in which the family adjusts to its new living standard
 - The dependency period is the period until the youngest child reaches age 18
 - Life income to the surviving spouse, including income during and after the blackout period. The blackout period refers to the period from the time that Social Security survivor benefits terminate to the time the benefits are resumed
 - Families should also consider special needs, e.g., funds for college education and emergencies

Amount of Life Insurance to Own

(2) The needs approach

<i>What You Will Need</i>	<i>Jennifer Smith</i>	<i>Your Needs</i>
Cash needs		
Funeral costs	\$ 15,000	\$ _____
Uninsured medical bills	5,000	_____
Installment debts	12,000	_____
Probate costs	3,000	_____
Federal estate taxes	0	_____
State inheritance taxes	0	_____
Total estate clearance fund	\$ 35,000	\$ _____
Income needs		
Readjustment period	24,000	_____
Dependency period	180,000	_____
Life income to surviving spouse	0	_____
Retirement income	0	_____
Total income needs	\$ 204,000	\$ _____
Special needs		
Mortgage redemption fund	200,000	_____
Emergency fund	50,000	_____
College education fund	150,000	_____
Total special needs	\$ 400,000	\$ _____
Total needs	\$ 639,000	\$ _____

<i>What You Have Today</i>	<i>Jennifer Smith</i>	<i>Your Assets</i>
Checking account and savings	\$ 10,000	\$ _____
Mutual funds and securities	35,000	_____
IRAs and Keogh plan	20,000	_____
Section 401 (k) plan and employer savings plan	40,000	_____
Private pension death benefit	0	_____
Current life insurance	60,000	_____
Other financial assets	0	_____
Total assets	\$ 165,000	\$ _____
Additional life insurance needed		
Total needs	\$ 639,000	\$ _____
Less total assets	165,000	_____
Additional life insurance needed	\$ 474,000	\$ _____

Amount of Life Insurance to Own

(3) The capital retention approach

- This approach preserves the capital needed to provide income to the family
 - Income-producing assets are preserved for the heirs
- To calculate:
 - Prepare a personal balance sheet
 - Determine the amount of income-producing capital
 - Determine the amount of additional capital needed to meet the family needs

Amount of Life Insurance to Own

(3) The capital retention approach

Example: Kevin, age 35, has a wife and two children, ages 3 and 5. Kevin earns \$60,000 annually. If he should die, he wants his family to receive \$40,000 annually.

Personal balance sheet

<i>Assets</i>	
House	\$225,000
Automobiles	20,000
Personal and household property	40,000
Securities and investments	60,000
Checking account	5,000
Individual and group life insurance	200,000
401(k) plan	70,000
Total	\$620,000
<i>Liabilities</i>	
Mortgage	\$100,000
Auto loan	10,000
Credit cards	5,000
Total	\$115,000

Income-producing capital

Total assets	\$620,000
Less:	
Mortgage payoff	\$100,000
Auto loan and credit card debts	15,000
Final expenses	15,000
Emergency fund	50,000
Educational fund	100,000
Non-income-producing assets (automobiles, personal and household property, value of home)	285,000
Total deductions	565,000
Capital now available for income	\$ 55,000

Additional capital needed

Income objective for family	\$ 40,000
Less:	
Income from capital now available (\$55,000 × 5%)	-2,750
Social Security survivor benefits	-13,000
Income shortage	\$ 24,250
Total new capital required (\$24,250/.05)	\$485,000

Types of Life Insurance

- Life insurance policies can be classified in two general categories:
 - Term insurance provide temporary protection
 - Cash-value life insurance has a savings component and builds cash values
- There are many variations of both types available today

Types of Life Insurance

(1) Term Life Insurance policy = protection is temporary

- Protection expires at the end of the policy period, unless renewed
- Most term policies are renewable for additional periods
 - Premiums increase at each renewal
- Most term policies are convertible, which means the policy can be exchanged for a cash-value policy without evidence of insurability
 - Under the attained-age method, the premium charged for the new policy is based on the insured's attained age at the time of conversion
 - Under the original-age method, the premium charged for the new policy is based on the insured's original age when the term insurance was first purchased

Types of Life Insurance

(1) Term Life Insurance policy: Uses and Limitations of Term Life Insurance

- Term insurance is appropriate when:
 - The amount of income that can be spent on life insurance is limited
 - The need for protection is temporary
 - The insured wants to guarantee **future insurability**
- However,
 - Term insurance premiums increase with age at an increasing rate and eventually reach prohibitive levels
 - Term insurance is inappropriate if you wish to save money for a specific need

Examples of Term Life Insurance Premiums

\$500,000 Term Life Insurance

Female Annual Premiums					
Age	10 Year	15 Year	20 Year	25 Year	30 Year
30	\$ 140	\$ 190	\$ 225	\$ 320	\$ 365
35	\$ 145	\$ 195	\$ 230	\$ 375	\$ 415
40	\$ 195	\$ 260	\$ 315	\$ 505	\$ 525
45	\$ 295	\$ 375	\$ 480	\$ 785	\$ 825
50	\$ 435	\$ 520	\$ 665	\$ 1,055	\$ 1,095
55	\$ 645	\$ 730	\$1,070	\$ 1,670	\$ 2,700
60	\$ 950	\$1,255	\$1,745	\$ 2,845	\$ 6,170
65	\$1,550	\$2,030	\$3,130	\$ 7,740	\$ 7,950
70	\$2,425	\$3,885	\$5,845	\$10,990	\$10,990

Male Annual Premiums					
Age	10 Year	15 Year	20 Year	25 Year	30 Year
30	\$ 140	\$ 195	\$ 230	\$ 320	\$ 415
35	\$ 145	\$ 195	\$ 255	\$ 375	\$ 465
40	\$ 200	\$ 260	\$ 340	\$ 560	\$ 680
45	\$ 295	\$ 455	\$ 585	\$ 855	\$ 1,110
50	\$ 450	\$ 690	\$ 955	\$ 1,390	\$ 1,990
55	\$ 685	\$1,025	\$1,470	\$ 2,765	\$ 4,705
60	\$1,110	\$1,710	\$2,535	\$ 5,735	\$ 7,645
65	\$1,920	\$3,360	\$4,970	\$10,045	\$10,045
70	\$4,440	\$5,555	\$9,540	\$13,140	\$13,140

SOURCE: Insure.com

Types of Life Insurance

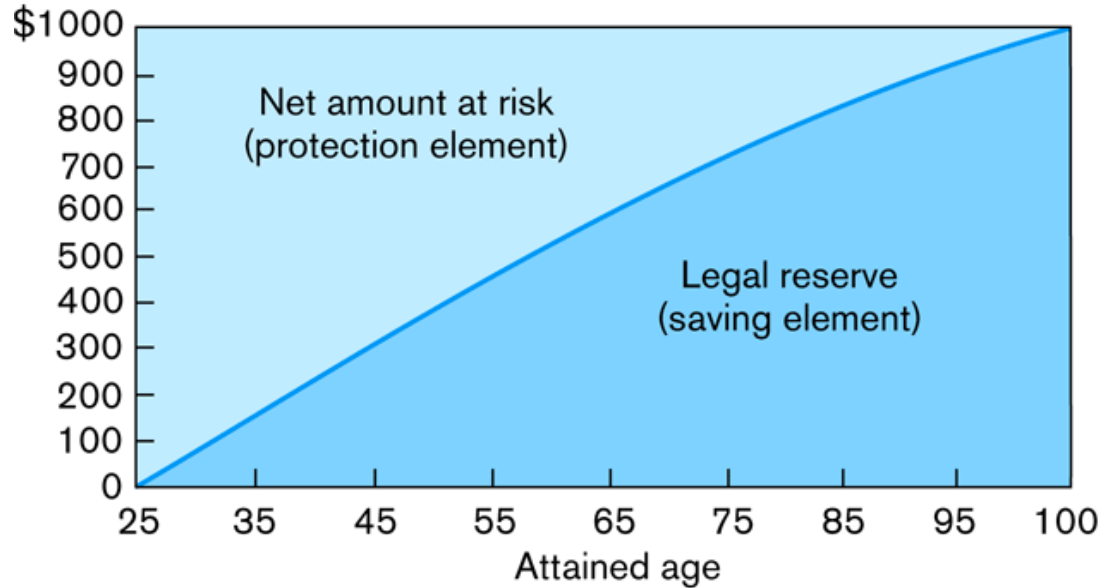
- Whole life insurance is a cash value policy that provides lifetime protection
 - A stated amount is paid to a designated beneficiary when the insured dies, regardless of when the death occurs
 - Types include:
 - Ordinary life
 - Limited-payment life
 - Endowment insurance
 - Variable life
 - Universal life
 - Variable universal life
 - Current assumption whole life
 - Indeterminate-premium whole life

Types of Life Insurance

(2) Ordinary life insurance is a level-premium policy that provides lifetime protection

- **Premiums are level** throughout the premium paying period
- The **excess premiums** paid during the early years are used to supplement the inadequate premiums paid during the later years of the policy. It is referred to as a **legal reserve**
- The insurer's legal reserve is a liability that must be offset by sufficient financial assets
- The **net amount at risk** is the difference between the legal reserve and the face amount of coverage

Relationship Between the Net Amount at Risk and Legal Reserve (1980 CSO Mortality Table)



- Another characteristic of ordinary life insurance policies is the accumulation of cash surrender values
- An ordinary life policy is appropriate when lifetime protection is needed

Types of Life Insurance

- The major limitation of ordinary life insurance is that some people are still **underinsured** after the policy is purchased
 - A term policy for the same premium would purchase substantially more protection
- Under a **limited-payment life insurance** policy, the insured has lifetime protection, and premiums are level, but they are paid only for a certain period
 - A single-premium whole life policy provides lifetime protection with a single premium
- **Endowment insurance** pays the face amount of insurance if the insured dies within a specified period. If the insured is still alive at the end of the period, the face amount is paid to the policyholder

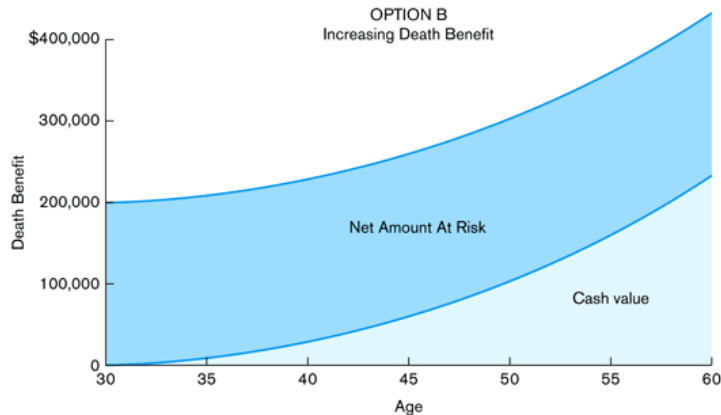
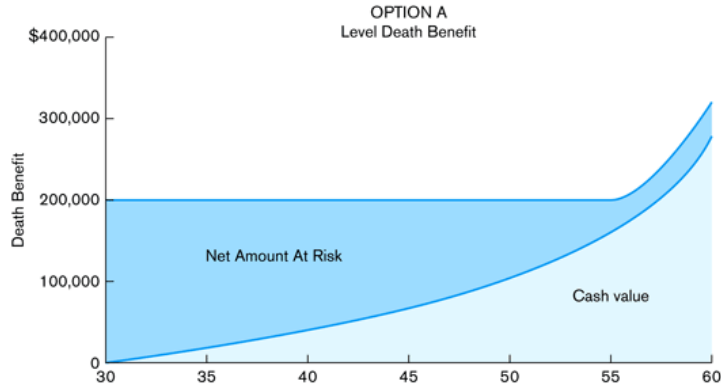
Types of Life Insurance

(3) Variable life insurance is a fixed-premium policy in which the death benefit and cash values **vary** according to the investment experience of a separate account maintained by the insurer

(4) Universal Life Insurance is a flexible premium policy that provides lifetime protection

- After the first premium, the policyholder decides the amount and frequency of payments
 - Most policies have a target premium, but the policyowner is ***not obligated*** to pay it
- The protection and savings components are unbundled
 - the policyholder's statement shows the premiums paid, death benefit, and value of the cash value account
 - It also shows the mortality charge and the interest credited to the cash value account

Exhibit: Universal life insurance



- There are two forms of universal life insurance:
 - Option A pays a level death benefit during the early years
 - The death benefit increases in later years to meet the corridor test required by the Internal Revenue Code
 - Option B provides for an increasing death benefit
 - The death benefit is equal to a constant net amount at risk plus the accumulated cash value

Example: Whole Life Insurance

Example: Assume that Jason, age 25, buys a universal life policy with a level death benefit of \$100,000. The annual planned premium is \$445.

Each premium is subject to a 5 percent premium expense charge. The policy has a monthly administrative charge of \$6. The policy provides for a maximum mortality charge, but the current mortality charge is only about two-thirds of the maximum rate. The policy has a guaranteed interest rate of 4.5 percent and a current interest rate of 5.5 percent that is not guaranteed.

Annual premium	\$445
Less:	
Premium expense charges	-22
Administrative charges	-72
Mortality cost	-113
	<u>\$238</u>
Interest at 5.5 percent	+13
Cash value account end of year	<u>\$251</u>

Example: \$100,000 Universal Life Policy, Level Death Benefit, Male Age 25, Nonsmoker, 5.5 Percent Assumed Interest

Guaranteed Values						Nonguaranteed Projected Values			Guaranteed Values						Nonguaranteed Projected Values		
Age	Year	Premium Outlay	Death Benefit	Cash Value	Cash Surrender Value	Death Benefit	Cash Value	Cash Surrender Value	Age	Year	Premium Outlay	Death Benefit	Cash Value	Cash Surrender Value	Death Benefit	Cash Value	Cash Surrender Value
26	1	\$445.00	\$100,000	\$222	\$0	\$100,000	\$251	\$0	60	35	445.00	100,000	4,370	4,370	100,000	17,483	17,483
27	2	445.00	100,000	454	0	100,000	516	0	61	36	445.00	100,000	3,562	3,562	100,000	18,111	18,111
28	3	445.00	100,000	698	140	100,000	796	238	62	37	445.00	100,000	2,567	2,567	100,000	18,723	18,723
29	4	445.00	100,000	953	395	100,000	1,092	534	63	38	445.00	100,000	1,362	1,362	100,000	19,298	19,298
30	5	445.00	100,000	1,219	661	100,000	1,392	834	64	39	445.00	0*	0	0	100,000	19,839	19,839
31	6	445.00	100,000	1,498	991	100,000	1,709	1,202	65	40	445.00				100,000	20,322	20,322
32	7	445.00	100,000	1,788	1,331	100,000	2,041	1,584									
33	8	445.00	100,000	2,079	1,673	100,000	2,393	1,987	66	41	445.00				100,000	20,819	20,819
34	9	445.00	100,000	2,383	2,028	100,000	2,764	2,409	67	42	445.00				100,000	21,233	21,233
35	10	445.00	100,000	2,689	2,385	100,000	3,143	2,839	68	43	445.00				100,000	21,570	21,570
									69	44	445.00				100,000	21,824	21,824
36	11	445.00	100,000	2,994	2,740	100,000	3,542	3,288	70	45	445.00				100,000	21,951	21,951
37	12	445.00	100,000	3,300	3,097	100,000	3,964	3,761	71	46	445.00				100,000	21,915	21,915
38	13	445.00	100,000	3,609	3,457	100,000	4,396	4,244	72	47	445.00				100,000	21,721	21,721
39	14	445.00	100,000	3,919	3,818	100,000	4,853	4,752	73	48	445.00				100,000	21,327	21,327
40	15	445.00	100,000	4,232	4,181	100,000	5,323	5,272	74	49	445.00				100,000	20,695	20,695
41	16	445.00	100,000	4,557	4,557	100,000	5,832	5,832	75	50	445.00				100,000	19,772	19,772
42	17	445.00	100,000	4,872	4,872	100,000	6,369	6,369									
43	18	445.00	100,000	5,190	5,190	100,000	6,924	6,924	76	51	445.00				100,000	18,478	18,478
44	19	445.00	100,000	5,495	5,495	100,000	7,509	7,509	77	52	445.00				100,000	16,780	16,780
45	20	445.00	100,000	5,790	5,790	100,000	8,114	8,114	78	53	445.00				100,000	14,574	14,574
									79	54	445.00				100,000	11,770	11,770
46	21	445.00	100,000	6,069	6,069	100,000	8,739	8,739	80	55	445.00				100,000	8,215	8,215
47	22	445.00	100,000	6,325	6,325	100,000	9,376	9,376	81	56	445.00				100,000	3,685	3,685
48	23	445.00	100,000	6,568	6,568	100,000	10,025	10,025	82	57	445.00				0*	0	0
49	24	445.00	100,000	6,785	6,785	100,000	10,687	10,687									
50	25	445.00	100,000	6,976	6,976	100,000	11,363	11,363									
51	26	445.00	100,000	7,133	7,133	100,000	12,052	12,052									
52	27	445.00	100,000	7,242	7,242	100,000	12,729	12,729									
53	28	445.00	100,000	7,280	7,280	100,000	13,390	13,390									
54	29	445.00	100,000	7,241	7,241	100,000	14,033	14,033									
55	30	445.00	100,000	7,106	7,106	100,000	14,668	14,668									
56	31	445.00	100,000	6,866	6,866	100,000	15,282	15,282									
57	32	445.00	100,000	6,498	6,498	100,000	15,873	15,873									
58	33	445.00	100,000	5,981	5,981	100,000	16,445	16,445									
59	34	445.00	100,000	5,282	5,282	100,000	16,989	16,989									

Note: This illustration assumes that the nonguaranteed projected values currently illustrated will continue unchanged for all years shown. This is not likely to occur, and actual results may be more or less favorable. Projected values are based on nonguaranteed elements that are subject to change. Guaranteed values are based on a guaranteed interest rate of 4.5 percent. Projected values are based on a current interest rate of 5.5 percent. Premiums are assumed to be paid at the beginning of the year. Benefits, cash values, and ages are shown at the end of the year.

*Coverage will terminate under current assumptions. Additional premiums would be required to continue coverage.

Types of Life Insurance

(4) Universal Life Insurance

- Universal life provides considerable flexibility
 - Cash withdrawals are permitted
 - Policies receive favorable federal income tax treatment
- Limitations of universal life policies include:
 - Insurers advertise misleading rates of return – Gross Rate vs. Net Rate
 - Cash-value and premium-payment projections based on higher interest rates are misleading and invalid
 - Insurers can increase the current mortality charge to recoup expenses
 - A policy may lapse because some policyowners do not have a firm commitment to pay premiums

Types of Life Insurance

(5) Variable universal life is an important variation of whole life insurance

- Most are sold as investments
- Similar to universal life except that:
 - The policy owner decides how the premiums are invested
 - The policy does not guarantee a minimum interest rate or minimum cash value
- These policies have relatively high expense charges, including front-end loads for sales commissions, back-end surrender charges, and investment management fees

Types of Life Insurance

(6) Current assumption whole life insurance is a *nonparticipating whole life policy* in which the cash values are based on the insurer's current mortality, investment, and expense experience

- An accumulation account reflects the cash value under the policy
- If the policy is surrendered, a surrender charge is deducted from the accumulation account
- A guaranteed interest rate and current interest rate are used to determine cash values
- A fixed death benefit and maximum premium level at the time of issue are stated in the policy
- Two forms of current assumption whole life products:
 - Low-premium products, with a low initial premium
 - High-premium products, with a vanishing premium provision

Comparison of Major Life Insurance Contracts

	<i>Term Insurance</i>	<i>Ordinary Life Insurance</i>	<i>Variable Life Insurance</i>	<i>Universal Life Insurance</i>	<i>Variable Universal Life Insurance</i>	<i>Current Assumption Whole Life Insurance</i>
Death benefit paid	Level or decreasing death benefit	Level death benefit	Guaranteed minimum death benefit plus increased amount from favorable investment returns	Either level or an increasing death benefit	Either level or an increasing death benefit	Level death benefit
Cash value	No cash value	Guaranteed cash values	Cash value depends on investment performance (not guaranteed)	Guaranteed minimum cash value plus excess interest credited to the account	Cash value depends on investment performance (not guaranteed)	Guaranteed minimum cash value plus excess interest credited
Premiums paid	Premiums increase at each renewal	Level premiums	Fixed-level premiums	Flexible premiums	Flexible premiums	Premiums paid may vary based on insurer experience; guaranteed maximum premium
Policy loans	No	Yes	Yes	Yes	Yes	Yes
Partial withdrawal of cash value	No	No	No	Yes	Yes	Yes
Surrender charge	No	No explicit charge stated (reflected in cash values)	Yes	Yes	Yes	Yes

Liability Risk and Insurance

Basis of Legal Liability

- A legal wrong is a violation of a person's legal rights, or a failure to perform a legal duty owed to a certain person or to society as a whole
- Legal wrongs include:
 - Crime
 - Breach of contract
 - Tort

Basis of Legal Liability

- A tort is a legal wrong for which the court allows a remedy in the form of money damages
- The person who is injured (plaintiff) by the action of another (tortfeasor) can sue for damages
- Torts fall into three categories:
 - Intentional, e.g., fraud, assault
 - Strict liability: liability is imposed regardless of negligence or fault
 - Negligence

When Buying Insurance

Homeowner's Insurance

- How much coverage is needed on your dwelling?
 - Replacement-cost requirement
- How much coverage is needed on your personal property?
 - Actual cash value (of personal property)
 - Contents replacement-cost protection

When Buying Insurance

Other Property and Liability Loss Exposures

- Comprehensive personal liability insurance
- Professional liability insurance
 - Professional liability insurance (or malpractice insurance)
- Umbrella (or excess) liability insurance
- Floater Policies

The Top 3 Financial Missteps in Managing Property and Liability Risk

People slip up in when they do the following:

1. Buy *only the legal minimum coverage* on the liability insurance on their car/property.
2. *Fail to keep good records* that could serve to document insured property losses.
3. *Pay high premiums* because they select low deductibles on property insurance.

Good Money Habits in Managing Property and Liability Risk

- *Always insure* your home and vehicle.
- Purchase insurance policies *with very high liability limits* to protect against the possibility of catastrophic losses.
- Verify that your *auto insurance policy covers rental car losses* so you can wisely ignore sales pressure to purchase such overpriced coverage.
- *Always comparison* shop for insurance locally as well as online.
- *Maintain a verifiable inventory* of all your insured property so that you can collect what is coming to you in the event of a loss.
- Once each year, *reassess what types of and how much* insurance coverage you need.

Question?