**Demand for Health Insurance**

Demand for Health Insurance is principally derived from the uncertainty or randomness with which illnesses befall individuals. Consequently, the derived demand for health insurance is to protect the individual from the financial risk created due to the illness and the consequent cost of care needed to return to health if possible. With a health insurance market, individual's best bet would be to self-insure through saving, or through a network of family and friends that would assist in times of need. Further, the latter includes a network that is capable of monitoring deviant behavior which the group may choose not to insure against. Further, the highly informal nature ensures that nothing is verifiable to the courts.

1. **Why do we dislike Risky Events?**
    In general, economic agents are typically risk averse, in the sense that if given a chance, they would rather do without a risky venture. This explains why agents often pay insurance companies more than their average loss they may confront to secure certainty.

    We know that the marginal utility from consumption of private goods, and medical goods, which gives rise to health, is positive. This in turn means that the marginal utility from income is also increasing, but increasing at a decreasing rate due to the fact of diminishing marginal utility. This means that if we were to plot the relationship with respect to income, we would get a increasing but concave curve. Another way of thinking about this is that given two income levels, the lower with certainty, and the higher without, the individual would pick the lower income with certainty.

2. **Risk Aversion**
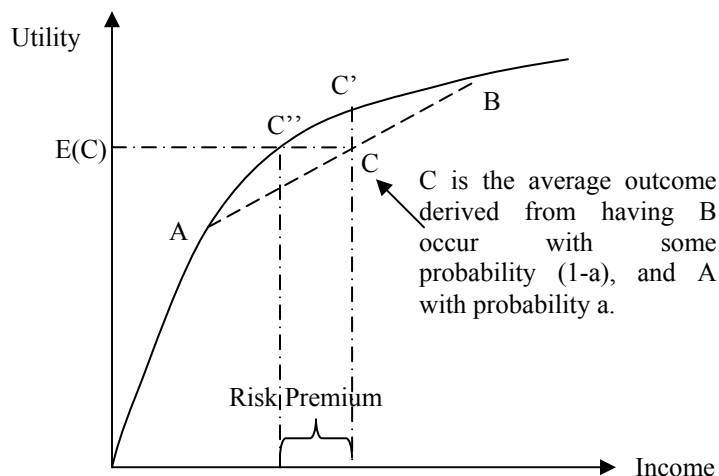
    The above diagram describes why the idea of diminishing marginal utility is synonymous with risk aversion. Consider a gamble where on the low side, you'd

get an income level of A, and a high winning the same as from B. The expected winning is what is typically termed a convex combination or weighted average of A and B, which I have arbitrarily denoted at point C. Note that although this level of expected income yields a higher income with uncertainty, it has the same level of utility as a situation where a lower level of income occurs with uncertainty. Comparing to another situation where the individual could get the same level of income with certainty at the same average income level, the individual would obviously prefer the certainty situation. The horizontal distance between C and C" is the risk premium, or the premium that an individual is willing to pay to avoid risky outcomes. (Note that we obtain this outcome without developing any new microeconomic theory.) The greater the risk aversion is, the greater the risk premium.

Choice of Insurance Policy

Let *C* be the coinsurance rate of an insurance policy, than (1 - *C*)% of a patient's medical bills is paid for by the insurance company. Although an insurance policy is far more complicated, this simplification would still allow us to glean some important insights.

As noted, the insurance contract obliges the insurer to pay $(1-C)p_m m$, for the *m* units of medical care that the patient obtains. However, as we have realized, with insurance coverage, the effective price of health care reduces, and consequently you have the problem of moral hazard. That is as *C* increases, *m* increases as well. However, this behavior is not necessarily a deviant behavior, but a rational response to a reduction in price. In order to understand the mechanics of deciding on the optimal level of coinsurance, we must understand what happens with its changes. Some of the key issues are the following;

1. The effects of insurance coverage on demand for health care feedbacks onto demand for insurance since as demand for health care increases, the marginal value falls.
2. The increased consumption leads to the patients consuming more health care (that gives a lower marginal value, than it costs to provide it. This means then that there is a fall in welfare for society as a whole. The problem is that health insurance breaks the link for the patients between the price of health care, and the costs of provision.
3. At the same time, necessarily, the provision of health insurance raises the welfare of the patients eliminating the financial risks. Then in deciding the optimal level of coinsurance, we have to balance the welfare gain versus the welfare loss in 2.
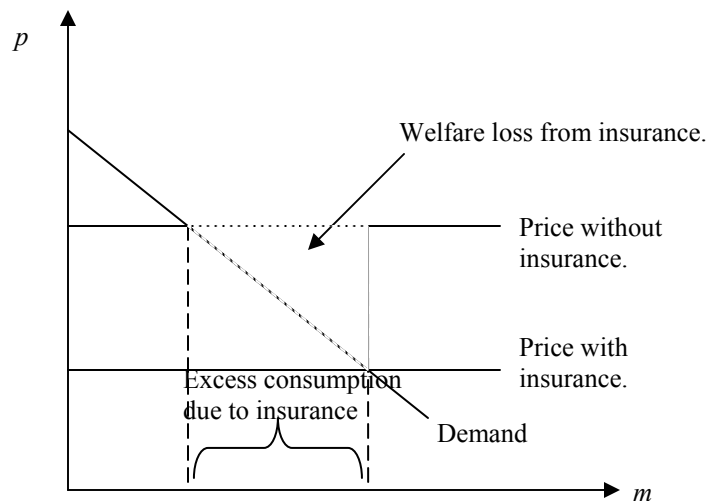
* Read the specific example on page 326-327 of your text for a more detailed expression of these welfare ideas.

Further, the expected "moral hazard" loss is in turn dependent on the elasticity of demand. Intuitively, if the elasticity of demand were small, then the change in pricing resulting from insurance purchased would mean that the welfare loss (due to moral hazard) would be small, as compared to the situation when the elasticity of demand is large. This then mean that the more price elastic is demand for medical services, the less desirable it is to insure against the risk due to the welfare loss involved.

This leads to two testable predictions
1. The greater the variance or financial risk involved the greater the demand for insurance.
2. The greater the elasticity of demand, the lower the demand for insurance.

It turns out that all of them hold empirical true, for example, most individuals tended to purchase insurance against hospitalization which is the type of care that creates the greatest financial risk. On the other hand, dental care has the lowest incidence of health insurance on account of the high degree of price elasticity.

It should be noted that the price of insurance as we had noted before is not the premium paid by the consumers, but it's the markup above the expected benefit. To use the notation we had above, the insurance premium is

$$R = (1+L)(1-C)p_m m$$

where L is the loading fee which insurance firms charges above the expected benefits so as to cover the cost of risk bearing, and administration fees. Then the larger the loading fees, the larger the coinsurance rates, C, that the consumer would select. If the insurers were to include deductibles into the insurance contracts, then the larger the loading fees,

the larger would the consumer pick for the deductible so as to reduce the cost of insurance. This then reveals that the relationship between the demand for insurance in the form of coinsurance, and deductibles is just as a typical demand, i.e. is negative with respect to the loading fee/price of insurance.

The Supply of Insurance
The insurance firm performs essentially two tasks:
1. The processing of claims on insurance contracts. In that sense, the output of a insurance firm are these payments, and the equipment it needs to perform these duties such as Actuaries, Insurance Agents, Clerical Staff, etc (And including equipment such as computers, and office space). The administrative costs that are to be covered by the loading fees are meant to cover these costs at the least. Just as there are several types of Hospitals, there are several types of insurance firms, a. For Profit (Prudential, Manulife etc) and Not-for-Profit (Blue Cross and Blue Shield). The key difference between the two are that;
    a. Not-for-Profit (Blue Plan) firms are exempt from taxation.
    b. Exemption from many State regulations such as minimum cash reserves regulations.

    The principal reason why the Not-for-Profit Insurance firms has not flourished principally is because,
    c. Organized on a State or Sub-State level that prevents them from enjoying or reaping economies of scale (especially where risks within a state are rather correlated).
    d. They also tended to insure only against low risk events.

    The above two features then prevent the Blue Plan firms from capturing the market.
2. Bearing and spreading of risk. This is reliant on the idea that if risks borne individually are uncorrelated (risk of earthquakes along the inhabitants of the San Andreas Fault is a correlated risk. One gets it, all gets it.) It should be noted that although with insurance, average risks falls with pooling done by Insurance firms, as a society, the transfer of individual risk to an insurance firm does not reduce the risk in/to our society.

**Is the Insurance Market Stable? : The Question of Self-Selection**
The basic problem remains in insurance; that causes us to wonder about the stability of the market. That is the inherent problem that the consumer know more about their own risk of illness than do the insurance firms; i.e. the problem of asymmetric information. We have already argued that this may lead to from of *adverse selection* where individuals with poor risk end up signing up for the policies.

A Simple Model
A way to "force" individuals to identify their true tendency towards usage is to offer set plans. Then their selection of the plans would indicate their "type" to the insurance firm. If such plans could be found, insurance firms would be able to avoid the problem of

adverse selection. However, on the down side, the insurance firm in doing so denies the healthy individuals from buying an insurance plan they would prefer.

We can think of the budget constraint for an individual choosing between the optimal level of private consumption good and health insurance as a negatively sloped concave shaped curve since it is more costly in terms of consumption good lost as an individual increase his purchase of health insurance.
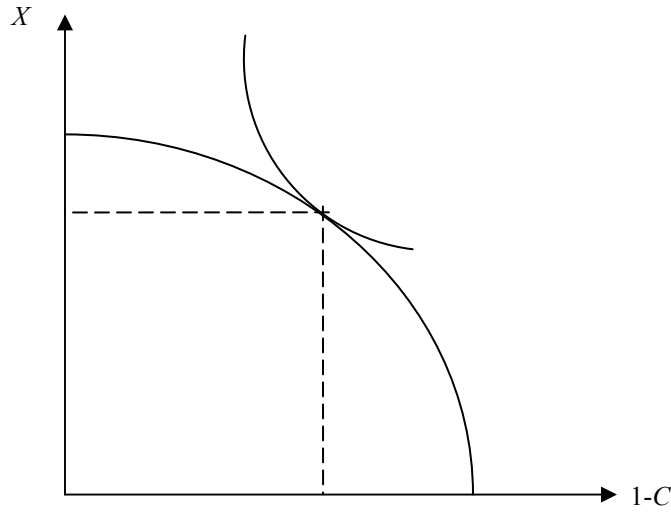

Then equilibrium occurs at the point where the individual's utility is tangent to her budget constraint. In a perfect world where the insurance company is aware of everyone's proclivities, they would know that the budget constraint of a healthy individual has a larger budget set than that of an individual with ill health since in such a perfect world, the insurer knows that the probability of ill health is lower for the healthy individual, and consequently the price charged is lower.
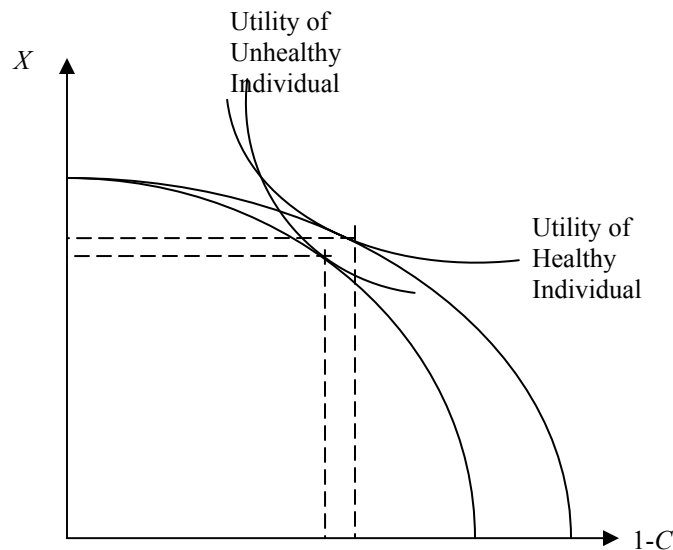
This then implies that in equilibrium, the consumption of the healthy individual would also be higher in all respects.

However, reality does not commiserate with that analogy, but rather is parallel to one of asymmetric information. If both the above insurance schemes were offered to everyone under that scenario, if would only be rational that the ill health individual try to pass off as someone healthy, and consume more of insurance and consumption goods. This then leads to a higher expected payout for the insurance firm.

To force the high risk individuals to reveal themselves then the insurance firm deny the portion of the insurance that would make the healthy individuals better off to everyone, thereby forcing the high risk individuals to reveal themselves.
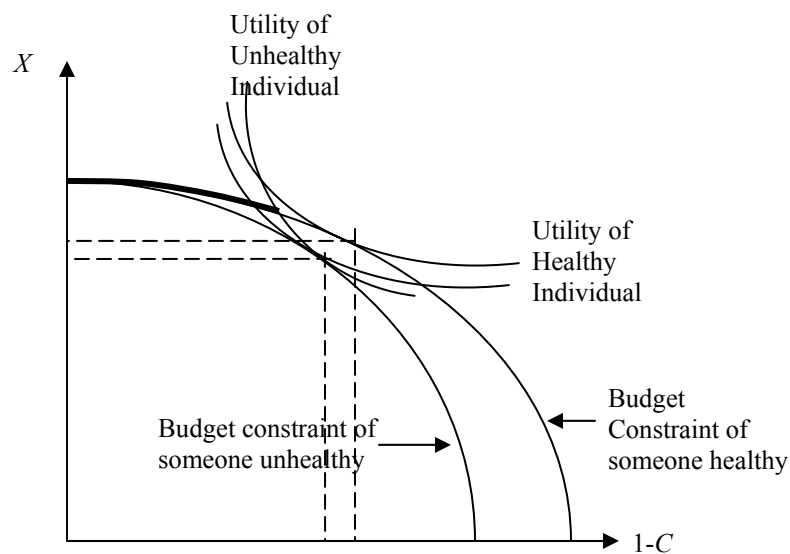
This is reflected in the above diagram as the bold line. In that scenario, the high risk individual is ambivalent between the policy offered to herself, and that offer to someone healthier. This however reduces the set of insurance that a healthy individual could purchase, and make her worse off. This is known as a Separating Equilibrium.

Other Possible Pareto Improvement Schemes
An alternative solution to the problem of asymmetric information is to force insurance companies to offer the same rates to everyone in the community, called "***community rating***". Such a scheme causes everyone's budget constraint to be the same, and creates a budget constraint that is between the two above. The exact location of which is dependent on whether it is individuals with ill health, or healthy individuals that dominate. The greater the proportion of healthy individuals, the greater the proximity of the "community rated" budget constraint is to the healthy individual's. This is a pareto improving scheme since everyone is made better off compared to the separating equilibrium, but it also means that the healthy are paying for the purchase of insurance for the unhealthy.

Yet another possibility is through insurance firms selling insurance policies directly to employers since the reason for an individual joining a particular firm are for purposes (such as high pay, matching of skills desired, etc.) other than to purchase insurance, thereby averting the consideration of self-selection/adverse selection. Virtually, all employers have a "community rating" scheme within a firm. However, if within a society, the problem rests in coverage of long term care, such insurance plans would fail to solve the problem for individuals dominant in that sub-market, the elderly. In summary, group insurance 1. provides for economies of scale (since it eliminates the "sale of insurance" individually, negates the collection of individual health histories, etc.), and 2. avoids adverse selection.

Empirical Estimates of Demand for Insurance

The estimation of demand for insurance has two approaches:
1. By examining choices made by individuals and groups, since the differences in income allow estimation of how demand varies across income groups.
2. By examining aggregated data over time, and estimating how total insurance premiums respond to changes in income, loading fees, etc.

The summary of these finding are as follows:
1. Income elasticities has been found to be positive, and generally small (less than 1) when using individual level data. Using aggregate data, the findings however yield measures between 1 and 2 (closer to 2).
2. Price elasticities found using both types of data has yielded values between -1 to -2. However, studies using differences in the marginal tax across households to determine the effect of price on insurance has yielded much smaller estimates of -0.2.

General Considerations for a National Health Policy
1. Should such a system have universal coverage, and if so, how should it be achieved?
2. How would such a coverage policy be financed?
3. What should be the scope and cost sharing scheme in such a policy?
4. How would expenditure be controlled?
5. How would new technologies be introduced?
6. How would quality of care be maintained?

Issues regarding Universal Coverage

Why should we have universal coverage?
1. Medical Care is a "merit good", whose consumption by fellow citizens yield increases in ones utility. If true, this would make the societal demand far larger than individual private demand for medical good and service.
2. Individuals without insurance free ride of individuals who do have through their inability to acquire it. It is claimed that eliminating private insurance and instituting universal insurance eliminates this problem. **Do you think universal insurance really eliminates free riding? Consider universal unemployment insurance; does it eliminate free riding?**
3. Market failures due to asymmetry in information. Universal insurance such as "community rating" eliminates this problem by providing a solution that is pareto welfare enhancing. **How can we really think about or measure the loss of wealth for individuals of good health really?**

How can Universal Insurance be achieved?
1. Government provision of Health Insurance (Canada), or Health Care provision (United Kingdom).
2. Legislate mandatory purchase of health insurance, and subsidizing needy individuals and households in this endeavor (Germany and Japan)
3. Legislate mandatory purchase of group health insurance by employers (as proposed in the United States).

How to Finance Universal Health Insurance?
1. Taxation
2. Subsidies

   However these financing schemes necessarily have a redistributive effect dependent on who bears the greatest burden in the tax increase (read 553-559 of your text). Further, insofar as the taxes are on either individuals and/or firms, this means that there will be distortions created in individual choices. Consider an increase in taxes to finance universal insurance. We know that labor supply would fall if the income effect dominates the substitution effect, thereby reducing an economies production, and hampering the society's ability to sustain the provision.

Features of the Canadian Health Care System and its Consequences
Some Stylized Facts
1. Prior to 1971, Canada spent 7.4% if its GNP on healthcare compared with 7.6 in the United States.
2. Prior to 1971, the most common found of insurance in Canada are group insurance provided for by employers, with some government coverage. Doctors and Hospitals operated as private entities then, and where Doctor's fees are determined by the market, while that of the hospital was through controls and bargaining with the government.
3. In 1971 Canada instituted a universal Medicare System, which then caused a deviation between the two countries. Due to a strong and comprehensive control on spending growth, and its share of GNP dedicated to healthcare, Canada today only dedicates 10% of its GNP on healthcare, compared to 15% in the United States.
4. Financed by Value-Added-Tax (VAT) (neutral in redistributive effect) and Income taxes (progressive in redistributive effect).
5. Scope of benefits includes almost all standard services and charges for care are small.
6. Hospitals are paid negotiated budgets, and doctors are paid on the basis of fees negotiated between the government and medical societies.
7. Capacity controls exists that constrains the provision of care, limits cost increases through time, and also provides for filters on the introduction of new technologies.

How does it work?
1. Insurance is Universal in Canada today, and the plan is organized around its provinces (i.e. provided for by the Provincial governments), where each province has its own Medicare system. Although there are idiosyncrasies across provinces, common ground is imposed by the federal government on the provinces. With this private insurance has disappeared.
2. Hospitals came under the authority of the provincial government, with a budget cap established by the government for all hospitals. Within that cap, every provincial hospital receives a direct budget.
3. Physicians receive a fee according to a negotiated schedule within the province, but continue to function as independent firms.

What is it like today?
1. Health care cost growth in Canada is this an entirely political decision, with no role for the markets to set prices. Since 1971 when US saw an increase of proportion of GNP received by physicians by 40%, Canada saw only 10%.
2. Hospital spending has also increased at a lower rate than in the US.
3. Admission rates in Canada and US has been the same, which means that the cost cuts does not seem to have dampened quantity.
4. US length of stay in hospital is lower than that of Canada's.
5. Doctor office visits have remained the same in both countries.

6. Because funding comes from the Government, the rate at which the Canadian system has adopted technology has been notably slower than in the US. This hence explains a part of the cost differential between the two countries.

7. A substantial proportion of consumers in Canada also seek health treatments across the border to bypass the waiting period associated with the Canadian system. This is evident from the thriving health markets catering to Canadian demand in cities that are close to the Canada-US border.