CHAPTER 2

ECONOMICS OF LIFE INSURANCE- A THEORETICAL CROSS SECTION

The theoretical cross-section of life insurance economics detailed in this chapter is an earnest attempt to dissect the theoretical underpinnings in a systematic manner based on fundamental economic theories.

2.1. Introduction

Insurance is an offshoot of the constant search for economic security needed by the human race. “Security can be thought of as peace of mind and freedom from uncertainty. Insecurity implies feeling of doubt, fear and apprehension. Security is measured by the probability of man’s needs will be satisfied” (Huebner and Black, 1982: 3).

Risks are the elements that make onslaught upon the quest for security. Economists, statisticians, decision theorists and insurance theorists have long discussed the concepts of risk and uncertainty in an attempt to construct a definition of risk that is useful for analysis in each field of investigation. Insurance is still in its infancy as a body of theory. As a result, we find contradictory definitions of risk throughout the literature.

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6 Risk and uncertainty-both concepts denote a certain degree of indeterminacy or randomness. Events as such are not indeterminate - they are governed by an intelligent ordering. Risk is a state of real world and uncertainty is a state of mind. “Uncertainty is simply a psychological reaction to the absence of knowledge about the outcome” (Vaughan and Vaughan, 2003:3).
“Risk is defined as uncertainty concerning the occurrence of a loss” (Rejda, 2004:3). When we take a risk, we are betting on an outcome that will result from a decision we have made, though we do not know for certain what the outcome will be (Bernstein, 1996).

“Risk is a condition in which there is a possibility of an adverse deviation from a desired outcome that is expected or hoped for” (Vaughan and Vaughan, 2003: 3). Even though there are different types of risks, only ‘pure risks’ (with the outcome of loss or no loss) are normally insurable. The three major branches of pure risks are personal, property and liability (damage to someone else). The search for product devices to shield the pure risk paved the way for the birth of Life and Non-life (General) insurances. While the first designed to protect from personal risk, the latter for covering property and liability risk. Thus, ‘insurance contract’ is one of the most important inventions of human mind in modern times. (Patterson, 1957)

2.2 Life Insurance-Meaning

Definitions can be inconsistent among countries and even within a single market. An attempt is placed here to define life insurance as a branch of private insurance7. Life insurance can be defined from two perspectives-economic and legal. Originally, the concept of ‘Life insurance’ was considered as the protection to cover the risk of premature death only. Later the concept was stretched to envelope major life related risks, which leads to the ‘economic death’ of a person. By taking into account of these changes, from an economic perspective, ‘Life insurance is a financial intermediation

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7 Governments provide some kind of insurance called Social insurance. Social insurance focuses on social equity while private insurance on individual equity. Participation in Social insurance schemes is compulsory and financing relies on government-mandated premiums.
function by which individuals exposed to specified life related risks such as mortality, disability, morbidity\(^8\) and longevity (living too long), contribute to a pool from which covered events suffered by participating individuals are paid.’ Under this view, individuals purchase the right to collect from the pool if the contingency occurs. It is a contingent claim contract on the pools’ assets (Black and Skipper, 2000).

From a Legal perspective, life insurance is an agreement that, the policy or contract by which one party - the policy owner pays a stipulated consideration called the ‘premium’ to the other party called the ‘insurer’, in return for which the insurer agrees to pay a defined amount of money or service if a covered event occurs during the policy term. The person whose life is the object is referred to as the ‘insured’ or ‘insuree’. In most instances the insured is also the policy owner - the person who exercises contractual rights under the policy - but not invariably so\(^9\). Under life insurance, the person to whom the payment is made on the insured’s death is the ‘beneficiary’.

From the social point of view, life insurance is an economic device for reducing and eliminating risk through the process of combining a sufficient number of homogeneous exposures into a group to make the losses predictable for the group as a whole.

### 2.3 Life insurance product

The term ‘product’ has been referred to anything produced. The economist Adam Smith first used the economic and commercial meaning of product i.e. the product

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\(^8\) In some countries such as Canada, U.S and several Asian countries, life insurance includes both mortality and morbidity related insurance. In other countries including throughout Europe, morbidity based insurance (Health insurance) typically falls within the Non-life branch. In India, it was under the non-life (General) branch, but recently life insurers are also permitted since the reforms.

\(^9\) One person can insure another’s life under the condition of legally admitted ‘insurable interest’ in that life.
should have an economic value. In Marketing, a ‘product’ is anything that can be offered to a market that might satisfy a want or need (Kotler, 2006). Therefore, Life insurance contract or policy is a product, which is non-physical in nature i.e. intangible product. In the literature, non-physical goods are distinguished from other goods by their unique characteristics, which are intangibility, inseparability, perishability and heterogeneity (Harrison, 2000).

The number of different types of life insurance contracts in the market is large. The effect of this proliferation is confusion and frustration for the buyers (Belth, 1985). Literally thousands of different life insurance policies or products exist. Luckily, all life insurance policies are one of the two generic types- Term and Cash value life insurance. **Pure Term insurance** pays the policy face amount if the insured dies during the policy term, which is usually a specified number of years or to a specified age. The premium is purely based on risk component only. There is no survival benefit.

In **Cash Value policies** the premium bears both risk and saving components. Alternatively, these policies combine pure term insurance and internal savings-called the cash-value-within the same contract. Thousands of variations of cash value policies exist, consistent with insurers’ product differentiation strategies to gain market power. Virtually every cash value policy sold falls into one of three categories, even if the insurer does not label the policy as such. **a) Universal Life Policies** are flexible-premium, adjustable death benefit contracts whose cash values and durations depend on the premiums paid into them. An increasingly popular type of Universal life insurance is **Variable Universal Life or Unit linked Insurance Policy (ULIP)**, which combines the flexibility and transparency of a Universal life policy with the investment flexibility and a risk of a mutual fund. In ULIPs, the main parking area of investment is in capital
market and the investment risk is borne by the policyholder. b) **Whole Life Insurance** pays the policy face amount whenever the insured dies and therefore, intended to remain in effect for the insured’s (whole) lifetime. c) **Endowment Insurance** makes two mutually exclusive promises to pay the face amount if the insured (i) dies during the policy period or (ii) survives to the end of the period.

Apart from ‘mortality’, there are other life related risks, which may lead to ‘economic death’ such as longevity and morbidity. To address these, the industry has coined annuity and health insurance products. So pure life insurance cover (mortality) is only an attribute among many, regarding a life insurance product. An annuity/pension plan is the systematic liquidation of fund. Most annuities sold by life insurers are also accumulation instruments, but this is the mechanism for developing the fund to be liquidated. The purpose of most annuity products is to protect against the possibility of outliving one’s income—that is just opposite of pure life insurance. Morbidity based or **Health insurance** products are the part of non-life (General) insurance industry in a large number of countries. However, in some others (in India since the reforms) it comes under both branches of life and non-life. There is a third category of countries, where morbidity related products are coming under the Life insurance industry alone.

**2.4. Basic principles of product formation**

The core technology of the financial market place is given by the use and application of a set of basic principles to process information.

**2.4.1 Economic principle - Risk pooling or Principle of mutuality**

Pooling of risks is the core principle of insurance. Risk can be transferred from an individual to a group and can be redistributed in an equitable basis. From the standpoint
of the insurer, this mechanism involves application of the principle of mutuality or risk pooling. The essence of this principle lies in the creation of a huge common (pooled) fund into which the contributions of small sums (premium) received from numerous individuals are poured. Drawings from the fund are used to pay for individual claims. From the individuals standpoint its essence consists in the transfer of risk. The act of pooling of homogeneous exposures is most advantageous when the losses are uncorrelated. Simply, the risk suffered by a few is spread over a large number of persons who face the same risk.

The process of fixing the contribution or premium is done through what are called actuarial or mathematical principles i.e. the theory of probability and dual application of law of large numbers.

2.4.2 Mathematical principles

It is the body of knowledge, which is concerned with measuring the likelihood of an event and making predictions based on this. The major information pool used in life insurance industry for probability calculation is mortality table. Product formation is impossible under the inapplicability of probability theory. The law of Large numbers tells that the greater the number of trials examined, the better will be our estimate of the probability. The requirement of a large number has dual application.

a. To estimate the underlying probability accurately, the insurance company must have a sufficiently large sample.

b. Once the estimate of the probability has been made, it must be applied to a sufficiently large number of exposure units to permit the underlying probability to work itself out.
“For the insurance company, risk is measured by the potential deviation of actual from predicted results and the accuracy of prediction is enhanced when the predictions are based on and are applied to a large number of exposure units” (Vaughan and Vaughan, 2003:3).

2.4.3 Legal principles

“The education of those engaged in the important functions of insurance business calls for an understanding of essentials of insurance law” (Patterson, 1957:103). Some of the major legal principles embedded with life insurance contracts are the following.

2.4.3.1 Utmost Good Faith Principle

An insurance contract is based on the principle of utmost good faith. “A higher degree of honesty is imposed on both parties of an insurance contract than is imposed on parties to other contracts” (Rejda, 2004:85). Under the contract of insurance, the insured is duty bound to disclose all material facts relating to the risk to be covered. Utmost good faith is a positive voluntary duty to disclose all material facts accurately and fully related to the risk being proposed whether requested or not.

2.4.3.2 Principle of Insurable interest.

In life insurance, the insured must have ‘insurable interest’ in the life assured. Without insurable interest, the contract of insurance is void. In case of life insurance, insurable interest must be present at the time when the insurance is affected. It is not necessary that the assured should have insurable interest at the time of maturity also.
2.5 Market Forces

As with all other products and services that are bought sold or traded, life insurance is also subject to the laws of supply and demand. It is reasonable to assume that the higher the price the less will be demanded and the more will be supplied and vice versa (Babbel, 1985).

2.5.1 The Demand

The concept of ‘demand’ in the strict theoretical sense may not be applicable to the purchase of many financial products like life insurance. The reach of the product/service and the payment may stretch to long period, which paint ‘demand for life insurance’ as a continuous process. Therefore, entry into a life insurance contract with a life insurer may treat as ‘demand’.

2.5.1.1 Demand Motives

The theoretically admitted motives behind the demand of life insurance are the following.

a) Protection of Human Life Value (HLV)

Economists since Adam Smith have recognised that people are important elements of Wealth of a Nation. The concept of ‘labour theory of value’ highlights the fact that labour is the sole source and standard of value. Economic research related to investment in human capital has gained substantial recognition. Indeed the 1992 Nobel Memorial Prize for Economics was awarded to Gary.S.Becker for his pioneering research on ‘human capital’ (‘Investment in Human Capital-A Theoretical analysis’, 1962).
The increased productivity arising from investment in human capital is so significant that human resource management has come to the force as a major management in every type of institution in our society. Clearly, the most distinctive feature of our economic system is the growth in human capital (Drucker, 1969). Investment in human capital has become one of the most cogent explanations for the difference in rates of economic growth experienced from country to country (Blaug, 1970).

Estimating the value of human capital is complicated by the necessity to distinguish between expenditures of consumption and investment. Consumption constitutes investment in human capital. One method for estimating human capital relies on its yield rather than its cost. The market place tends to reflect investment in personal development through wages and salaries. The resulting increase in earnings is viewed as the yield on the investment. The value of the investment can be determined by discounting the potential future earnings at a yield just as the physical capital goods can be determined by discounting its income stream. As Hofstede (1995) stated, the major function of Life insurance is to protect against financial loss from the loss of human life.

The concept of HLV is one segment of the General theory of human capital. Although this has been an area of enquiry for more than four centuries, the interrelationship between human capital and life insurance has been acknowledged only recently. A considerable body of literature has been developed in this area. In contrast to human

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10 William Petty (1623-1687) was the first economist credited with using the concept of the economic value of a man. Fifty years after, another economist Richard Cantillon (1680-1734) made a contribution to the concept of human capital. This followed Adam Smith (1732-1790), Johann von Thunen (1783-1850), John Stuart Mill (1806-1873) and others. In 1853, William Farr an economist and statistician derived the first set of equations used to describe human life value. In so doing, he laid the foundation of the theory as we know today. See Hofflander, ‘The Human Life Value: An Historical Perspective.’; The journal of Risk and Insurance Vol33, Sept 1966, pp 381-391.
capital, which is the production potential of an individual, human life value is a measure of the actual future earnings or values of services of an individual; that is the capitalized value of an individual’s future net earnings after subtracting self maintenance cost. It is the measure of human life as an asset based on individual’s actual expected future earnings. From the view of one’s dependents, an individual’s human life value is the measure of the value of benefits that the dependents can expect from their breadwinner or supporter. In 1924, S.S Huebner of Wharton School of Finance and Commerce, University of Pennsylvania, U.S.A proposed the human life value concept as a philosophical framework for the analysis of basic economic risks that individual faces, “Were it not for human life values, there would be no property values at all.” He suggested that the human life value concept is not just a statement that a human life has an economic value but implies that the five aspects as follows: i) Appraisal and capitalization of human life value ii) Recognition of family as an economic unit organized around human life values iii) Human life value and its protection as the main link between present generation and the succeeding generation iv) Recognition of human life value as creator of property values v) Application of scientific principles of business management to life values (Huebner and Black, 1982). The human life value is subject to loss through, premature death, incapacity, retirement and unemployment. Any event affecting an individual’s earning capacity has a corresponding impact on his or her human life value.

Let \( Y_i \) (i = 1, 2, 3, - - n) represent the expected earnings of an individual, during the period of his earnings and \( C_i \) represents expected personal expenditure. The net earnings of expected for each future respective year is then \( (Y_i - C_i) \). Assuming ‘n’ number of years and a rate of discount of \( i \) (interest rate), we get
The family is an economic unit organized around the human life values of its members. The protection of this human life value should act as the fundamental motive behind the demand for life insurance.

However, as Mc Gill (1967:18) puts it, “The HLV concept provides a normative economic approach to life and health insurance planning. It suggests how one ought to behave. As a positive economic concept, however, it could lead to results that are inconsistent with actual economic behaviour. The HLV concept provides an economic rationale for the purchase of life insurance but not an economic explanation for its purchase.”

b) Need based motive or Needs Approach

The Needs Approach is concerned with meeting needs that arise when one dies, especially when such death is untimely. The method involves first quantifying the needs and the funding requirements that arise as a result and subtracting from the gap between needs and available assets. These needs are again categorized into permanent and temporary. Like HLV, this motive is also concerned with why life insurance should be purchased rather than why it is purchased.

c) Risk Aversion motive

The level of risk aversion indicates the propensity of an individual to avoid risk. The problem of decision making under uncertainty has been well recognized in the literature. One of the major components has been a model known as ‘Expected Utility Hypothesis.’ It postulates that the value of a random distribution of possible outcomes
of a risk event (like death) can be represented in terms of a single number -its expected value i.e. the fair actuarial value. The extra amount above this constitutes the loading element. It includes a margin of expenses; a reserve for adverse experiences other than assumed a reward for bearing the risk. Without this loading provision, life insurers could neither survive nor want to be in such a business.

Various writers have acknowledged the need for loading in the insurance contract. As Adam Smith wrote in his magnum opus, ‘Wealth of Nations’(1776), premium must be sufficient to compensate the common losses to pay the expenses of management and to afford such a profit as might have been drawn from an equal capital employed in any common trade. Why should a consumer pay this loading element and how much would be prepared to pay? The answer is given by Bernoulli’s famous solution to the so-called ‘St.Petersburg Paradox’, the paradox is named from Daniel Bernoulli’s presentation of the problem and his solution published in 1738 in the commentaries of the Imperial Academy of Sciences of St.Petersburg. Whenever people face risky situations, they prefer to maximize expected marginal utility rather than expected monetary value.

An individual with risk averse intention is prepared to bear the extra loading because the burden (marginal disutility) one shoulders as a result is less than one’s marginal disutility of loss, which may arise due to uncovered exposure to risk. In short, risk aversion is the behavioral foundation of life insurance. The inverse relationship of risk aversion and wealth was well discussed by Mossin (1968) and Fortune (1973).

*d) Bequest Motive*

This motive refers to the individual’s desire to leave an estate behind to the dependants. It is relevant to make a distinction between two types of bequests. The first kind
consists of accumulated wealth (saving) that is naturally bequeathed to heirs after one’s demise. As Modigilani and Brumberg (1954) put, this is the result of a ‘precautionary’ response to uncertainty as regards the time of death. In order to control the risk of outliving their resources, risk averse consumers would pursue a strategy that with high probability, would result in their leaving behind some positive bequest.

The second type of bequest is in the form of a specific kind of estate, which becomes real only after one’s demise. Life insurance fits into this category. According to Belth (1985), the life insurance purchase depends on how much and how long the needs of beneficiaries are.

Yaari (1965) coined a model with uncertain lifetime, that a consumer purchased life insurance to increase his expected lifetime utility. The utility function is given by

\[ V(c) = \int \alpha(t) g[c(t)] dt \]

Where, \( \alpha \) was the subjective discount function with respect to time \( t \) and \( g \), the utility associated with consumption \( c \) at every moment of time. The introduction of insurance in the model is seen equivalent to the removal of uncertainty from the allocation problem. He analysed that one could not consume as much as one wants or accumulate a debt as that would mean leaving a negative legacy behind. The presence of bequest thus imposes a natural penalty on consumption and accumulation of debt. Life insurance serves as a means to overcome this disability.

Pissarides (1980) which states that life insurance was theoretically capable of absorbing all fluctuations in lifetime income modified Yaari’s model. In the individual’s income allocation without life insurance, the bequest arising from death was equal to the wealth he happened to have in hand when he died. Effective consumption pattern could be achieved through the appropriate use of life insurance as could be achieved if the time
of death were known with uncertainty. Without life insurance, the lifetime consumption pattern would be different and involve less enjoyment (utility).

Hakansson (1969) presented a model having individual’s lifetime as a random variable with a known probability distribution, and a utility function representing bequest motive. The optimal amount of insurance in the model was seen to depict on the present value of non-capital income stream in any period and on the bequest motive.

The standard model of the demand for life insurance, (Fischer, 1973) assumes that the breadwinner maximizes his expected utility over an uncertain lifetime by choosing the level of consumption and life insurance. The demand for life insurance thus obtained is dictated by the bequest function. Shorrocks (1979) pointed out that such a model is unsatisfactory because, among other things the purchase of insurance is independent of the number or circumstances of the beneficiaries. Subsequently, Lewis (1989) presented a model of demand for life insurance that maximizes the beneficiary’s utility, not the breadwinners own utility. This model dwells that the life insurance demand expands with beneficiary consumption and degree of risk aversion along with the probability of breadwinner’s death. Lewis model builds the theoretical starting point of many subsequent empirical works.

\[(1-lp) \ F = \max \left[1-lp/l \ (1-p) \right]^{1/\delta} TC- W, p \quad \text{where,}\]

\[l= \text{policy loading factor (the ratio of the cost of the insurance to its actuarial value);}\]
\[F= \text{face value of life insurance written on the breadwinner’s life};\]
\[p= \text{probability of breadwinner’s death};\]
\[\delta= \text{a measure of beneficiaries relative risk aversion};\]
\[TC= \text{value of consumption of each offspring from the current period until he/she leaves the households and off the spouse over his/her remaining life span}.\]
\[W= \text{Household’s net worth}.\]

Therefore, bequest motive addresses the problem of life insurance purchase by itself or as a component of intergenerational transfer.
2.5.1.2 Economic Theories of Consumption and Life insurance

Economics is concerned with both positive and normative issues. The Human Life Value concept provides a normative economic approach to life insurance planning. It suggests how one ought to behave. Stated differently it provides an economic rationale for life insurance purchase from a replacement and cost perspective. As a normative economic concept, however it can lead to results that are inconsistent with actual consumer behaviour.

Each consumption theory begins with the assumption that rational consumers seek to maximize their lifetime utility. The maximization of lifetime utility involves attempts by consumers to allocate their lifetime incomes in such a way as to achieve an optimum lifetime pattern for consumption. This concept is rational but on what basis would we expect individuals make allocations between now and the future or stated differently between consumption now and consumption for the future?

Theories of Consumption date from the era of noted economist Keynes (1936). He exposed what is referred to as the Absolute Income Hypothesis, where he observed that, on average the larger a person’s income, the smaller the average propensity to consume and larger the average propensity to save.

A variation of the Keynesian view by Duessenberry, referred to as the Relative Income Hypothesis, argues that consumption depends on the household’s income relative to the income of households with which it identifies rather than the absolute level of income(Duessenberry, 1949).

An interesting extension of Duessenberry’s work argues that certain consumption items typically cannot be readily observed by others (like the amount spend on life insurance)
and that consumption expenditures thereby vary depending on the observability of goods and services (Frank, 1985).

Consumption theories by Ando and Modigliani and by Friedman take a different view of income. According to Ando-Modigliani (1963) in the ‘Life Cycle Hypothesis’ of consumption, an individual’s income will be low in the beginning and end stages of life and high during the middle of life. Friedman’s permanent income Hypothesis for consumption, like the life cycle hypothesis assumes that individuals wish to smooth their level of life time consumption but do so through an assessment of their permanent level of income. Permanent income is stable, reflecting some type of weighted (for the time value of money) average of individual’s expected future income. It is an annualized measure of the consumers’ expected future income or stated differently, of the individual’s human capital (as with the HLV concept but with no diminution for self-maintenance expenses) (Friedman, 1975).

In their earliest forms, none of the consumption theories appropriately allowed for the possibility of bequests to heirs or for an uncertain time of death. Obviously, these two extensions make the theories more relevant. Subsequent studies emerged in the arena by Yaari, Pissarides, Lewis, Hurd etc sufficiently and theoretically succeeded to state that ‘without life insurance the lifetime consumption pattern would be different and involve less enjoyment (utility).’ Research has established that highly risk averse individuals will guard against a failure of to have sufficient income later in life, so they will save more than individuals who are less risk averse and they would be expected to purchase more life insurance.
2.5.2 The Supply Side

Life insurance supply is a function of many factors. However, the supply of life insurance is not subject to precise definition or measurement. Supply is positively related to the insurance risk bearing capacity, which in turn depends on insurer’s capital, which is the difference between assets and liabilities. Insurer’s technical expertise and management capabilities are important factors determining insurance supply (Black and Skipper, 1987). The production of life insurance services as with other financial services rely on financial and human capital.

2.5.2.1 Role of Capital

Life insurers have an inordinately high degree of financial leverage on the liability side of their balance sheet. The greater part of life insurers’ a funds are raised through issuing debts (claims against itself that are sold to policyholders) rather than capital put by owners. Life insurers also differ fundamentally from other organizations with respect to the reasons for which they need capital. In the case of manufacturing and other companies, capital is required primarily for conducting operations of production and sale of goods. For a life insurer risk is not incidental to the business, it is the business. To the insurer, risk is both on the liability and on the asset side-faces not only with non-performing assets or with assets whose market values have declined but also uncertainty about when the debt would have to be redeemed, because claims are life contingent and not set at predetermined rates. Again, the contracts of a life insurer being long term, the liabilities have a long-term character. The fact that assuming risk is the business of a life insurer leads to a very different purpose for raising capital. We look at the reasons why capital is needed in a life insurance company. The first is an
**entry stake**, considered, as the minimum investment has to be made for entering the business. That differs from country to country. The fixed cost of setting up the business constitutes the second reason. Every life insurer needs to start with principal officers including staff, infrastructure, distribution networks etc. The third reason is capital needed to **finance new business strain**. One of the major differences between Life Insurance Company and another manufacturing company/trading enterprise is that when a life insurance sells a policy, the initial premium inflows are less than the outflows so that there is a negative cash flow. This creates an immediate deficiency strain—the new business strain, which has to be met by capital supplied by the owners. Again, capital is needed to meet **solvency and capital adequacy requirements** determined by the regulatory authorities. Life insurers deal with long term promises. Their liabilities are determined with reference to assumptions, they make about the future. When the real outcomes are adverse vis-a-vis the assumptions, the assets of the insurer may fall short of that required for meeting the liabilities, resulting in possible insolvency. Capital is required to address any such short falls of assets that may arise. Even an iota of error in the function and assumptions can bring down the insurance business unit like a pack of cards. To avoid this by transferring a part of risk, insurers have to seek **reinsurance**¹¹, which also necessitates capital requirement.

### 2.5.2.2 Product Designing and Pricing

One reality life insurers face is that of a market environment over which they have little control. Premium and benefits are increasingly market driven and determined by the

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¹¹ The kind of insurance by insuring business unit covering it against the possible business risk is called ‘reinsuring’. Reinsurance is thus a kind of rolling conveyor belts that transfers the business risk from the cogwheels of the primary insurer to those of the reinsurer.
forces of demand and supply. The ‘product’ is no longer an output that emerges at the end of a purely internal chain of financial and actuarial processes such as pricing, investment and valuation. Rather, life offices have the onus to determine their product offerings and work backwards to dovetail their internal processes accordingly. Thus, every life insurance product has two faces. As a value proposition - the mix of price and product differentiation elements through which life insurers position their products in customer’s mind constitute their value propositions. Each value proposition represents a tradeoff between different attributes such as yield, investment risk, death protection, liquidity and flexibility, which are designed to meet the needs and attribute preferences of largest segments. As an output – a life insurance product may also be viewed as one of the products of a manufacturing process that is underway in what we may call the actuarial factory. The raw materials for the process consist of various kinds of data inputs. These include: demographic data on variables like mortality, morbidity and life expectancy rate; financial market inputs like interest rates on bonds and stock market returns, data regarding macro economic variables such as inflation, prices etc. Coming to the process there are two instruments form the core of actuarial technology. The first is the science of probability and the other is the principle of discounting - the mechanism to equate tomorrow with today.

In common, parlance price is often equated with premium. A little reflection would, however reveal that premium is not the same as price. It only represents the outlay, which the consumer makes on the purchase of life insurance. Premium adequacy was the cardinal principle underlying traditional life insurance policy. As the name suggests it expresses the insurer’s concern that premiums received, together with the proceeds of
their investment must at all times and under all circumstances be adequate or sufficient to meet its liabilities and earn a profit.

2.5.2.3 Marketing Channels

It is said that ‘Life insurance has to be sold and is never bought’ the world over. The insurer’s first point of contact with the ultimate customer is the distributor and hence the role played by them in insurance market is critical. Selling focuses on the needs of the seller, marketing on the needs of the buyer (Levitt, 1960). Therefore, proper distribution of life insurance products and services plays a vital and key role in deciding the success for any insurer. Personal distribution system channels such as agencies of different models, brokerages, bancassurance12 and worksite marketing are the first kind. Direct response distribution systems are the media wherein the client plays a more interactive role and purchases the insurance more directly. This segment utilizes various modern media such as the internet, telemarketing, direct mail, call centers etc. Traditionally in almost all countries, agents have been the primary channel for product distribution. The buyers expect life insurance agents to analyse their personal and family needs before designing the most suitable policies for them. In an increasingly crowded market place, fools will compete on price; winners will find a way to create lasting value in the customer’s mind (Aaker, 1991). Therefore, insurance sales agents must fully understand the customer’s needs and requirements as well as build a trusting relationship between themselves and their clients to promote long-term mutually beneficial relationship (Crosby et al., 1990).

12 ‘Bancassurance’ is a compound word composed of ‘banque’(meaning bank) and ‘assurance’(meaning insurance). The term first appeared in France in 1980, to define the sale of insurance products through banks.
In marketing life insurance, agents are often considered to be marketing complex services. This is because insurance agents are involved in long-term commitment and a continual stream of interaction between buyer and seller. After the sale, agents provide follow up service and help customers, make policy changes in response to changing needs. Customers often base their evaluation of their satisfaction with a company largely on the services provided by the ‘customer contact employees’.

2.6. Life insurance Market

A market-oriented economy would have an insurance industry, which would be the same as that has for other industries- an efficient allocation of society’s resources while maximizing consumer choice and value. At the same time, society desires an economic system that leads to continuous innovation and improvement. This objective is most likely to be achieved through reliance on competitive market. Neo-classical Welfare Economics theorises that in a complete set of markets, a competitive equilibrium analogous to the Walrasian allocation is ‘Pareto Optimal’. In this competitive environment, institutions of saving, credit and insurance play a major role in facilitating mutually advantageous exchanges between economic agents (Besley, 1995). The Arrow-Debrue (1954) competitive model, in the absence of externalities, ensures financial contracts for all future contingencies. These securities in the sense are a set of insurance policies with future dimensions attached to each one (Arrow and Debrue, 1954).

For a perfectly competitive market, certain conditions must be met. The more removed the actual market functioning is from the ideal conditions, the more imperfect the resulting competition and poorer the industry performance and attendant consumer
value and choice. Variations of actual market performance and structure from the ideal are referred to as ‘market imperfections’ or ‘market failures.’

2.6.1 Market Imperfections

The various forms of market imperfections embedded with the world of life insurance is summarized in the Figure 2.1

![Figure 2.1](image)

2.6.1.1 Market Power

The ability of one or a few sellers to influence the price of a product or service is called ‘market power.’ In Less Developed Countries’ markets, where public sector alone or both public and private insurers operate, feature monopolies or oligopolies or collusive oligopolies (cartels). In the developed countries, where private insurers operate monopolistic insurance markets.
Usually monopoly and oligopolistic markets are viewed as detrimental to the healthy growth of life insurance business. The former are believed to leave limited options to the consumers in terms of product choices. In the latter case, the interests of consumers may be overlooked with the formation of collusive oligopolies (cartels). At the same time, there exists the possibility of price wars leading to cutthroat competition where the viability of small insurers is threatened.

a) **Barriers to entry and exit**

Entry barriers exist in all countries in the form of licensing requirements and minimum capital requirements, but they usually are not onerous. Barriers to exit are comparatively rare worldwide.

b) **Economies of Scale or Scope**

Economies of Scale exist when a firm’s average cost of production falls with increasing production. With economies of scale, the larger the firm, the more efficiently it can operate thus putting new entrants at an immediate competitive disadvantage. Economies of scope exist when a single firm can produce multiple products or services at lower costs than can multiple firms. Whether an insurer possesses market power from scale or scope economies depends on its size relative to its market rather than its absolute size. Even a monopolist or a seller in oligopoly may be unable to exercise monopoly power if the market is contestable meaning that entry barriers are low and exit is easy. In such instances, the mere threat of competition from possible new entrants may be sufficient to cause existing firms to behave as if the market were competitive (Skipper, 1998).
c) **Price discrimination**

Insurers often attempt price discrimination, although regulatory requirements may threat this strategy. With increasing competition, insurers seek ways to segment their target markets to charge different prices in each.

d) **Product differentiation**

It exists when buyers prefer one firm’s product to hose of its rivals. The preference may stem from perceived differences in product quality, service, reputation, convenience or other attributes. The more complex the product or at least, the more complex the product is perceived to be in the minds of consumers, the greater the likelihood of a successful product differentiation strategy.

2.6.1.2 **Externalities**

The conditions for a perfectly competitive market presume that all costs of production are fully included in each firm’s cost. However, producers can impose positive and negative spillover effects on others. In insurance business, one way of negative externality flows from the important role played by financial intermediaries. Systematic risks exist if the difficulties of financial institutions cause disruption elsewhere within an economy. One of the major positive externalities is that insurers have only rarely sought protection under intellectual property law for their product, processing and service innovations.

2.6.1.3 **Information Problems**

Information problems abound in life insurance market and arguably are the industry’s most important market imperfections.
a) Asymmetric Information

A perfectly competitive market stands on the presumption of complete information of both present state and all possible future states of the world to all economic agents with zero monitoring cost (Fry, 1995). However, markets are more often than not imperfect, missing or incomplete. This is due to the inherent problem of asymmetry of information. Asymmetric Information problems drive most life insurer operations and are the bane of customers driving much of the regulations. Different forms of asymmetric information are the following.

(i) Adverse selection

Adverse selection arises when one party (generally the insured) has better information than the other party (the insurer) does about some parameters that are relevant for the relationship. In most theoretical models, the asymmetry is relative to the level of risk. In such cases, the buyer’s informational advantage is directly related to the insurer’s (expected) cost of providing the contract. The problem of adverse selection plagues insurers worldwide and is the principal reason that insurers seek such extensive information about proposed insured. The presence of adverse selection will have an impact on prices. Because of the over representation of high risk insured in the insurer’s portfolio, unit prices at equilibrium exceed the level that would obtain in the absence of adverse selection (Chiappori and Salaine, 2000). In this process of ‘adverse selection’, low risk prone individuals end up with less insurance, but buying a low premium. Thus, the insurer is exposed to high risk leading to market failure (Stiglitz and Weiss, 1981).
If the insured knows risk, but the insurer was not, then affects the realized ex-post profitability, which falls below the ex-ante profitability of a contract signaling adverse selection. The insurer may charge premium based on its calculated average experience but it may happen that the low risk individual being aware of the riskiness of the enterprise may not opt for insurance.

(ii) Moral Hazard

It is the tendency of individuals to alter their behaviour because of insurance. Moral hazard occurs the probability of a claim is not exogenous but depends on some decision made the subscriber. Moral hazard problems are of concern in both pure life and health insurance, but the nature of the problem differs somewhat. Insurers are not overly concerned that insured for life insurance will engage in behaviour that could take or shorten their lives just because they are insured. On the other hand, insurers are greatly concerned about the possibility that beneficiary under a life insurance policy might try to shorten the insured’s life.

Few studies consider the ‘insurer’s moral hazard’, which is not mentioned in the basic insurance theory. Doherty and Schlesinger (1990) argued that insurers who face some insolvency risks have the possibility of paying less insurance than the contractual payment.

(iii) Principal-Agent problem

Generally, the Principal-Agent problem arises when an entity (principal) enters into contract with another entity (agent) whose actions the former cannot observe or evaluate (Perloff, 2001). The principal - agent problem in insurance is when the agent (the person who represents the principal) knows more about his or her own actions than
does the principal (insurer). Because of this information asymmetry, the agent can take advantage of the principal. The agent’s incentive is to maximize his or her own personal gain, which is not always compatible with simultaneously maximizing the principal’s gain. More generally, principal-agent problem arises when a function is carried out by an agent whose participation in the cost and benefits differs from that of principal’s. Principal-agent problems lurk behind innumerable insurance relationships, operations and practices.

(iv) Lemons Problem

Economists refer to as a ‘lemons problem’ in which the insurance customer knows less than the seller about the seller and their products. The nature of the insurance transaction involves a contract that makes a present promise of future performance. Although much has been done to simplify insurance contracts, and to enhance their readability, life insurance contracts remain technical complex documents. Life insurance is necessary a technical complicated subject. Villeneuve (2005) argued that the informed insurer market is more inefficient than the informed policyholder market even if the insurance market is competitive.

b) Nonexistent Information

In many aspects of insurance processes, neither the buyer nor the seller has complete information because desired information simply does not exist. Insurers cannot know the future. Similarly, individuals cannot have complete knowledge about the consequences of their present and future choices.
2.6.1.4 Free Rider Problem

One of the free rider problems in the insurance business are that when an insurance trade association lobbies for favourable legislation, all insurers may benefit from its activities.

2.7 Market Regulation

Economists have divergent opinions regarding the State’s role in conditions of market failure. Many argue that State should act as apparatus in providing basic infrastructure facilities in order to prepare the ground for efficient allocation of resources through formal credit and insurance markets. Insurance is a financial future-delivery product tied closely to the public interest, so governments should judge the information imbalance to warrant substantial oversight of the financial condition of insurers. Government must provide information for the public good. In addition, significant economies of scale and scope exist with respect to the consumption and production of regulatory services, further supporting government’s role (Klein, 1995).

The urgency of regulation highly noticed in Less Developed Countries (LDCs), where there is a limited development of markets for saving, credit and insurance but with high quantum of life related risks. Given the unequal distribution of assets, households at least in the case of uncertain and risky productive activities, work out shadow prices rather than market prices and thus equilibrium, even a competitive one may not be a Pareto optimum (Bardhan, 1988). Therefore, in this environment, the standard Neo-Classical theory fails. The standard notion of efficiency becomes questionable. Greenwald and Stiglitz (1986) rightly pointed out that LDCs characterized by imperfect information do possess certain externalities, which do not allow the market to operate
even with constrained efficiency. Therefore, the state in these economies takes an active role in banking and insurance either by intervening to provide formal insurance to the society directly or through the regulated market.

The insurance industry in the world economy is one of the structurally most complex and most regulated industries due to its susceptibility to recurring crisis (Prasad, 1994). Many countries successfully regulated their insurance markets through prudential norms and regulations such as capital adequacy norms, solvency margin, entry restrictions and created an effective legal system.

The eighth Third World Insurance Congress (New Delhi, Feb 1992) concluded their session, “Sweeping reforms wherever applied including the insurance industry can only be successfully implemented with the establishment of a strong and well administered prudential regulatory system”. In fact, the absence of strong regulatory and control mechanism in many developing countries such as Mexico, Chile, Uruguay and Peru resulted in huge losses and liquidation of private companies leading to financial instability and social distress.

The insurance industry manages two important operations simultaneously: (a) continuous creation of liabilities and (b) accumulation of investment income enough to offset these liabilities. The accrued income from both insurance (premium receipts) and investment operations (dividends and interests) is used for meeting the current period’s operation cost of life insurance and expense of management. Therefore income from underwriting premiums falls due to premium cuts below sustainable levels, profit gets squeezed and in order to compensate, the firm has to look for other sources mainly income from ‘investment operations’. This ultimately forces the firm to indulge in
unscrupulous activities such as deployment of funds aggressively in equity markets and those firms, which have other subsidiary activities interlock their funds in them. In times of crisis of such a crash of real estate prices, stock prices and overall economic downturn, income from these sources also gets adversely affected threatening the very existence of the firm. Further the firm’s asset value and net worth shrinks leading to liquidation (Experience of AIG Company in USA in the Global Financial Turmoil of 2008). Therefore, a regulatory balance should be struck between ensuring sound investment policies of life insurance companies which reflect the nature of the local capital market and allowing companies to earn competitive rates of return on the savings of policy holders.

The insurance business has not only economic significance but also social responsibility. The primary function of the regulatory authority that is the excessive branch of the government is to ensure the stability of the insurance sector to create and maintain public confidence. In the case of Life insurance, policyholders need protection and in the case of General (Non-life) insurance they need due compensation (UNCTAD, 1993).

2.8 Life Insurance and Economic Development

Tracing the history of Economic Thought over a period of time right from Classical Economists on ‘Economic Development’, one discovers that the central theme and concern of these economists had been to identify the factors, which contribute towards increasing the wealth, prosperity and welfare of the masses. It has been defined in the incorporation of both sustained increase in the GDP/ GDP per capita as well as improvement in the basic indicators affecting the quality of life. The growth of GDP is a function of host of factors, both economic and non-economic in nature, which directly
or indirectly subscribe it. From an economic angle, these factors could be grouped into four categories—Human resources, Natural resources, Capital formation and Technology. One of the most important factors contributing to the process of Economic Development is capital formation, which in turn largely relied on level of ‘saving.’

2.8.1 Saving and Economic Development

Theoretically, ‘saving’ is that part of income, which is abstained from current consumption. The interrelationship between saving and the growth of GDP is quite simple.

\[ g = \frac{s}{k} \]

Where, \( g \) = rate of growth of GDP, \( s \) = saving ratio, and \( k \) = capital-output ratio.

It establishes direct positive correlation between rate of saving on the one hand and the rate of growth of GDP on the other. Various studies underline the same inference. Traditional development theory was that increasing saving would accelerate growth (Lewis, 1955). Kaldor (1956) and Samuelson and Modigliani (1966) studied how different saving behaviors induce growth and development.

The sources of generation of savings could be both internal and external. The sources of internal savings could be voluntary cut in consumption, involuntary cut in consumption through taxation, forced lending to the government, inflation etc. The internal savings flow from household sector, private corporate sector and public sector. The savings from the household sector constitute the major proportion of the total savings in a country. The household savings comprise of two components—physical and financial. Life insurance policies constitute one of the major components of financial
saving. Generally, the more economically developed a country is, greater the proportion of its total wealth in financial saving. This is consistent with the view that financial development and overall economic development move in tandem.

2.8.2 Life Insurance and Financial Intermediation

Life insurance companies have historically played an important role in Economic development because of their financial intermediary\(^{13}\) activities. Economic historians have consistently reported that financial intermediation of life insurance assisted economic development in the early years of mass industrialization in the eighteenth and nineteenth centuries by amongst other things mobilizing savings, mitigating risks and uncertainty, encouraging entrepreneurship, accumulating productive capital and fostering the development of national financial infrastructure. Thus, there is likely to be a strong linkage between life insurance and economic development in today’s emerging economies (Adams and Zou, 2004). To capture the potential effects of financial development on growth, several models incorporate the role of financial development in economic growth. This includes the original Solow-Swan neoclassical growth model, assuming a Cobb-Douglas type of production model, which states that production growth is due to labour, capital, and technology. The neoclassical production function in its general form,

\[ Y = f (L, K, T) \]

represents the relationship that output (Y) is produced from labour (L) and capital (K) under certain technology (T). This model also assumes diminishing returns to capital and labour such that

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\(^{13}\) Financial intermediation is essentially concerned with the transfer of resources from savers (surplus units) to users of funds (deficit units) in the economy. (Boot and Thakor, 2000).
\[ \frac{dY}{dK} > 0, \frac{dY}{dL} > 0, \frac{d^2Y}{dK} < 0, \frac{d^2Y}{dL} < 0. \]

In the revised model, the aggregate of the weighted financial activities of three financial institutions: banks, property/liability insurers, and life insurers are taken into account as a multiplicative exponent that affects the production function. The revised Solow-Swan model reveals that insurance activities and banking raise the capital stock productivity, in turn driving the level of investment and output. (Outreville, 2011).

However, not many empirical studies have focused on the role played by financial intermediation (especially life insurance) in the historical development of modern economies. Economic development can be either supply-lead because of development in financial intermediaries like banks and life insurance companies or, alternatively, economic growth and development can promote the public demand for financial services.

The performance of Life insurance industry as the financial intermediary can be summed up in the Figure 2.2, which is highly explanatory to tell the linkages between life insurance and the economy.

Life insurers offer the same advantages as other financial intermediaries in channeling savings into domestic investment (Black and Skipper, 2000). By designing relatively simple life insurance and saving contracts, which can be purchased in small amounts on a regular basis, insurance companies have been able to accumulate large amounts of money from a large proportion of the population. By pooling these savings from many small investors into large accumulation of investable funds, insurance companies have been able to invest not only in a wider range of investments but have also been able to invest in large scale and more risky investment opportunities.
Figure 2.2
Linkages of Life insurance industry and the Economy


Figure 2.3
Growth nexus of Economy and Life insurance Market

Note: Slope of the curve represents growth
The importance of the life insurance - economic development nexus is growing due to the increasing share of the insurance sector taken together financial sector in almost every developing and developed country. Insurance companies are one of the biggest institutional investors into stocks, bonds and real estate markets and their possible impact on the economic development will rather grow than decline due to issues such as ageing societies, widening income disparities and globalization. The growing links between the life insurance and other financial sectors also emphasise the possible role of insurance companies in economic growth (Rule, 2001).

The strength of the link between the life insurance sector and economic growth/development however is not static. As the relationship between bank and capital market finance varies with the level of economic development and growth, so does the Life insurance- growth nexus (Rousseau and Wachtel, 1998; Rioja and Valev, 2004). The life insurance sector in developed countries offers a whole bunch of specialized products, service, educated and experienced clients and insurance coverage is recognized as an important value. The potentiality of growth contribution is much higher in developing countries where the insurance sector hardly reaches the same importance and evolutionary stage.