T.C
YEDİTEPE UNIVERSITY
GRADUATE INSTITUTE OF SOCIAL SCIENCES

EFFECTS OF MACRO-ECONOMIC FACTORS ON NON-LIFE INSURANCE SALES

by

Elif Ebru ERCE OZBILEN

Submitted to the Graduate Institute of Social Sciences
In partial fulfillment of the requirements for the degree of
Master of
Business Administration

ISTANBUL, 2007

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ABSTRACT

It is commonly argued that macro-economic factors have substantial effects on financial markets. Insurance business is an important part of an economic structure as well as a safeguard against potential risks for the better functioning of economies. Insurance can be classified as life insurance and non-life insurance according to the different economic benefits they supply to the policy holders. Objective of this study is to analyze the effects of some macro-economic factors namely, inflation rate, USD, interest rates and GDP per capita on non-life insurance sales in Turkey. First, the variables are employed separately in four different models, and then the effects of the variables are examined altogether in one model. Results of the analyses imply that the economic factors employed in the models are doing a good job in explaining the change in non-life insurance premium production, having different explanatory powers taken separately. However, inflation rates and interest rates variables are dropped out of the model as they are not statistically significant. Another major finding in this study is that the GDP per capita is directly proportional and USD is inversely proportional to the non-life insurance premium production volume. The study is further deepened by segmenting non-life insurance companies into three categories namely upper, middle and lower segments, and by employing two different matrix approaches namely, BCG Matrix and the Relative Profitability and Growth Matrix.

Key words: Non-life insurance, macro-economic factors, inflation rate, USD, interest rate, GDP per capita, BCG matrix, Relative Profitability and Growth Matrix.

ÖZET

Makro ekonomik faktörlerin finansal piyasalara önemli etkilerinin olduğu yaygın olarak kabul görmektedir. Sigortacılık sektörü, ekonomik yapının önemli bir parçası olmasının yanı sıra, ekonomilerin daha iyi çalışması yönünde potansiyel risklere karşı bir muhafaza görevi görmektedir. Sigortacılık, poliçe sahiplerine sağladığı ekonomik faydalara göre hayat ve hayat dışı sigortacılık olarak sınıflandırılabilir. Bu çalışmanın amacı, enflasyon oranı, Amerikan Doları, faiz oranları ve kişi başına düşen GSYH olmak üzere bazı makro-ekonomik faktörlerinin hayat dışı sigorta satışlarına olan etkilerini incelemektir. Öncelikle, değişkenler münferit olarak kullanılarak dört farklı model oluşturulmuş, devamında tüm değişkenler beraber incelenerek bir modelleme yapılmıştır. Yapılan analizler, modellerde kullanılan değişkenlerin hayat dışı sigorta prim üretimlerindeki değişimleri göstermek açısından iyi iş gördükleri sonucuna işaret etmekle birlikte, her bir değişkenin münferit etkisine bakıldığında farklı açıklama güçlerine sahip oldukları görülmektedir. Ayrıca, enflasyon oranı ve faiz oranları değişkenleri istatistiksel anlam taşımadıklarından, modelin dışında bırakılmışlardır. Çalışmanın diğer önemli bir bulgusu ise, sigorta prim üretim hacminin kişi başına düşen GSYH ile doğru orantılı ve Amerikan Dolar kuru ile ters orantılı olduğudur. Çalışma, hayat dışı sigorta şirketlerinin yüksek, orta ve düşük olmak üzere üç segmente ayrılarak kategorize edilmesi ve BCG ve Rölatif Karlılık ve Büyüme Matris yaklaşımlarını uygulanması yoluyla daha da derinleştirilmiştir.

Anahtar kelimeler: Hayat-dışı sigorta, makro-ekonomik faktörler, enflasyon oranı, USD, faiz oranı, kişi başına düşen GSYH, BCG Matrisi, Rölatif Karlılık ve Büyüme Matrisi.

1. INTRODUCTION

Today’s highly competitive and challenging living conditions lead people to face with greater magnitude of ambiguity regarding almost each and every facet of every day life. In this respect, the subject of insurance has gained more importance compared to a few decades ago and consequently the subject of risk taking is becoming an important issue even for ordinary people.

Risk is the starting point for the concept of insurance. It is something which can not be avoided in life. When people make a decision, they face to the risk of being wrong. We are often subject to risks even without having made any decisions. Risk implies the possibility of a divergence between the expected course of events and what actually materializes (Mayerson, 1962).

Insurance is a contract based on mutuality. The insurance company is responsible from underwriting, determining and pricing the risks. The premium rates are calculated by actuaries by the operation of law of averages. Being among the largest financial institutions in the world, insurance companies are major suppliers of capital by investing premium income on wide range of revenue-producing projects.

Insurance can be defined as a social device in order to combine experience, which permits mathematical prediction of losses, and provides for payment of losses from funds contributed by all members who transferred risk. Those who transferred risk are called insureds. Those who assume risk are called insurers (Athearn et al., 1989).

Insurance can be classified as life insurance and non-life insurance. Life insurance is the form of insurance that provides for the payment of a sum of money upon the death of the insured. In addition, life insurance can be used as a means of investment or saving. All classes of insurance business excluding life insurance are called as non-life insurance. Financial intermediation is the primary aspect of life insurance while risk transfer and indemnification are the major characteristics of non-life insurance. In this paper, non-life insurance is discussed with respect to economic variables.

The major function of insurance on the client's side is risk transfer. Insured pays an amount of premium and gets secured against any risk. By diminishing uncertainty, insurance companies smoothen economic cycle and lessen impact of crisis situations. Possession, purchase, sale of goods and services are facilitated by indemnification of insurance. There is need for financial security against losses of property caused by different set of reasons like natural disaster, crime, accident etc. Insurance increases national consumption by covering individuals' risks in buying cars or real estates. Companies feel secure against threats accruing from their business activities. So, from the insured's point of view, insurance is a risk transfer device. On the other hand, from the insurer's viewpoint, insurance is retention and combination device. The insurer combines exposures of many insureds and by this way they improve the ability to predict expected losses (Heins and Williams, 1989).

The indemnification of possible losses leads to less dependence on precautionary savings held by households and companies. It also enables customer to diversify his portfolio and substitute different investments. This substitution effect of insurance is directly related to life insurance. Life insurers and pension funds play the role of saving vehicles and increase competition in investment and banking sector.

Insurances resemble banks and capital markets as they work for the needs of business units and private households. The insurance services are an important part of financial system and a safeguard against potential risks for the better functioning of economies. They serve for the stability of economy and help business units get confound risks. From the insurance companies' perspective, they pool premiums and have reserve funds. Hence, their role is essential in economic growth by increasing cash flow and generating great deal of assets for capital markets. Given the increasing importance of insurance sector, the growing role of insurance companies vis-à-vis economic stability and growth is amplifying concern for policy makers and supervisors.

Assuming insurance business is fully integrated into the economic system; macro-economic factors should have impacts on insurance premium production. Theoretical studies and empirical evidence have demonstrated that economic growth and insurance development are interdependent and that countries with better-developed financial systems have faster and more stable growth in the long run. A world without insurance would be much less developed and much less stable. Importance of insurance and economic growth nexus is increasing due to the rising share of insurance business in the financial sector in almost every country in the world.

The relationship between an economy's financial market development and insurance market development is discussed by a few authors in the literature. Among outstanding authors who have studied on the subject, Outreville has made an important empirical contribution to the discussion. He finds a positive relationship between a nation's economic development and property-liability insurance consumption (Outreville, 1990). Ward and Zurbruegg advance Outreville's work by investigating the long and short run causal relationships between economic growth and insurance market development. They defend that, casual relationships between economic growth and insurance market development vary across countries due to country specific factors (Ward and Zurbruegg, 2000). Beenstock, Dickinson and Khajuria find that premiums are correlated to interest rate and GNP and marginal propensity to insure (short and long-run) rises with income per capita and it is always higher in the long run (Beenstock et al., 1988). Hofstede argues that insurance level within an economy will depend on the national culture and the willingness of individuals to use insurance contracts as a means of dealing with risk (Hofstede, 1995). Park, Borde and Choi study the linkage between insurance penetration and GNP, and some socio-economic factors adopted by Hofstede (1983). They find that GNP, masculinity, socio-political instability and economic freedom are linked with insurance penetration (Park et al., 2002). Browne, Chung and Frees (2000) attempt to explain variations in the international consumption of insurance by using disaggregated data. They find that the relationship between premium density and income (GNP per capita in US dollars) is appeared to be positive and significant (Browne et al., 2000).

1.1 Purpose of the Study

As insurance sector is an important part of financial system, it is expected that some factors in the economy should have impacts on insurance. In the light of this consideration, the main purpose of this study is to analyze the effects of some macro-economic factors on non-life insurance sales. There are a limited number of researches on insurance sector in this respect. The current study is related with country specific data, based on non-life branch of insurance industry and economic parameters in Turkey. It has implications for insurance and economy researchers and insurance industry managers.

1.2 Significance of the Study

This study is significant for a set of reasons. Firstly, the relationship between growth in the insurance industry and economic growth is an important question and there is little work done on this subject. Secondly, in the literature there is an emphasis on the argument that causal relationships between insurance market growth and economic development differ across countries. The study contributes to insurance researches by bringing the economic growth-insurance market debate into a country specific framework. Finally, the study helps insurance firms operating on non-life branches to get an understanding of the relationship between their sales activities and economic developments which is essential to have satisfying outcomes out of their strategic decisions.

In order to have a closer look to the essence of the discussion, a review of the literature is made in the next section. Concept of insurance, main functions of insurance and foundations of insurance in the world and in Turkey are explained in the section. Moreover, the structure of insurance industry is summarized both globally and within the framework of Turkish insurance industry. Basic cornerstones in the history of Turkish economy are underlined in the following heading for the better understanding of the factors. In addition, conceptual framework of the economic growth-insurance consumption nexus is explained in the last part of the second section. In the third and fourth sections, methodology is set forth and four macro-economic indicators are analyzed both separately and altogether. Linear regression and multiple linear regression analyses of premiums produced in Turkey are applied for non-life insurance data onto gross domestic product (GDP), USD, interest rate and inflation rate development. In the fifth section, a further analysis is made based on a segmentation perspective for non-life insurance companies. Moreover, segments and companies are analyzed on the basis of two different matrix approaches. Finally, outcomes, implications and different aspects of the research are discussed in the last part.

2. REVIEW of the LITERATURE

2.1 Concept of Insurance

Concept of insurance stems from concept of risk. Risk is defined in several ways in different sources. In different fields of research, various definitions can be derived. In general, we find the definition of term in the literature in one of the following forms;

-the chance of loss,
-the possibility of loss,
-uncertainty,
-the dispersion of actual from expected results,
-the probability of any outcome different from the one expected

Vaughan makes an acceptable form of risk definition for insurance theorists. He defines risk as a condition in which there is a possibility of an adverse deviation from a desired outcome that is expected and hoped for (Vaughan, 1986).

Insurance on the other hand can be defined as a system which enables a person, who suffers a loss or accident, to be paid financial compensation for the effects of that misfortune. It is a device that is used to transfer certain risks of economic loss to an insurer and a method by which individual risks can be pooled and shared, with each policy holder making an assessed contribution to the common fund. The contributions are determined according to the probability of the occurrence of the loss. The contribution is known as the premium (ABI, 1986).

Heins and Williams define insurance from two points of views; Firstly, insurance is the protection against financial loss provided by an insurer. Secondly, insurance is a device by means of which the risks of two or more persons or firms are combined through actual or promised contributions to a fund out of which claimants are paid (Heins and Williams, 1989). The burden of losses are spread over a large body of insured persons and hence that burden becomes easy to bear. This objective is implemented by means of collecting from each of the insureds a premium proportional to risk insured against. The insured who experience a loss is indemnified by this way (Lucas and Wherry, 1954).

There are some requirements of an insurable risk. Before a pure risk is privately insured, there are ideally six requirements; A large number of exposure units must exist, loss must be accidental and unintentional, loss must be determinable and measurable, loss should not be catastrophic, the chance of loss must be calculable, premium must be economically feasible. If those requirements are fulfilled insurers decide to insure risks (Rejda, 2005).

2.2 Functions of Insurance

The purpose of the insurance is to provide service for the reduction of uncertainty and anxiety induced when people become aware of their inability to predict individual future outcomes. Insurance has two core characteristics in its simplest aspect (Vaughan, 1986);

1. Transferring or shifting risk from one individual to a group
2. Sharing losses, on some equitable basis, by all group members

Risk transfer is possible because insurers are able to predict losses by pooling the risks of individuals into a group. The insurer assumes a financial burden and does not guarantee that the event insured against will not happen. Insurance reduces financial uncertainty created by risk and group losses are shared by the group members through premiums. Premiums are intended to reflect each insured’s expected losses. Expected losses are determined by actuaries. They estimate the likelihood (probability) of loss and the corresponding size of loss to arrive at an average (Athearn et al., 1989; Pritchett et al., 1996).

Those two basic functions of insurance lead to different kinds of benefits. Insurance contributes to the economic development of a nation. Insurance companies meet future liabilities by setting up vast reserves. The companies look for such investments that are safe and yielding a fair interest return. Those investments help in the economic development. Insurance also plays an important role for the support of commerce and industry as insurance is the basis of whole credit system. The transfer of risks creates gains of specialization as it is economically advantageous that risks are analyzed, rated and assumed by risk-bearing specialists. Different types of insurance eliminate worry and increase efficiency. Individuals are relieved about various losses (Lucas and Wherry, 1954). Financial security is provided against losses of property caused by natural disaster, crime, violence, accidents, etc. Purchase, possession and sale of goods, assets and services are facilitated by the indemnification of the insurance. The insured pays a premium and gets secured against a specific uncertainty. By reducing uncertainty and volatility, insurance companies smoothen the economic cycle and reduce the impact of crisis situations. The financial protection enhances trade, transportation and capital lending. In addition, national consumption increases and companies get security to resist threats accruing from their business activity, like receivables, equipment brake down, transport risk and more, which all represent loss of property. To provide the risk transfer, actuaries are in charge with determining appropriate prices for coverage, probability of loss and severity of loss.

2. 3 Origins of Insurance in the World

In some sense, it can be argued that insurance came into being simultaneously with the appearance of human society. In non-money economies of human society, we witness insurance in the form of helping each other. For example, if one’s house is fired down, community members come and help him to build a new one. When one’s neighbor faces to the same, this time he must go to help. If he does not help, he will not get help in the future.

Chinese merchants made use of the concept of sharing risk in ancient world at 3000 B.C. These merchants distributed their goods on each other’s boats to reduce the impact of losses when they ship their boats downriver (there were treacherous rapids). When a loss occurred, it was shared by all the merchants. About 500 years later, the transfer of the risk of loss from merchants to moneylenders was provided in the Great Code of Hammurabi (Vaughan, 1986).

In Babylonia, there was a practice that traders were encouraged to bear the risks of caravan trade through loans that were paid back only after the goods safely arrived in the place of destination. The Greeks and Phoenicians used a similar system in seaborne commerce. There is evidence that famous Greek bottomry contracts developed from the Babylonian idea. Greek ship-owners, before going on voyage to bring cargo from a foreign land, borrowed the necessary money by pledging the ship as collateral. The contract had the provision that if the ship fails to return safely to port, the lender would have no claim against the ship-owner. The Romans established associations for funeral expenses of the members and for future payments to survivors, which can be thought as a form of life insurance (Mehr and Cammack, 1972; The Columbia Encyclopedia, Sixth Edition).

Achaemenian monarchs insured their people by registering their presents in notary offices. This process was performed at the beginning of the Iranian New Year. The most important gift was presented during a special ceremony and if the gifts were worth more than 10.000 Derrik, it was registered in a special office. Other gifts were assessed by the court and registered in special offices. In case of trouble, the monarch or court would help the owner of the present.

The concept of the ‘general average’ was invented by Rhodes inhabitants. Merchants would pay a proportionally divided amount of premium for their goods shipped together, to be used in the case of a need for reimbursement.

During the middle ages, guilds took part in the development of insurance by initiating insurance schemes financed by regular payments from their members. Those associations paid benefits for various kinds of losses such as those caused by fire, shipwreck, theft and flood. This system also offered health benefits resembling to those currently available in health insurance companies (Athearn et al., 1989).

The oldest of the modern branches of insurance, marine insurance, started in Italy in 13th century. The Italian merchants, who came from commercial centers in northern Italy, founded trading houses in London in the twelfth century. Afterwards it spread out to the other countries in the continent. This early marine insurance was issued by individuals, not by insurance companies as we know today. Those who agreed to accept a portion of risk of a ship-owner wrote their names under the description of the risk and the agreement. The practice of "writing under" agreement led to the term "underwriter". Ship-owners looking for insurance and that group of underwriters found the coffee houses of London convenient meeting places. One of those coffee houses, Lloyd's Coffee House, became the leading one of those in London to transact business; which later would become one of the first modern insurance companies by the end of 18th century (Lucas and Wherry, 1954; Vaughan, 1986).

First mortality table based on the statistical laws of mortality and compound interest was developed by an astronomer, Edmond Halley, in 1693. This table assumed the same premium rate for all ages. Joseph Dodson improved the table by scaling the premium rate to age (The Columbia Encyclopedia, Sixth Edition).

Separate insurance contracts (loans not associated with loans or other kinds of contracts) were first used in 14th century Genoa. Insurance pools were supported by pledges of landed estates. These contracts were separated from investments which were first proved useful in marine insurance. In post-Renaissance Europe, insurance became more advanced and varied.

Insurance, in today's meaning, can be traced back to the Great Fire of London in which 13.200 houses were devastated. After that fire Nicholas Barbon opened an office to insure buildings. He established first insurance company of England, 'The Fire Office' insuring brick and frame houses.

Industrialization, rapid urbanization and increasing number of commercial and professional people contributed to the development of life insurance and strengthened its appeal in the late 19th century. The rise of cities created a growing mass of people detached from the relatives. In modern times people had to look for their own security (Keller, 1963).

One of the first life insurance policies by professional insurers was a term policy written by a group of marine underwriters in London on the life of William Gibbons, early in the 16th century. The first life insurance establishment, in the modern meaning, was the Society of

Assurance for Widows and Orphans which was established in London in 1699 with the purpose of aiding at the death of a member (Athearn et al., 1989).

In the United States, the major development of insurance started after the colonies became independent. The first insurance company in the States was established in 1732 as a fire insurance company in Charles Town. Benjamin Franklin popularized and helped to standardize the insurance and founded the Philadelphia Contributionship for the Insurance of Houses from Loss by Fire. His company was first to make contributions toward fire prevention and it refused to insure risky buildings like wooden houses. In 1792, the Insurance Company of North America was established. The success of it encouraged the formation of other marine companies.

New York fire in 1835 introduced the need of adequate reserves to meet the unpredictable large losses. Massachusetts was the first state to require companies by law to maintain such reserves in 1837. After the great Chicago fire in 1871, due to great loss it caused, the need for distributing risks among many companies erupted, and reinsurance concept, which is common in every lines of insurance today, arouse. In Britain, The Workmen's Compensation Act of 1897 required employers to insure their employees against industrial accidents. In 1880s practice of public liability insurance that enforced by legislation increased as the automobile became widespread (The Columbia Encyclopedia, Sixth Edition).

2.4 Structure of Insurance Sector in the World

World insurance premiums (property/casualty and life/health) totaled $3,4 trillion in 2005. 58% of the total amount is composed of life insurance while the contribution of the non-life is 42%. Industrialized countries dominate the insurance market with an 88% share, but emerging markets' share increases day by day. Although, the sector had a decreasing trend until 2000, the terrorist attacks and people's increasing awareness of safety change this trend to upwards. The graph below shows the trend in global premium generation from 1980's up to 2005.

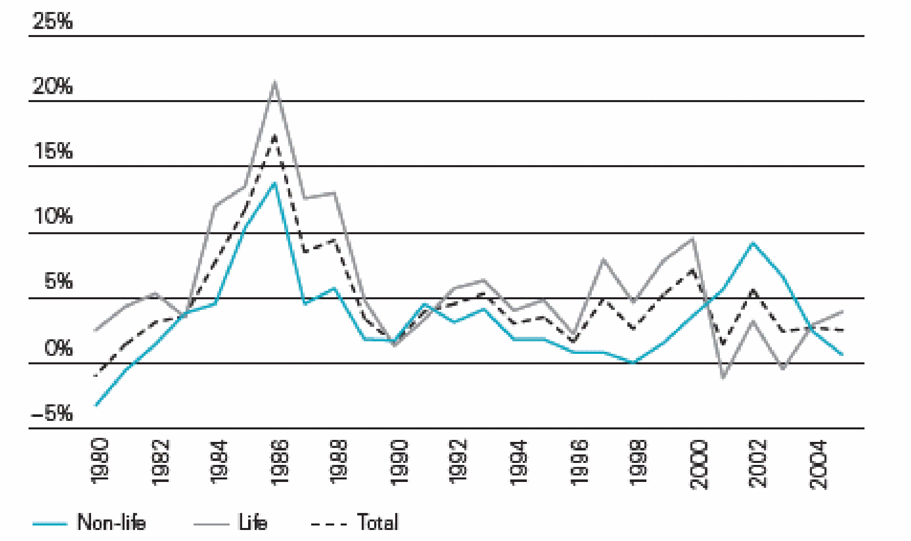


Figure 2.1 World premium production between the years 1980 and 2005

Source: Sigma No 5/2006, Swiss Re Economic Research and Consulting. - www.swissre.com

In 2005, world insurance premium volume reached $1,97 trillion in life branch and $1,45 trillion in non-life branch. Table 2.1 denotes life and non-life premiums produced all over the world for the years 2003, 2004 and 2005.

Table 2.1 World life and non-life insurance premiums, 2003-2005

Year	**Non-life**	**Life**	**Total**
2003	$1.275.616	1.682.743	$2.958.359
2004	1.397.522	1.866.636	3.264.158
2005	1.452.011	1.973.703	3.425.714

(Insurance Information Institute, Facts and Statistics- www.iii.org- Source: Swiss Re sigma database)

The premium volume shares by regions are shown in Table 2.2. Premium generation is the highest in the North America. Western Europe has the second largest share and Japan's share alone is more than the rest of the world. This distribution inequality shows that with better life standards, there is a higher consciousness of insurance in developed parts of the world.

Table 2.2 Premium shares by region

Region	Premium Share
North America	38%
Western Europe	34%
Japan	16%
South and East Asia	7%
Oceania	2%
Latin America	1%
Central and Eastern Europe	1%
Africa	1%
Middle East	0%

Source: Sigma No 3/2004- Swiss Re Economic Research and Consulting-www.swissre.com)

Insurance density and penetration is presented in the Figure 2.2. An average of 3.287 USD per capita was spent on insurance in the industrialized countries in 2005. More was spent on life insurance than non-life insurance. In terms of GDP, the industrialized countries had an average penetration of 5,1 % for life and 3,8% for non-life business. Premiums in % of GDP is the highest in the United Kingdom, Switzerland, and Japan. In other words, those countries posted the highest per-capita insurance expenditure.

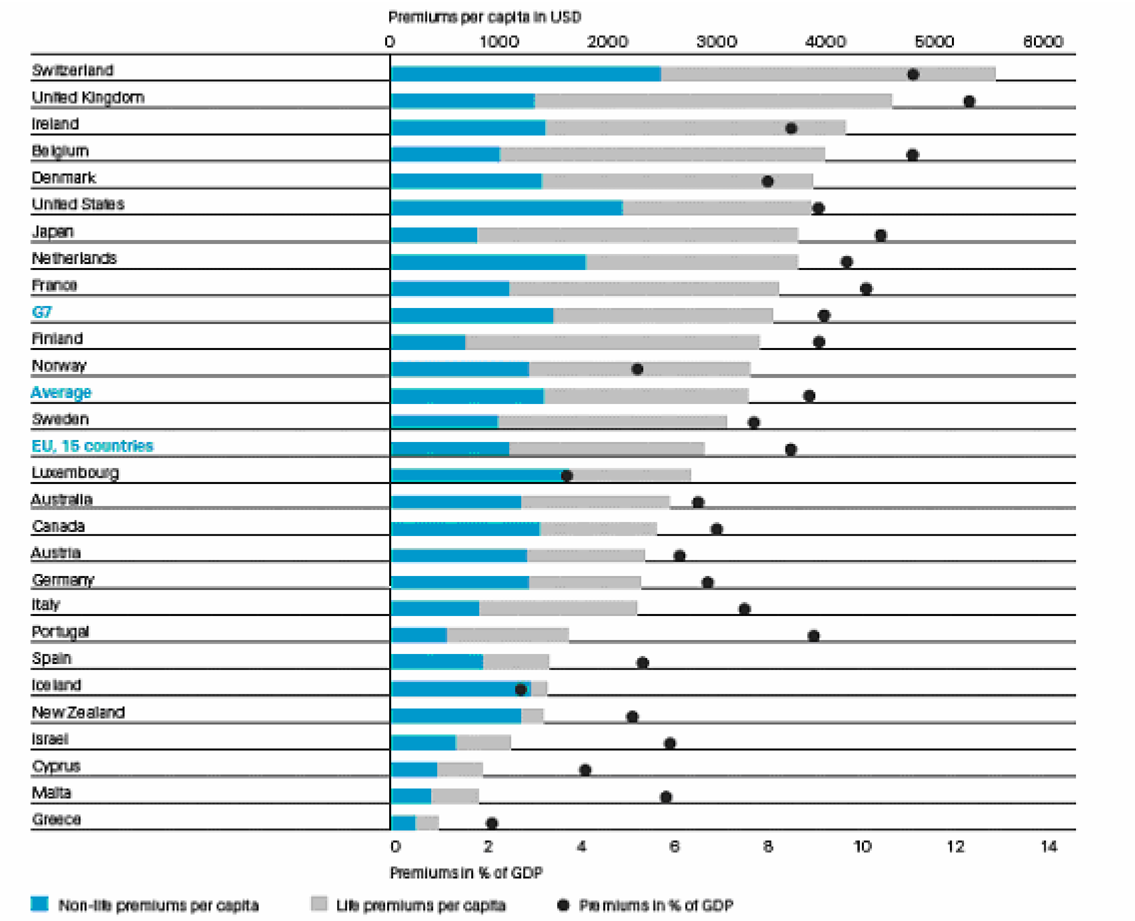


Figure 2.2 Insurance density and penetration in the industrialized countries (2005)

Source: Sigma No 5/2006, Swiss Re Economic Research and Consulting. - www.swissre.com

Table 2.3 denotes the top ten global insurance companies by revenues by the end of 2005. ING Group is the biggest insurance company globally, AXA follows ING as the second largest company and Allianz is in the third rank.

Table 2.3 Top ten global insurance companies by revenues, 2005

Rank	Company	Revenues ($ millions)	Country	Industry
1	ING Group	$138.235	Netherlands	Life/health
2	AXA	129.839	France	Life/health
3	Allianz	121.406	Germany	Property/casualty
4	American International Group	108.905	U.S.	Property/casualty
5	Assicurazioni Generali	101.404	Italy	Life/health
6	Aviva	92.579	U.K.	Life/health
7	Berkshire Hathaway	81.663	U.S.	Property/casualty
8	Prudential	74.745	U.K.	Life/health
9	Zurich Financial Services	67.186	Switzerland	Property/casualty
10	Nippon Life Insurance	61.158	Japan	Life/health

(Insurance Information Institute, Facts and Statistics- Life Insurance- www.iii.org- Source: Fortune)

2.5 Origins of Insurance in Turkey

Prior to the second half of 19th century one can not talk about insurance in Turkey. There were unions in some Anatolian villages to provide aid in case of a need to compensate damages occurred, and associations were established by craftsmen to help their members in case of death or illnesses. However all those practices can not be called as insurance in today's meaning but they were associations established with the aim of security, solidarity and public spirit. Those organizations were limited to a few villages and they did not develop enough and spread out Anatolia (Kazgan et al., 1999).

In spite of important developments in insurance in Europe, the social characteristics of Ottoman society, religious environment and financial system hindered the development of insurance. Fires and their big damages that have occurred in the second half of the 19th century mildly affected the negative opinions about insurance and led to arise of insurance. The development process of insurance accelerated with the Big Pera Fire in Beyoglu in the summer of 1870, as a result of which a lot of offices, houses, mosques and churches were ruined. Foreigners and rich people in touch with foreigners residing in this district contributed to the development process. Foreign insurance companies set up their agencies and opened offices after the Beyoglu Fire in 1870. During this period, insurance services were limited to certain minority groups (Kazgan et al., 1999; Tahsin and Saka, 1929).

In Turkey, first insurance transactions were mainly started by foreigners. In 1872, British insurance companies were the first to start insurance activities in the Ottoman Empire through their representative offices. After Brits, French also showed an interest and a French company initiated its operations in 1878. Later on, insurance continued to develop with the operations of foreign insurance firms like German, Italian and Swiss companies. Although these firms met the demand of insurance, they worked without being monitored since there were no laws and regulations providing government control. They were operating freely in the Ottoman Empire according to instructions given by their headquarters. They were writing their policies in English or French, and in case of disagreements they accepted that the London courts or local courts where company resides were authorized. They nullified policies whenever they wish. Thus, disputes arising from the payment of loss indemnifications were resolved at the courts located in their respective countries (Isgoren, 1988; Kazgan et al., 1999).

During the first years, in such an environment, insurance companies behaved honestly in paying damages and fulfilling their commitments with the aim of expanding their portfolios by providing penetration of insurance conception and of making their names known. However as the time passed, the free operating environment and extensive opportunities provided by capitulations created the impression that insurers could gain a lot of money in the Ottoman Empire. This situation led to arise of too many insurance companies, corruption of insurance ethic, unfair competition and expertise abuses. Although honest traders were negatively affected, many insurance companies avoided paying even ordinary fire damages and disregarded the rights of insureds since there were no controls (Kazgan et al., 1999). As there was no supervision over the premium rates and activities of companies, there appeared the issues of unpaid indemnifications and intentionally started fires. In addition, there were serious problems regarding the determination of damages (Ozmen, 1986).

Under these circumstances, the first national insurance company, the Societe General de Constantinople (Osmanlı Umum Sigorta Şirketi), initiated its operations in 1892. A tendency of acting together appeared among the foreign insurance companies for the purpose of reordering of insurance in the following years. 44 insurance companies, out of which 43 were foreigners, came together and defined a standard fire tariff on 12 July 1900. This was the very first tariff in the Ottoman Empire. The establishment decision of an association, namely ‘the Syndicate of Fire Insurance Companies Operating in Istanbul’, which is composed of 44 foreign companies, was also taken concurrently with the tariff. However, measures which aim to improve industry and prevent abuses could not put into practice. The association, operating under the instructions of Fire Office Committee in London, set up a union namely Fasman, to prevent the outspread of fires by arriving at in time and to research the reasons of fire. The audit mechanism and its contents were also developed. Despite all the positive operations of the Union, not all of the companies entered the Union and they continued to engage in unfair competition and behaved in contrast to the decisions taken by the Union. Also outside Istanbul, there were similar organizations established in provincial cities like Izmir, Salonica, Manastır, by foreign insurance companies. Foreign companies were tried to be taken under control by changes in laws in 1908 and 1914. With the law enacted in 1914, foreign companies were obliged to present assurance and pay taxes. In 1916, the name of the union was changed as the ‘Society of Insurance Companies Operating in Turkey’ which had 81 members all of them being foreign companies. As a result of these changes, foreign companies started to establish partnerships with Turkish people (Gün, 1942; Kazgan et al., 1999).

Consequently, there had been no insurance establishments managed totally by national technicians and national capital until the declaration of republic. Following the establishment of Turkish Republic, big steps were taken in insurance sector towards institutionalization and for constituting a legal framework. Companies operating in Turkey were required to use Turkish as a statutory obligation in all their transactions and documents in 1924 (Ozmen, 1986). In the same year ‘the Club of Insurers’ was established which later replaced by ‘the Central Office of Insurers’. On 31 July 1927 Law No: 1149 regarding the Inspection and Supervision of Insurance Companies was put into force. With the enactment of law aiming to prevent the outflow of foreign exchange and audit foreign and national insurance companies, insurance business started to develop and the number of national insurance companies increased. After necessary preparations and inquiries in the following two years a corporation managed by T.C. İş Bankası A.Ş, was decided to be established. Thereby in 1929 Milli Reasurans T.A.Ş went into operation. In this way, national reinsurance monopoly started in Turkey and all insurance companies, foreign or national, were obliged to hand over some of the premiums they collected to Milli Reasurans. It can said to be the first reinsurance monopoly in the world., Although there were some objections against Milli Reasurans, it played a positive role by eliminating unfair competition, providing payments to be done in time, and preventing corruption (Kazgan et al., 1999). On 28 May 1938, Law No: 1149 was amended by Law No: 3392 and the inclusion of new articles was approved and put into force (The Annual Report of the Association of Insurance and Reinsurance Companies of Turkey, 2005; Kazgan et al., 1999).

In parallel with these developments insurance companies were joined to Trade Ministry in 1939. A new draft law about supervision of insurance companies was prepared at the meeting of ‘Insurance Council’ in Ankara in 1950. Later, this draft law was sent to ‘Central Office of Insurers’ where some disagreements occurred among the members and insurance companies about this draft-law. Genel, Guven, Halk, Ankara, Inan Insurance companies resigned from the membership and later Anadolu Sigorta and Destek Reasurans resigned in 1952 and they established the ‘Association of Insurance Companies of Turkey’ as a legal entity. The statue of it was approved by the Council of Ministers on 16 July 1952 (Kazgan et al., 1999).

The name of Central Office of Insurers was redefined as the ‘Society of Turkish Insurers’ between 1952 and 1954. ‘The Association of Insurance Companies of Turkey’ was abolished in January 1954 and then the regulation of ‘Association of Insurance and Reinsurance Companies of Turkey’ was published and first General Assembly was gathered. The new association was formed by the unification of ‘the Association of the Insurance Companies of Turkey’ and ‘Society of Turkish Insurers’ (The Annual Report of the Association of Insurance and Reinsurance Companies of Turkey, 2005).

Law No: 7397 regarding the Supervision of Insurance Companies came into force on 30th of December 1959 with a serious approach to insurance sector. With Law No: 3379 which came into effect in 1987, some important and fundamental amendments has been made in the Law No: 7397 with the aim of closing gaps in the legal field, developing insurance companies financially and rearranging the position of agents. This law envisaged to enact regulations ordering organizations related to insurance and their activities. The status of the Association was turned into a public institution. Elections of the Association's organs were to be made under judiciary according to another amendment. Insurance companies have been joined to Undersecreteriat of Treasury and Foreign Trade and they were regarded as a part of financial structure. By the 1st of May 1990, in Accident (except compulsory policies), Engineering and Agricultural Insurance and by 1st of October 1990 in Fire and Transportation Insurance, Free Rate system has been accepted. On January 1989, a new regulation relating to the working principles of the Association of the Insurance and Reinsurance Companies of Turkey came into force (Kazgan et al., 1999).

In time, while the number of newly established companies increased, the demand on insurance did not increase at the same rate and there have been some problems in the collection of premium payments. Because of all those issues, there appeared a need to make some amendments in the Law No: 7397 with the enactment of decree laws. With the aim of solving the problem of premium collection, the system of tracking premiums on agency current accounts was abolished and tracking on the basis of policies was accepted by the 1st of January 1995.

In the year of 2000, the pool of "Dogal Afet Sigortalari Kurumu" (DASK) was set up to manage earthquake insurance which has been made mandatory after 1999 earthquakes and its management was assigned to Milli Reasurans T.A.S which was experienced about it. On the other hand, compulsory reassurance hand over which was shaped by the Law No: 1160 and 23.07.1927 date, was finalized.

Private Pension Plan system went into operation on 27 October 2003 with the "Bireysel Emeklilik Tasarruf ve Yatırım Sistemi Kanunu" (Private Pension Savings and Investment System Law) which was enacted on 28 March 2001. Some amendments have been made on the Insurance and Private Pension Legislation in 2005.

2.6 Structure of Insurance Sector in Turkey

The Turkish insurance sector is still creeping, in spite of its rapid development. Nevertheless, it still has a great potential not used. Consciousness of people about insurance increases day by day. Although the sector was dominated by foreign companies at the early stages of its history, local or alliance companies are the key players in the sector now.

Development of insurance sector in Turkey can be considered to be in relation to the reinsurance monopoly implemented after 1927. Introduction of the monopoly is the turning point in structural development of insurance. Prior to the reinsurance monopoly, insurance activities were completely different in terms of supervision and market structure. Evolution of the insurance sector in Turkey can be classified into different phases: The first phase begins with the second half of the 19th century and ends with the implementation of the reinsurance monopoly in 1927; the second phase starts in 1927 and ends with 1987; the third phase is from 1987 to the present time. The first phase, 1862-1927 period, can be called as ‘liberal phase’. In this period there were no restrictions on the business of the domestic and foreign insurance companies. The second period, 1927-1987, can be called as ‘etatist phase’. In contrast to the first period, this period is characterized by strict supervision. The regulatory measures were taken in 1927. The supervision of insurance companies was carried out under the reinsurance monopoly which was started in 1929 with the establishment of Milli Re by Is Bankasi. A new insurance law was enacted and restrictions on new entries were lifted in 1987. The phase following 1987 can be called as ‘controlled liberal phase’. The general characteristic of this stage was the liberalization of premium rates in non-life insurances, except in compulsory insurances (Elveren, 1996).

Turkish insurance sector faced financial problems especially after the 2001 economic crisis. The crisis affected very badly the banks and insurance companies owned by banks whose stocks had been siphoned out. Individually owned companies having inadequate capital and unbalanced portfolio structure were also negatively influenced.

Insurance is divided into 3 main lines that are property insurance, liability insurance and life insurance. Table 2.4 denotes the classification of branches in Turkey. Property insurance is classified in 6 types; fire, accident, marine, engineering, agricultural and credit. Liability insurance covers different types of liability insurances like motor vehicles third party liability insurance, general third party liability insurance etc. Life insurance branch includes life, personal accident, health, and compulsory road passenger transportation, personal accident insurances. Here in this study, we exclude the life branch and include all branches except life branch.

Table 2.4 Types of insurance in Turkey

1. Property Insurances	
A. Fire Insurances	
	A.1. Fire Insurance
	A.2. Loss of Profit Insurance Due to Fire
	A.3 .Compulsory Earthquake Insurance
B. Accident Insurances	
	B.1. Motor Vehicle Physical Damage Insurance
	B.2. Theft Insurance
	B.3. Plate Glass Insurance
C. Marine Insurances	
	C.1. Hull Insurance
	C.2. Specie Insurance
	C.3. Cargo Insurance
D. Engineering Insurances	
	D.1. Machinery Breakdown Insurance
	D.2. Erection All Risk Insurance
	D.3. Construction All Risk Insurance
	D.4. Electronic Equipment Insurance
E. Agriculture Insurances	
	E.1. Crop – Hail Insurance
	E.2. Livestock Insurance
	E.3. Poultry Insurance
	E.4. Greenhouse Insurance
F. Credit Insurances	
	F.1. Credit Insurance
	F.2. Export Credit Insurance
2. Life Insurances	
A. Life Insurances	
	A.1. Term Insurance
	A.2. Saving Life Insurance
B. Personal Accident Insurance	
C. Health Insurance	
D. Compulsory Road Passenger Transportation Personal Accident Insurance	
3. Liability Insurances	
A. Motor Vehicles Compulsory Third Party Liability Insurance	
B. Compulsory Third Party Liability Insurance for Road Passenger Transportation	
C. Motor Vehicles Facultative Third Party Liability Insurance	
D. Elevator Accident Third Part Liability Insurance	
E. Employer Third Party Liability Insurance	
F. General Third Party Liability Insurance	
G. Compulsory Third Party Liability Insurances for LPG and Dangerous Materials	
	G.1.Compulsory Third Party Liability Insurance for Dangerous Materials
	G.2. Compulsory Third Party Liability Insurance for LPG
H. Legal Protection Insurance	
I. Private Security Third Party Liability Insurance	
J.Compulsory Certificate Third Party Liability Insurance	

Source: Association of Insurance and Reinsurance Companies of Turkey-www.tsrsb.org.tr

Currently there are 55 insurance companies operating in the sector, of which 2 of them are reinsurance companies, while only Milli Reasurans operates actively as a reinsurance company. 21 companies operate in the field of life branch and 32 companies are in non-life branch. In the last 5 years the number of insurance companies declined by 18 % (Table 2.5).

Table 2.5 Number of insurance and reinsurance companies in Turkey

Occupation	**2001**	**2002**	**2003**	**2004**	**2005**
Insurance Companies	63	58	55	53	53
Life	22	21	21	21	21
Non-life	41	37	34	32	32
Reinsurance Companies	4	3	3	3	2
Total	**67**	**61**	**58**	**56**	**55**

Source: Annual Report of Association of Insurance and Reinsurance Companies of Turkey, 2005

31 companies work in the field of fire, marine, accident, engineering and motor vehicles TPL branches. There are only 3 companies working in the credit branch indicating that this line of business is not developed much. In legal protection branch, there are 15 companies operating and there is a gradual increase in the number of firms in contrast to the other branches. In agricultural branch 15, in health branch 33, in personal accident branch 45 and in life branch 26 insurance companies operate (Table 2.6).

Table 2.6 Breakdown of insurance companies according to the branches

Branches	**2001**	**2002**	**2003**	**2004**	**2005**
Fire	40	38	34	31	31
Marine	40	38	34	31	31
Accident	40	38	34	31	31
Engineering	40	38	34	31	31
Agriculture	15	14	14	13	15
Legal Protection	6	7	9	14	15
Health	40	39	36	33	33
Personal Accident	58	56	49	49	45
Credit	1	1	1	1	3
Motor Vehicles TPL	-	-	34	31	31
Life	33	28	28	26	26

Source: Annual Report of Association of Insurance and Reinsurance Companies of Turkey, 2005

The Turkish insurance sector is tiny compared to counterparts over the world. Insurance premium production per capita is about $47 in Turkey, while world average is about $470,2 and about $2.738,6 in developed economies. Ratio of the volume of Turkish insurance sector over GNP, is 1,38 percent while it is about 8,08 % on average in world and 9,14 % on average in developed economies. 39,35 % of the world's premium production is generated by the countries in the American continent, while 34,78 % is generated by the European countries. Turkey has 0,11 % share in the world. In non-life premium volume, the share of Turkey is larger by 0, 21 % (Table 2.7).

Table 2.7 World insurance premium volume (2003)

Life Non-life	**Million USD**	**World Market Share %**	**Premium % GNP**	**Premium Production Per Capita USD**
America	1.159.732	39,35	8,52	1.354,8
Europe	1.024.936	34,78	7,85	1.230,1
Asia	684.758	23,23	7,49	182,9
Africa	31.671	1,07	4,82	37,3
Australia	46.097	1,56	7,76	1.469,4
OECD	2.710.847	91,98	8,92	2.321,1
G7	2.287.140	77,6	9,5	3.192,2
Turkey	**3.316**	**0,11**	**1,38**	**47,0**
World	**2.947.195**	**100**	**8,08**	**470,2**
Developed Economies	2.627.126	89,14	9,14	2.738,6
Developing Economies	319.811	10,85	3,87	59,7

Source: Sigma No 3/2004, Swiss Re Economic Research and Consulting

The sector has shown a gradual increase since 1990s except 1994 and 2001. Economic crises in 1994 and 2001 negatively affected premium production which dropped to $1.066 million in 2001 by 31,8 percent and fell to $2.033 million in 2004 by 28,6 percent. Despite the damaging effects of 2001 financial crisis, it also paved way for a series of financial reforms including measures to reform outdated insurance regulations. The revaluation of Turkish Lira against USD in 2003 and 2004 significantly affected the sector so that there was a 36,6 percent increase in 2003 in premium production with a volume of $ 3.316 million and 59,5 percent increase in 2004 premium production with a volume of $ 4.656 million (Table 2.8).

Table 2.8 Direct premiums produced in Turkey in USD

Years	*Direct Premiums (YTL)*	*Increase in Direct Premiums (YTL) %*	*Direct Premiums Per Capita (YTL)*	*Increase in Direct Premiums PerCapita %*	*PREMI./ GDP %*	*Direct Premiums (Million $)*	*Increase in Direct Premiums ($) %*
1981	22.851		0,0005			203	
1982	33.874	48,2	0,0007	44,4		206	1,5
1983	46.311	36,7	0,0010	33,3		203	-1,5
1984	85.288	84,2	0,0017	79,7		231	13,8
1985	129.817	52,2	0,0026	48,6		247	6,9
1986	191.51	47,5	0,0037	44,4		281	13,8
1987	311.989	62,9	0,0059	59,2		363	29,2
1988	572.082	83,4	0,0107	79,6		401	10,5
1989	1.039.700	81,7	0,0189	77,8		497	23,9
1990	2.211.100	112,7	0,0394	108,1	0,56	710	42,9
1991	4.033.400	82,4	0,0704	78,6	0,64	964	35,8
1992	8.171.429	102,6	0,1394	98,1	0,75	1.187	23,1
1993	17.203.911	110,5	0,2867	105,6	0,87	1.563	31,6
1994	31.729.600	84,4	0,5168	80,2	0,82	1.066	-31,8
1995	63.250.523	99,3	10,040	94,3	0,81	1.377	29,2
1996	128.167.862	102,6	19,964	98,8	0,87	1.535	11,4
1997	283.084.008	120,9	45,221	126,5	0,98	1.811	18
1998	549.736.978	94,2	84,854	91,1	1,05	2.119	17
1999	966.459.337	74,6	150,106	72,1	1,25	2.314	8,6
2000	1.774.577.979	83,6	271,712	81,0	1,42	2.847	23
2001	2.480.740.783	39,8	374,570	37,9	1,39	2.033	-28,6
2002	3.650.727.900	47,2	543,749	45,2	1,32	2.426	19,6
2003	4.961.330.513	35,9	699,913	33,7	1,38	3.316	36,6
2004	6.621.024.600	33,5	919,548	31,4	1,54	4.656	59,5

Source: Undersecreteriat of Turkish Treasury.-www.hazine.gov.tr/stat/finans/ti55.htm

Casualty and Compulsory Motor Third Party Liability have the largest shares in direct premium production by 32,4 % and 15,6 % respectively. Then we have Life, Fire and Health branches. Transportation, Engineering, Personal Security, Legal Protection and Credit branches have the lower shares. While half of the income comes from life branch in the insurance industry over the world, it is about 14,7 % in Turkey. This is an important indicator showing the development potential of this branch in Turkey (Figure 2.3).

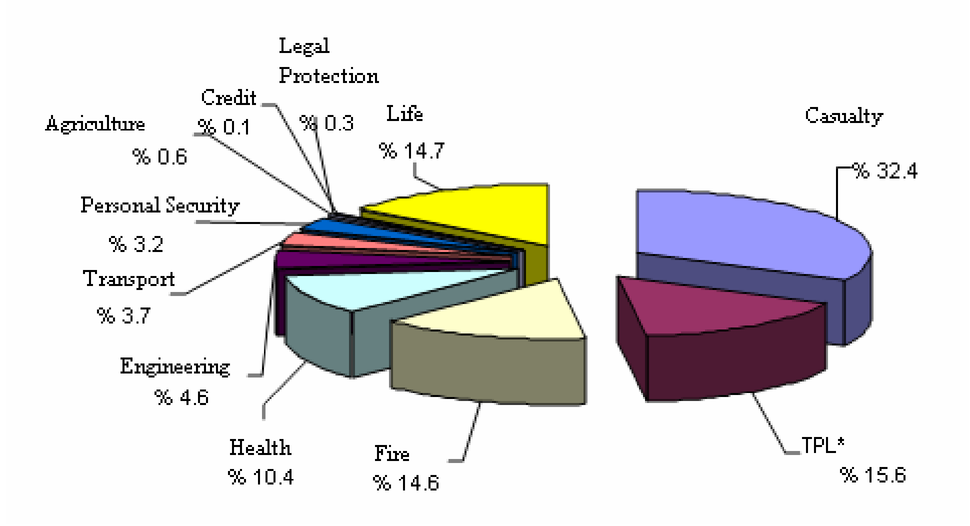


Figure 2.3 Shares of branches in life and non-life premium production, 2006

Source: Association of Insurance and Reinsurance Companies of Turkey-www.tsrsb.org.tr

As it is shown in the Table 2.9, there is a decrease in the share of fire, transport, engineering, health and life branches in the last 5 years. Introduction of private pension system can be thought as the basic reason for the decrease in the life branch. On the other hand, there is an increasing trend in Compulsory Motor Third Party Liability, Casualty, Personal Security, Agriculture branches.

Table 2.9 Shares of branches in direct insurance premium production in the last 5 Years

Insurance branches	**2001**	**2002**	**2003**	**2004**	**2005**
Fire	17,59	17,9	16,51	15,26	14,26
Transport	4,29	4,37	3,9	3,91	3,64
TPL	9,86	11,14	11,47	14,25	14,97
Casualty	31,88	29,3	30,35	31,16	32,86
Personal Security	2,03	2,1	2,14	2,47	3,02
Credit	-	0,01	0,02	0,04	0,06
Legal Protection	-	0,08	0,11	0,23	0,25
Engineering	4,82	5,02	4,16	3,89	4,04
Agriculture	0,34	0,42	0,41	0,44	0,63
Health	10,85	11,26	10,3	9,84	10,08
Life	18,35	18,41	20,66	18,5	16,2
Total	100	100	100	100	100

*TPL-Compulsory Motor Third Party Liability

Source: Annual Report of Association of Insurance and Reinsurance Companies of Turkey, 2005

In the Turkish insurance sector, top ten companies have 64,36 % market share of the total premium volume indicating that those companies dominate the sector overwhelmingly. Anadolu Sigorta is the leading company in the sector with a market share of 10,90 %. Axa Oyak is the runner-up and Koc Allianz takes the third spot with market shares of 9,70 % and 8,09 % respectively (Figure 2.10).

Table 2.10 Top ten companies in Turkish insurance sector (2006)

Rank	**Company**	**Total premium production (TRY)**	**Market Share %**
1	Anadolu	1.030.373.347	% 10,90
2	Axa Oyak	917.485.398	% 9,70
3	Koc Allianz	765.035.939	% 8,09
4	Aksigorta	651.438.310	% 6,89
5	Yapı Kredi	574.342.313	% 6,08
6	Isvicre	513.825.366	% 5,43
7	Gunes	495.435.649	% 5,24
8	Basak	434.093.969	% 4,59
9	Garanti	357.793.741	% 3,78
10	Anadolu Hayat Emeklilik	340.786.879	% 3,60
	TOP 10 COMPANY	**6.080.610.910**	**% 64,32**
	SECTOR TOTAL	**9.454.096.793**	**% 100,00**

Source: Association of Insurance and Reinsurance Companies of Turkey-www.tsrsb.org.tr

2.7 Brief History of Turkish Economy (1980-2005)

Turkish economy has experienced high inflation rates over the past years. The annual inflation rates were around 35-45 % in the early 1980s, 60-65 % in the late 1980s and early 1990s and about 80% before the government started a disinflation program in 1998.

Early attempts to reduce inflation rates started in 1980 by the January 24th program. A liberalized economy and an export-led strategy were declared by the government. The program was successful in terms of a lowering inflation, a higher GDP growth and a relatively liberalized external trade regime and financial system. In the late 1980s various forms of nominal anchoring and monetary tightening was applied without reducing the public sector barrowing. This strategy had to be combined with higher interest rates and lower depreciation rate practice to secure short-term capital flow. Following the general elections and establishment of new parliament in 1984, inflation started to increase again. In 1989 the capital account was liberalized and the new inflation strategy seemed to be strong. However, since on the fiscal front there were no sound measures, disinflationary efforts were unsuccessful. In the early 1994, the Turkish economy experienced a major crisis due to unsustainable nature of fiscal policy and external deficit. A new stabilization program and stand-by agreement was announced in the same year but these efforts became useless at the end of 1995. In 1998, another disinflation strategy was defined under the supervision of IMF Staff Monitored Program. The inflation rates and fiscal imbalances were improved to some extent but pressure on interest rates was not lowered. Fiscal balance was deteriorated as a result of some series of events; The Russian crisis in August 1998, the general elections in April, two major earthquakes in August and October 1999 (Selcuk and Ertugrul, 2001).

Another restructuring and reform program was introduced following the general elections on April 1999. The basic goals of the program was to reduce inflation to reasonable rates, to raise the growth potential and to allocate resources in the economy in a more efficient and effective way (Keyder, 2000).The government aimed at reducing current inflation rates of 60-70 % to single digits by the end of 2002. A stand-by agreement was signed with IMF in December 1999. The new inflation program adopted crawling peg regime which can be explained as the percent change in the Turkish Lira value of a basket of foreign exchanges is fixed for a period of a year and a half. This regime was based on a an exchange rate basket path consisting of 1 USD + 0,77 Euro. Moreover, a daily depreciation rate was announced by the CBRT. The program gave positive signals for the economy at the beginning. Nevertheless, since the real exchange rate appreciated with the program, the banking sector increased its foreign currency denominated debt to a risky level. In November 2000, sudden capital outflows led to banking sector enter into crisis and CBRT reserves were deepened by an important amount. By the end of 2000, there was turmoil in financial markets. After the December crisis, the program was on track by February 2001 with substantial additional funds from IMF. The short-lived crisis showed that continuation of disinflation program and stability of banking system in the short run depends on short-term capital inflows. Unless a comfortable environment created for foreign direct investment, the program is destined to fail and inflation is likely to increase. In February 2001 the crawling exchange regime was abandoned as a result of political instability and following severe crisis. The nominal exchange rate was depreciated by 94 percent. In May 2001, floating exchange rate regime was adopted (Selcuk and Ertugrul, 2001).

In the post crises period, economy began to recover and GDP growth reached to 6,9 % between 2002 and 2003. In the manufacturing industry, investments began to increase. Inflation rate declined to 18,4 % at the end of 2003. The real exchange rate appreciated 10,1 percent in 2002-2003 period. During this phase, export's and import's share increased. Increase in the demand of import, caused by real appreciation and decrease in interest rates, led to current account deficit. Increase in exports led to increase in imports since intermediate and investment goods imports acquired to produce exportables. Hence in the post crisis period (2002-2003) output growth and real exchange appreciation occurred simultaneously (Can, R., 2006).

During 2004 and 2005 Turkish economy continued to grow with high rates. It was the fastest growing economy in the world in 2004 with a rate of 9,9 %, which was realized as 7,6 % in 2005. In 2004 and 2005, GDP growth rates were 8,8 % and 7,4 %. Manufacturing industry grew by 9,4 % in 2004 and 6,5 % in 2005. Inflation rate decreased to single digit values in 2004 and 2005, which were 9,3 % and 7,7 % respectfully. Current account deficit of 1,5 billion USD in 2002 which reached to 15,6 billion USD in 2004 and to 22,6 billion USD in 2005 remained as one of the main concerns among economists (Turkish Statistical Institute).

2.8 Theoretical Framework for Insurance Consumption and Economic Growth Nexus

Literature on the interaction between financial sector and economic growth is merely concerned with bank and stock markets. The insurance sector has not received an extensive attention in this regard while plenty of studies exist on the causal relationship between economic growth and bank lending and economic growth and capital markets. A few researchers have made contribution to the issue with their studies. Outreville has made a notable empirical contribution to the understanding of the link between an economy's financial market development and insurance market development. He was concerned with understanding the importance of insurance within the development process. He makes a cross-section analysis on property liability insurance (PLI) premiums onto GDP, insurance price and other macroeconomic figures for 55 developing countries between the years 1983 and 1984. The results support the significance of GDP and financial development. He finds a positive relationship between a nation's economic development and property-liability insurance consumption. Other variables do not seem to be significant. The insufficient demand for insurance services and hence resulting unbalanced portfolio of the insurer are the problems in the investigated countries (Outreville, 1990).

Ward and Zurbruegg advances Outreville's work by analyzing the long and short run causal relationships between economic growth and insurance market development. Nine leading OECD countries are examined with real GDP as the measure of economic activity and real total written premiums as a measure of insurance activity. This is conducted by cointegration analysis on a unique set of annual data for real GDP and total real premiums for each country covering the years between 1961 and 1996. Ward and Zurbruegg defend that casual relationships between economic growth and insurance market development vary across countries. This is due to country specific factors. In addition, attitudes towards risk and appropriateness of insurance as a risk management technique are likely to be culturally determined and hence different among economies. Also regulatory framework differs between economies (Ward and Zurbruegg, 2000).

Beenstock, Dickinson and Khajuria employ pooled time series and cross-section analysis on data covering the years 1970-1981, comprising mainly 12 countries. They regress premiums for property liability insurance (PLI) onto gross national product (GNP), income and interest rate development. They identify that premiums are correlated to interest rate and GNP and marginal propensity to insure (short and long-run) rises with income per capita and it is always higher in the long run. They defend that economic cycles or cyclical income variations does not affect insurance consumption (Beentock et al., 1988).

Hofstede develops a taxonomy by grouping countries as low and high group societies. Low group societies emphasize individuality and tend to support market based means of dealing with risks such as insurance. High-group societies put an emphasis on collectivism and tend to further the role of families and government in the risk management process. Insurance level within an economy will depend on the national culture and the willingness of individuals to use insurance contracts as a means of dealing with risk (Hofstede, 1995).

Park, Borde and Choi study the linkage between insurance penetration and GNP, and some socio-economic factors adopted by Hofstede (1983). The authors use cross-sectional data of 38 countries in 1997. The results show that GNP, masculinity, socio-political instability and economic freedom are significant. While all the remaining factors lack importance (Park et al., 2002).

Browne, Chung and Frees attempt to explain variations in the international consumption of insurance by using disaggregated data thinking that aggregated data across all lines of non-life insurance prevent detection of differential effects across individual lines of coverage. Prior researches have been based on aggregated data. For their empirical analysis they use both time series and cross-sectional data. They study on the relationship between premium density and some independent variables namely income, market share of foreign insurers, risk aversion, urbanization, wealth and legal system. The relationship between premium density and income (GNP per capita in US dollars) is appeared to be positive and significant. This result is in line with previous studies claiming that income is positively correlated with insurance consumption. They find that income is positively correlated with the purchase of both motor vehicle and general liability insurance. But, income has a much greater effect on the purchase of motor vehicle insurance than on the purchase of general liability insurance. There is a negative and statistically significant relationship between the market share of foreign insurers variable and motor vehicle premium density. This result implies that a low market share of foreign companies may represent a highly competitive domestic market which in turn induces higher insurance consumption. On the other hand, there is positive and statistically significant relationship between market share of foreign insurers variable and general liability premium density implying consumption of insurance is greater in markets in which foreign insurers have a greater market share. The authors use third level education enrollment percentage as risk aversion measure. It is statistically insignificant in motor vehicle insurance model and significant in the general liability insurance pooled cross-sectional analysis. In terms of urbanization variable, findings suggest that general liability insurance consumption is greater in countries with lower urbanization rates. Wealth variable appears to be a substitute for insurance according to the results. In terms of legal system, it is statistically significant in both the motor vehicle and general liability least square regression models (Browne et al., 2000).

There are some other different perspectives related to the insurance-growth nexus. Holsboer's main interest was the recent changes in external environment for insurance companies in Europe. He defends that the change of importance of insurance services in an economy is dependent on the growing amount of assets and increasing competition between the financial sectors. However, he puts emphasis on the prominent role in the services industry and argues that insurance sector development is highly correlated with economic growth (Holsboer, 1999).

Das, Davies and and Podpiera establishes a model to identify contagious functions and properties of insurances. Then they develop new financial soundness indicators for insurance companies by joining their experiences gained under the Financial Sector Assessment Program (FSAP) and from a review of recent failures in the sector. In the model, the insurances' role as a risk pass-through mechanism, the asset allocation and the ability of insurers to alter the behavior of clients and the public are the factors that affect the economic growth. They defend that financial deregulation and liberalization that allowed bank-type activities, large macroeconomic fluctuations in output and price, and close linkage between banks and insurers could be the main indicators for a possible insurance failure with repercussions to the economy at large (Das et al., 2003).

Browne and Kim investigate life insurance consumption per capita for 45 countries in 1980 and 1987. Their regression analysis represents cross-sectional data onto various country figures, such as income and inflation rate. Income, dependency and social security expenses are positively, inflation is negatively correlated and significant in both years. The religious origin, in other words, being a Muslim country, is always negatively connected to insurance consumption and hence the results supports the findings of Hofstede (1995, 2004) in their reasoning that social banking influences insurance demand (Browne and Kim, 1993).

Catalan, Impavido and Musalem analyze Granger causality of insurance assets for 14 OECD and five developing countries for the period 1975 and 1997 against GDP growth. They argue that contractual savings are partly induced by market capitalization (MC) and value traded (VT) in the majority countries. The correlation between MC and pension funds show similar links as its connection to contractual savings, however the nexus of pension funds- VT is mixed. In the analysis, nine OECD countries support the life insurance – MC link, while the results for the developing countries are mixed. Although findings for the connection of life insurance to VT is not so strong in OECD countries, the majority of non-OECD countries show this linkage. The effect of the non-life business is almost equal to the impact of the life business for MC and less for VT. The linkage proposed by the authors between contractual savings and MC or VT seems to be valid for OECD countries, particularly for countries with small and tight markets. There also exists a regulatory environment in those countries. The reason of mixed results for the small set of non-OECD countries maybe the different regulatory restrictions they employ. The second proposition – to favor contractual savings institutions over other institutional investors (e.g. non-life insurance) – is also supported by the evidence and induces the authors to recommend an appropriate sequencing of the financial institutions' development (Catalan et al., 2000).

Beck and Webb apply a cross-country and a time-series analysis for the linkage between life insurance penetration, density, and percentage in private savings and in force to GDP as the dependent variables and GDP, real interest rate, inflation volatility and other the explanatory figures as independent variables. Strong evidence was found for GDP, old dependency ratio, inflation and banking sector development. From the group of additional explanatory variables expected inflation, real interest rate, secondary enrollment and the private savings rate were also found to be significant. The evidence for the other dependent variables and the time-series and cross-country analysis support the results. When analysing the share of life insurance in private savings, the findings suggest that the ratio decreases with an increasing saving rate. This could be the result of the behavior of the household to limit life insurance expenses by transferring additional income to other saving instruments. The cross-country analysis demonstrates a negative coefficient for an Islamic country. It also shows that institutional development is positively related to insurance demand (Beck and Webb, 2002).

Szablicki makes a cross-sectional analysis and a panel regression for causality between three different life insurance figures and income and socio-economic country variables for the period 1960 to 1996. Results from 63 developing and developed countries support the significance of education level. There is also evidence for the importance of the banking sector development and the income level, which are in line with the results of past researches. The panel data regression largely confirms the results of the cross-section estimation (Szablicki, 2002).

Webb, Grace and Skipper use a Solow-Swan model and analyse both the insurance and the banking sector. They classify the insurance as property/liability products and life products. Their findings demonstrate the significance of financial intermediation. When split into the three categories banking and life sector are significant for GDP growth, while property/liability insurances loose their importance. Furthermore results show that the combination of one type of insurance and banking has the dominant impact on growth (Webb et al., 2002).

Lim and Haberman investigate the Malaysian life insurance market. Findings show that the interest rate for savings deposits and price are significant in the equation. On the other hand, the positive sign for the interest rate may be supporting the findings of Webb et al. (2002), who reached the best results by combining the insurance and the banking sector in the estimates. Price elasticity is found to be more than even (Lim and Haberman, 2003).

Esho et al., concentrate on the legal framework besides the GDP and the Property-Causality Insurance Consumption (PCI) link. The causality analysis is based on data from 44 countries for the period of 1984 to 1998. It covers OLS (ordinary least square) and fixed-effects estimations and GMM (generalized method of moments) estimation on panel data. Findings show that independent of the methodology used, real GDP and the strength of the property rights in a country are positively correlated to insurance consumption. Results also demonstrate that the insurance demand is significant in loss probability, while the link with risk aversion is rather weak. The impact of the price is hardly negative when investigated with GMM estimator. Even though the data is substantially different for the developments of countries of different legal origin (PCI per capita, GDP, PCI price, etc.), there is no evidence for the legal origin being a significant indicator for PCI consumption. In contrast to other sectors the importance of the property rights suggests that the legal environment positively affects insurance demand (Esho et al., 2004).

3. METHODOLOGY

Understanding effects of macro-economic factors can help insurers gain a competitive edge. The current study investigates how those factors influence non-life insurance sales in terms of premiums received. This chapter firstly draws the conceptual framework for the study. Then, sections devoted to data, research design, research variables, data analysis procedures and regression analyses.

3.1 Conceptual Framework

Figure 3.1 depicts the conceptual framework for the study. The dependent variable of non-life insurance sales is influenced by four macro-economic factors namely; inflation rate, USD in TRY, annual interest rates and GDP per capita.

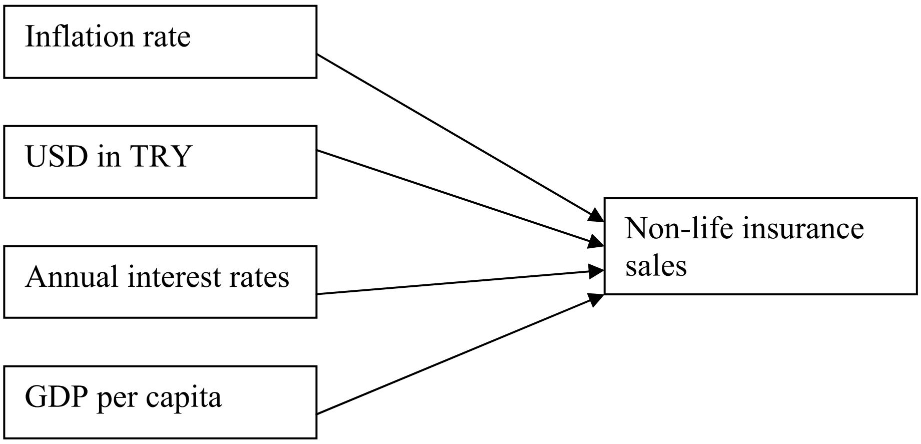


Figure 3.1 Relationship between macro-economic factors and non-life insurance sales

As reported in Part Two, Outreville finds a positive relationship between a nation's economic development and property-liability insurance consumption. The results support the significance of GDP and financial development (Outreville, 1990). Beenstock, Dickinson and Khajuria identify that premiums are correlated to interest rate and GNP and marginal propensity to insure (short and long-run) rises with income per capita and it is always higher in the long run (Beenstock et al., 1988). Browne, Chung and Frees study on the relationship between premium density and some independent variables namely income, market share of foreign insurers, risk aversion, urbanization, wealth and legal system. The relationship between premium density and income (GNP per capita in US dollars) is appeared to be positive and significant (Browne et al., 2000).

3.2 Research Design

The research described here studies the effects of macro-economic factors on non-life insurance sales, hence the type of research design is a (explanatory) correlational one. The author undertakes linear and multiple regression models to examine the relationships between the independent variables and the dependent variable.

3.3 Data

The yearly data for the four macro-economic parameters (four main research variables namely inflation rate, USD, annual interest rates and GDP per capita) and non-life insurance premiums cover a 19 years period from 1986 to 2004. Secondary data which was used for data collection purposes were obtained from the Undersecretariat of Turkish Treasury and the Association of the Insurance and Reinsurance Companies of Turkey.

3.4 Research Variables

3.4.1 Dependent variable

Dependent variable is non-life insurance premiums received. It is important to emphasize the significance of factors that have an impact on premium production to make sound budget decisions. In the study, economic fundamentals are taken into account for estimating premium production. Changes in some of these factors may increase production volume, while changes in others may cause a reduction.

3.4.2 Independent variables of the research

The changes are studied in the following four economic variables that may potentially have an effect on insurance premium production as independent variables;

1. Inflation rate
2. USD in TRY
3. Annual interest rates
4. GDP per capita

3.4.2.1 Inflation rate

Changes in inflation rate influence insurance price rates and may have the potential to effect consumption patterns of people, therefore the expected premium production. So we can say that an increase or decrease in inflation rate should be a determinant of premium production. Figure 3.2 gives the change in inflation and in non-life premium production for the period 1986 to 2004.

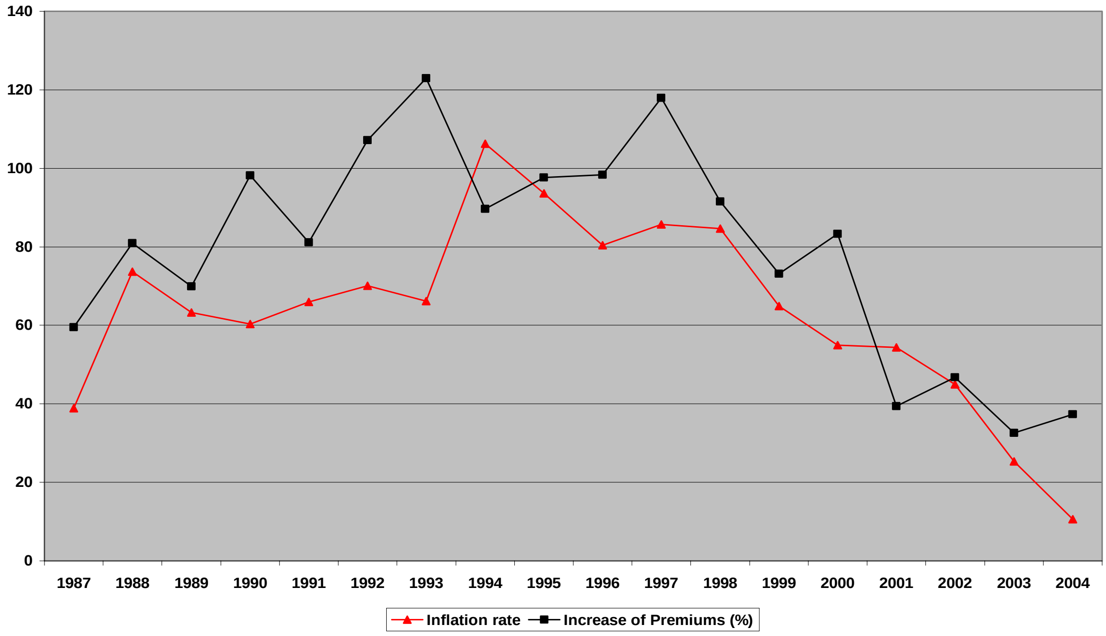


Figure 3.2 Change in inflation and non-life premium production

Source: Undersecreteriat of Turkish Treasury

3.4.2.2 USD in TRY

USD variable is used in the analysis to show the effect of developments in alternative investment devices. Although USD and insurance premium production volume are not substitutes of each other, people can prefer investing in a strong currency with the expectation of a sharp increase in the currency rates rather than paying insurance premiums.

Figure 3.3 shows the change in USD and non-life insurance premium production for the period 1986 to 2004.

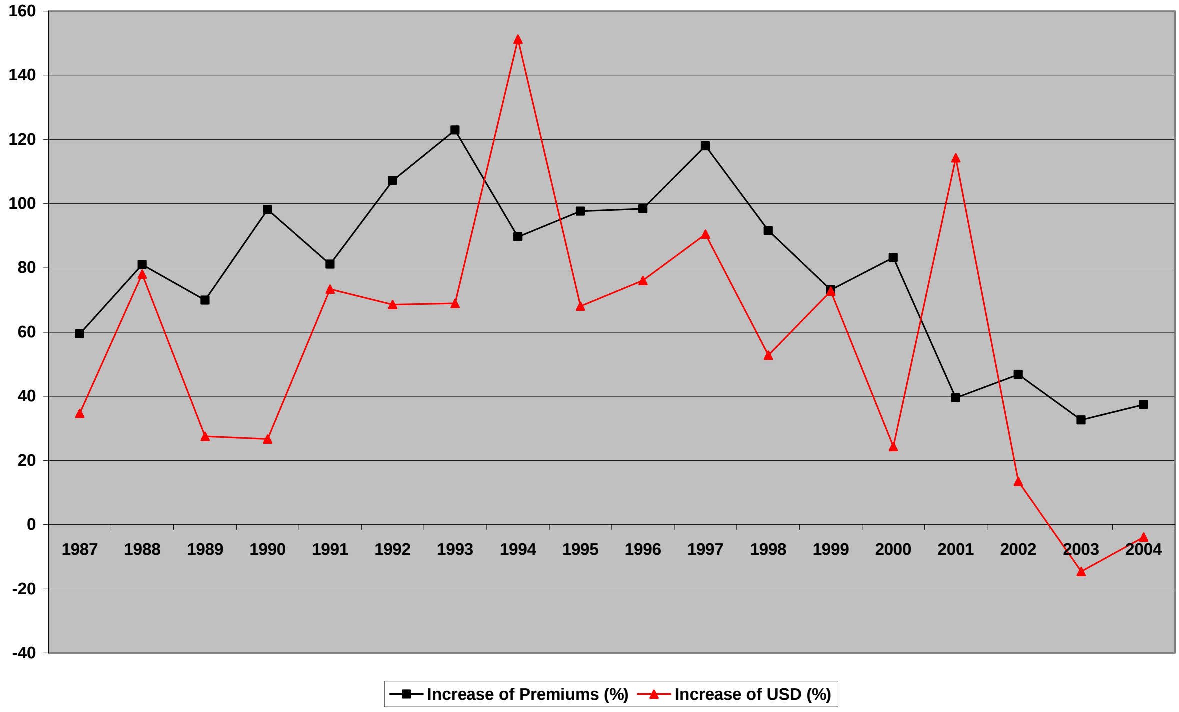


Figure 3.3 Change in USD and non-life insurance premium production

Source: Undersecreteriat of Turkish Treasury

3.4.2.3 Annual interest rates

Interest rates variable can also be used as another alternative investment option in the analysis. When annual interest rates get higher, people tend to invest on high income financial tools and buy fewer insurance policies. Therefore, this is expected to lower the increase rate of premium production.

The change in interest rates and insurance premium production for the period 1986 to 2004 is shown in Figure 3.4.

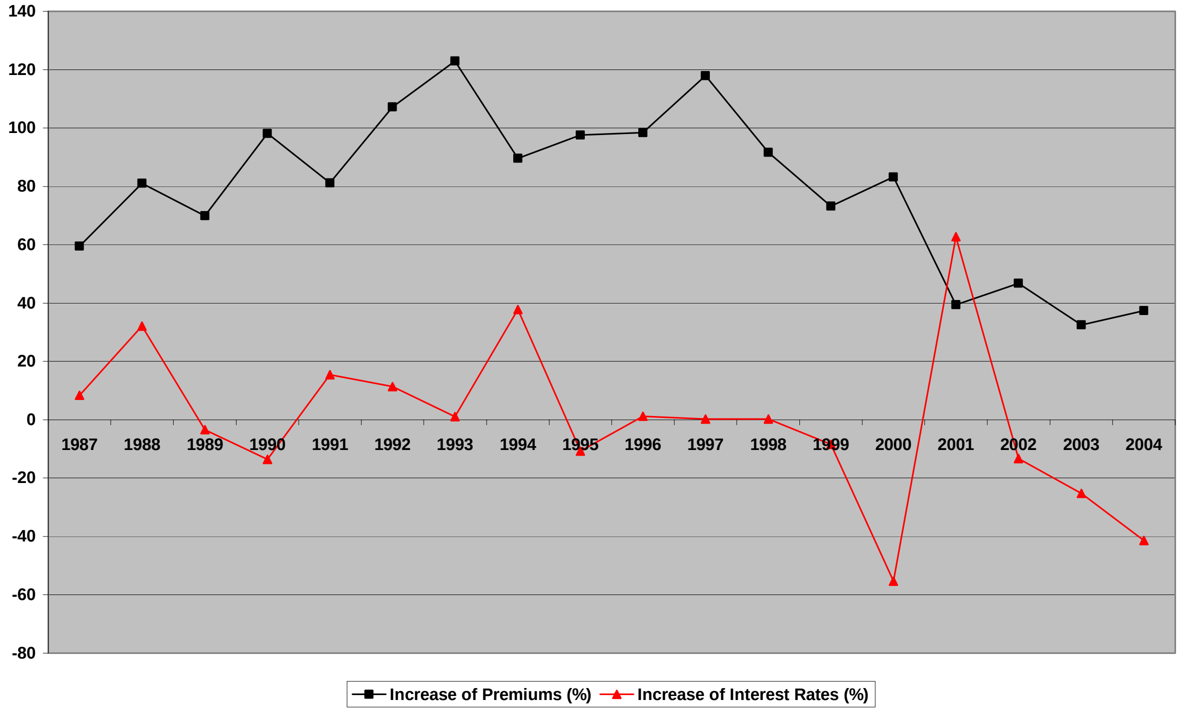


Figure 3.4 Change in annual interest rates and non-life premium production

Source: Undersecreteriat of Turkish Treasury

3.4.2.4 Gross domestic product (GDP) per capita

GDP is an indicator of economic prosperity of society. It is expected that the more is the GDP per capita, the higher is the insurance premium production per person.

As GDP per capita increases, tendency of people to consume more also becomes higher. They can have spare funds to invest on different financial instruments or buy insurance policies.

Figure 3.5 demonstrates the change in GDP per capita and non-life insurance premium production for the period 1986 to 2004.

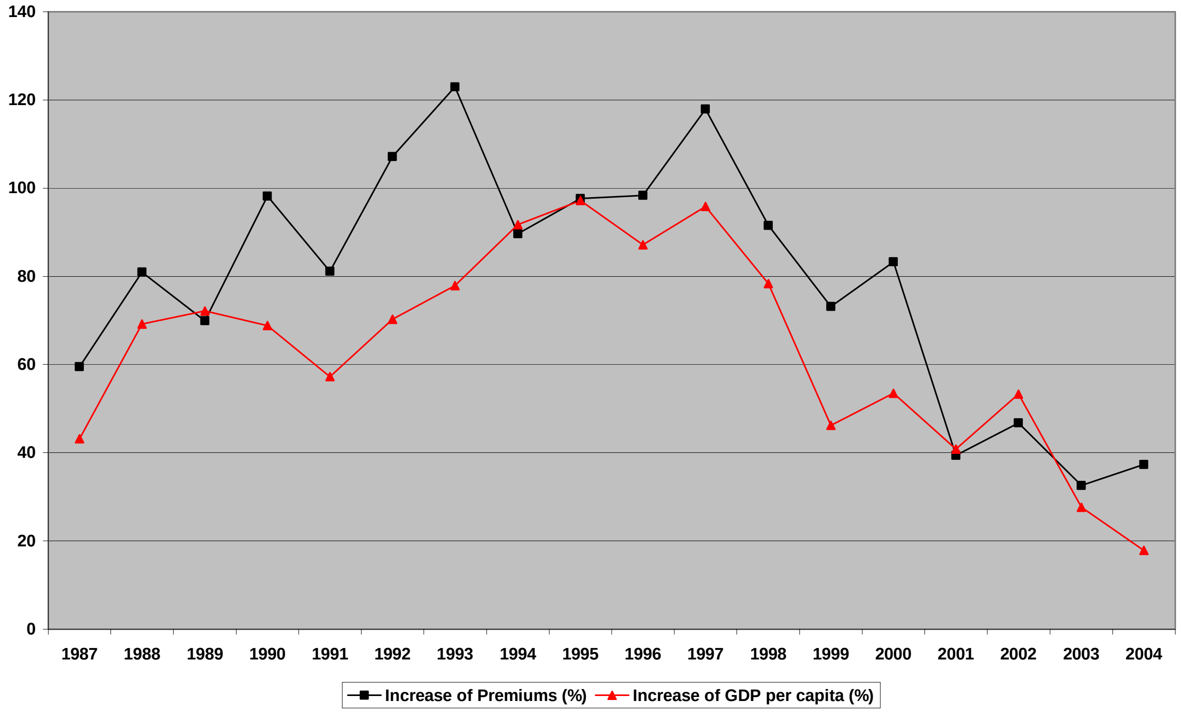


Figure 3.5 Change in GDP per capita and non-life premium production

Source: Undersecreteriat of Turkish Treasury

3.5 Data Analysis Procedures

The data analysis methods used in the study are linear regression and multiple linear regression analyses. Microsoft Excel 2003 - Analysis ToolPak was used for statistical analysis procedures. The statistical methods which were employed for analyzing the research data could be summarized as follows:

It is assumed that insurance premium production volume is composed of two components, which are predictable and unpredictable factors. This research concentrates on predictable component of insurance premium production. By definition, the conditional variance of a series, σ_t^2, is the predictable component of the change in the volume in these series.

Let's assume that we model a series in vectoral form as follows:

$$y_t = x_t^{'}\beta + u_t \qquad (3.1)$$

where x_t is a set of variables that have an impact on the conditional mean of y_t, and u_t is an error term with zero mean and conditional variance σ_t^2.

Linear models that will include four explanatory variables are developed in order to measure to what extent changes of these variables affect the premium production volume. The influence of changes in inflation rate, USD, annual interest rates and Gross Domestic Product (GDP) per capita on insurance premium production volume are measured by using the yearly data separately. Finally, influence of changes of all the four macroeconomic variables altogether on premium volume is measured.

Insurance premium production volume as a function of changes in macroeconomic variables can be given as follows:

$$IPPV = f(INFRATE, USD, AINTRATE, GDPP) \tag{3.2}$$

Of the independent variables in the model, INFRATE represents the inflation rate, USD symbolizes the currency rate of USD as a foreign exchange in TRY, AINTRATE stands for the average annual interest rates and GDDP represents the gross domestic product per capita. Dependent variable in the model, IPPV, symbolizes the non-life insurance premium production volume.

We can give the functional relation above with an econometric model as follows:

$$IPPV = \alpha + \beta_1 INFRATE + \beta_2 USD + \beta_3 AINTRATE + \beta_4 GDPP + u \tag{3.3}$$

$\alpha, \beta_1, \beta_2, \beta_3,$ and β_4 are the parameters of the model. u is an error term which is taken to be a random variable. We assume that u is distributed as an independent multivariate normal distribution with a mean of zero and a constant variance of σ^2. We also assume that independent variables are linearly independent of each other.

3.6 Regression Analyses

The regression is run for five different models. In the first place the relation between the non-life insurance premium production and the changes in macroeconomic factors are analyzed separately. Then, the impact of the changes of these factors on the premium production volume is measured altogether. The models employed are as follows:

$$Model1:\ IPPV = \alpha + \beta.INFRATE + u \tag{3.4}$$

$$Model2:\ IPPV = \alpha + \beta.USD + u \tag{3.5}$$

$$Model3:\ IPPV = \alpha + \beta.AINTRATE + u \tag{3.6}$$

$$Model4:\ IPPV = \alpha + \beta.GDPP + u \tag{3.7}$$

$$Model5:\ IPPV = \alpha + \beta_1 INFRATE + \beta_2 USD + \beta_3 AINTRATE + \beta_4 GDPP + u \tag{3.8}$$

4. RESEARCH FINDINGS

The summary of the results is given below in Table 4.1.

Table 4.1 Results of the 5 models

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	**3.781.973.162,44**	**-66.741.341,13**	**4.049.324.873,88**	**-64.983.488,15**	**144.950.736,72**
	[5,04]	**[-0,34]**	**[4,32]**	**[-1,45]**	**[1,04]**
INFRATE	**-46.147.385,71**	**-**	**-**	**-**	**1.729.389,07**
	[-4,07]				**[0,48]**
USD	**-**	**2.406.698.490,22**	**-**	**-**	**-439.925.865,03**
		[8,51]			**[-3,10]**
AINTRATE	**-**	**-**	**-46.337.112,02**	**-**	**-4.020.830,26**
			[-3,50]		**[-1,10]**
GDPP	**-**	**-**	**-**	**830.660,55**	**944.278,38**
				[40,47]	**[19,06]**
R-square	**0,49**	**0,81**	**0,42**	**0,99**	**0,995**
F	**16,58**	**72,39**	**12,25**	**1.637,90**	**683,21**
F_{test}	**4,45**	**4,45**	**4,45**	**4,45**	**3,11**
t_{test}	**2,110**	**2,110**	**2,110**	**2,110**	**2,145**

[…] shows t values

High coefficient of determination (R-square) values suggests that the economic factors employed in the model are doing a good job in explaining the change in non-life insurance premium production volume.

Model 2 and Model 4 have higher R-square values compared to Model 1 and Model 3. The explanatory power of inflation rate employed in Model 1 and average interest rates employed in Model 3 are lower than the explanatory power of USD employed in Model 2 and GDP per capita employed in Model 4.

Model 5 in which all the four macroeconomic variables employed altogether has the highest R-square value of 0,995.

This result implies that 99,5% of the sample variability in non-life insurance premium production volume is explained by its linear dependence on the macroeconomic variables we employed in the model.

4.1 Hypotheses Testing

First, the existence of a linear relationship between all of the macroeconomic variables (independent variables) taken together and premium production (dependent variable) in Model 5 is tested. Hypotheses are as follows:

H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ (No linear relationships) (3.9)

H_1: At least one $\beta_i \neq 0$ (At least one independent variable effects IPPV) (3.10)

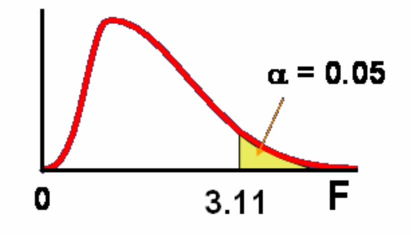


Figure 4.1 F distribution

As the F value of 683,21 is much higher than the F_{test} value of 3,11, the null hypothesis is rejected; indicating that the regression is significant. There is evidence that at least one macroeconomic variable (independent variable) affects IPPV. In other words, the explained variation (explained by the macroeconomic variables) is 683,21 times greater than the unexplained (residual) variation.

Secondly, the existence of a linear relationship between each of the macroeconomic variables (independent variables) and non-life premium production (dependent variable) is tested. Hypotheses are as follows:

H_0: $\beta_i = 0$ (No linear relationships) (3.11)

H_1: $\beta_i \neq 0$ (Linear relationship between each variable and premium production) (3.12)

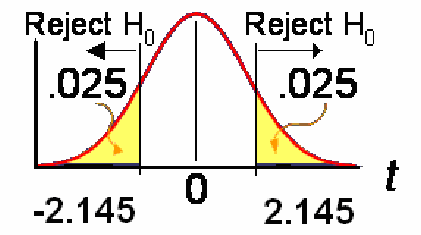


Figure 4.2 T distribution

The null hypotheses are rejected for USD and GDP per capita (GDDP) variables at 95% confidence interval; implying that there is evidence of a significant effect of USD and GDDP per capita on premium production.

On the contrary, the hypotheses are accepted for inflation rate (INFRATE) and average annual interest rates (AINTRATE) variables at 95% confidence interval; implying that these variables do not have a significant effect on premium production. In other words, a linear relationship between these variables and premium production does not exist.

4.2 Revised Model

As inflation rate (INFRATE) and average annual interest rates (AINTRATE) variables are not significant in the model (Model 5) and as these variables have low R-square values (Model 1, Model 3) it will be reasonable to drop them out of the model. New model will be as follows:

$$Model6:\ IPPV = \alpha + \beta_1 USD + \beta_2 GDPP + u \qquad (3.13)$$

Results of the regression for the model above are given in Table 4.2 .The model has a very high R-square value of 0,994 implying that 99,4% of the sample variability in insurance premium production volume is explained by its linear dependence on USD and GDP per capita variables we employed in the model.

Table 4.2 Results of the Model 6

Variables	**Model 6**
Intercept	**-33.392.178,81**
	[-0,92]
USD	**-478.961.195,89**
	[-3,45]
GDPP	**969.601,88**
	[22,38]
R-square	**0,994**
F	**1.350,38**
F_{test}	**3,63**
t_{test}	**2,120**

[…] shows t values

F value of 1.350,38 is much higher than the F_{test} value of 3,63; indicating that the regression is statistically significant at 95% confidence interval. The explained variation (explained by USD and GDP per capita variables) is 1.350,38 times greater than the unexplained (residual) variation.

T values of the variables imply that USD and GDP per capita (GDDP) have a significant effect on premium production at 95% confidence interval; indicating that a linear relationship between these variables and non-life premium production exists.

The positive sign of the coefficients demonstrate that when there is an increase in the independent variable, there is also an increase in the dependent variable. Contrary to this, the negative sign of the coefficients indicates that when there is an increase in the independent variable, there is a decrease in the dependent variable. Therefore we can say that every 0,01 TRY of increase in USD currency rate decreases non-life insurance premium production volume by approximately 4.789.611,96 TRY, while every 1,00 TRY of increase in GDP per capita increases insurance non-life premium production volume by approximately 969.601,88 TRY.

5. SEGMENTATION APPROACH FOR NON-LIFE INSURANCE SALES

5.1 Regression Analyses Based on Segmentation of Non-Life Insurance Companies

In the previous section, the findings of analysis explain the effects of macro-economic factors on non-life insurance sales with a totally macro perspective. In this section, the macro-economic factors employed are further expanded and insurance companies are segmented into three categories namely upper, middle and lower segments. The categorization is based on total assets of the non-life insurance companies by the year 2005.

The segmentation criteria are set as;

- lower segment companies: total assets lower than 50.000.000 TRY
- middle segment companies: total assets between 50.000.000 TRY and 250.000.000 TRY
- upper segment companies: total assets higher than 250.000.000 TRY

By the year 2006, upper segment non-life insurance companies have 72 % of the whole market while middle segment companies have 25 % market share and lower segment companies have 3 % market share.

Non-life insurance companies are segmented as follows;

Table 5.1 Segmentation of non-life insurance companies

Non-life Insurance Companies	**Total Assets (x1.000 TRY)**	**Segment**
TİCARET	9.039,18	LOWER
TOPRAK	15.152,00	
HÜR	34.006,13	
İHLAS	42.161,23	
GENERALİ	44.181,00	
IŞIK	53.327,28	MIDDLE
BİRLİK	64.929,33	
TEB	65.725,03	
AIG	73.205,85	
ŞEKER	78.099,00	
ANKARA	97.448,00	
FİNANS	111.308,87	
AVIVA	129.175,28	
RAY	138.083,63	
GÜVEN	150.579,47	
GARANTİ	212.271,95	
BAŞAK	321.325,00	UPPER
İSVİÇRE	349.521,35	
GÜNEŞ	370.719,86	
YAPI KREDİ	469.759,24	
KOÇ ALLIANZ	560.528,40	
TÜRKİYE GENEL	653.471,53	
AXA OYAK	714.079,00	
ANADOLU	1.028.147,00	
AKSİGORTA	2.032.900,60	

Following analysis investigates how GDP per capita and USD currency rates, automobile sales and consumer loans influence non-life insurance sales of the companies, in terms of premiums received, in the three segments.

5.1.1 Conceptual Framework

Three regression frameworks are employed in this part of the study. Firstly, the regression framework run in the first part of the study is reanalyzed, for the different segments separately, by employing GDP per capita and USD currency rate against insurance sales. Automobile sales variable is the independent variable for the second regression framework; while consumer loans variable is the independent variable for the third regression framework. In each framework, regression is run separately for upper segment companies, middle segment companies, lower segment companies and for all the companies together.

5.1.2 Data

The yearly data for the current GDP per capita, USD currency rates, automobile sales, consumer loans and non-life insurance premiums cover a 10 years period from 1997 to 2006. Secondary data which was used for data collection purposes were obtained from the Undersecretariat of Turkish Treasury, Central Bank of Turkey and The Banks Association of Turkey.

5.1.3 Data Analysis Procedures

We can set up econometric models for the first regression framework as follows:

Model 1: $IPPV_{Total} = \alpha + \beta_1 .USD + \beta_2 .GDPP + u$ (5.1)

Model 2: $IPPV_{Upper} = \alpha + \beta_1 .USD + \beta_2 .GDDP + u$ (5.2)

Model 3: $IPPV_{Middle} = \alpha + \beta_1 .USD + \beta_2 .GDDP + u$ (5.3)

Model 4: $IPPV_{Lower} = \alpha + \beta_1 .USD + \beta_2 .GDDP + u$ (5.4)

Our models for the second regression framework as follows:

Model 5: $IPPV_{Total} = \alpha + \beta .AUTOSALES + u$ (5.5)

Model 6: $IPPV_{Upper} = \alpha + \beta .AUTOSALES + u$ (5.6)

Model 7: $IPPV_{Middle} = \alpha + \beta .AUTOSALES + u$ (5.7)

Model 8: $IPPV_{Lower} = \alpha + \beta .AUTOSALES + u$ (5.8)

Our models for the third regression framework as follows:

Model 9: $IPPV_{Total} = \alpha + \beta.CONSUMERLOANS + u$ (5.9)

Model 10: $IPPV_{Upper} = \alpha + \beta.CONSUMERLOANS + u$ (5.10)

Model 11: $IPPV_{Middle} = \alpha + \beta.CONSUMERLOANS + u$ (5.11)

Model 12: $IPPV_{Lower} = \alpha + \beta.CONSUMERLOANS + u$ (5.12)

α and β are the parameters of the model. u is an error term which is taken to be a random variable. We assume that u is distributed as an independent multivariate normal distribution with a mean of zero and a constant variance of σ^2. We also assume that independent variables are linearly independent of each other.

5.1.4 Research Findings

The summary of the results of the first regression framework is given below in Table 5.2.

Table 5.2 Results of the 4 models of first regression framework

Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Intercept	**-231.847,58**	**-194.567,24**	**-47.645,85**	**10.365,51**
	[-0,82]	**[-1,10]**	**[-0,48]**	**[0,74]**
USD	**-1.113.360,66**	**-726.480,28**	**-361.573,47**	**-25.306,91**
	[-2,78]	**[-2,91]**	**[-2,57]**	**[-1.27]**
GDPP	**1182,02**	**853,50**	**298,47**	**30,05**
	[14,68]	**[17,05]**	**[10,59]**	**[7,55]**
R-square	**0,98**	**0,99**	**0,97**	**0,94**
F	**211,82**	**294,02**	**100,87**	**57,89**
F_{test}	**4,74**	**4,74**	**4,74**	**4,74**
t_{test}	**2,365**	**2,365**	**2,365**	**2,365**

[…] shows t values

When we consider the first regression framework, in which GDP per capita and USD are the independent variables, high coefficient of determination (R-square) values suggest that

GDP and USD are doing a very good job in explaining the change in non-life insurance premium production volume.

Findings are consistent with the results of the first part of the study. The positive sign of the coefficients demonstrate that when there is an increase in the independent variable, there is also an increase in the dependent variable. Contrary to this, the negative sign of the coefficients indicates that when there is an increase in the independent variable, there is a decrease in the dependent variable. Therefore we can say that every 1 TRY of increase in USD decreases insurance non-life premium production volume of the all the companies in upper, middle, lower segments by approximately 726 million TRY, 361 million TRY and 25 million TRY respectively. In contrast, every 1 TRY of increase in GDP per capita increases insurance non-life premium production volume of the all the companies in upper, middle, lower segments by approximately 853.500 TRY, 298.470 TRY and 30.050 TRY respectively.

The summary of the results of the second regression framework is given below in Table 5.3.

Table 5.3 Results of the 4 models of second regression framework

Variables	Model 5	Model 6	Model 7	Model 8
Intercept	**-2.264.856,72**	**-1.621.612,95**	**-603.092,37**	**-40.151,40**
	[-2,75]	**[-2,66]**	**[-3,08]**	**[-1,64]**
AUTOSALES	**9,3130**	**6,7939**	**2,2789**	**0,2402**
	[6,99]	**[6,87]**	**[7,18]**	**[6,04]**
R-square	**0,86**	**0,86**	**0,87**	**0,82**
F	**48,82**	**47,24**	**51,58**	**36,54**
F_{test}	**5,32**	**5,32**	**5,32**	**5,32**
t_{test}	**2,306**	**2,306**	**2,306**	**2,306**

[...] shows t values

Results show that automobile sales variable is also a good explanatory variable for non-life insurance sales. High coefficient of determination (R-square) values of 0,86, 0,87 and 0,82 for the companies in upper, middle and lower segments suggest that automobile sales variable is doing a very good job in explaining the change in non-life insurance premium production volume.

We can say that every automobile sale increases insurance non-life premium production volume of the all the companies in upper, middle, lower segments by approximately 6.794 TRY, 2.279 TRY and 240 TRY respectively.

The summary of the results of the third regression framework is given below in Table 5.4.

Table 5.4 Results of the 4 models of third regression framework

Variables	Model 9	Model 10	Model 11	Model 12
Intercept	**910.396,03**	**700.449,54**	**168.667,61**	**41.278,88**
	[2,54]	**[2,53]**	**[2,29]**	**[3,85]**
CONSUMERLOANS	**0,1623**	**0,1180**	**0,0401**	**0,0042**
	[8,95]	**[8,39]**	**[10,76]**	**[7,78]**
R-square	**0,91**	**0,90**	**0,94**	**0,88**
F	**80,10**	**70,47**	**115,82**	**60,49**
F_{test}	**5,32**	**5,32**	**5,32**	**5,32**
t_{test}	**2,306**	**2,306**	**2,306**	**2,306**

[…] shows t values

Results indicate that consumer loans variable is another explanatory variable for non-life insurance sales. High coefficient of determination (R-square) values of 0,90, 0,94 and 0,88 for the companies in upper, middle and lower segments suggest that consumer loans variable is doing a very good job in explaining the change in non-life insurance premium production volume.

Therefore we can say that every 1 TRY of increase in consumer loans increases insurance non-life premium production volume of the all the companies in upper, middle, lower segments by approximately 118 TRY, 40 TRY and 4 TRY respectively.

5.2 Matrix Approaches to Non-Life Insurance Sales

In this part, non-life insurance companies are analyzed on the basis of matrix approaches with the aim of integrating the macro-economic perspective with a narrow perspective on the side of insurance firms. Both Boston Consulting Group Growth Share Matrix and Relative Profitability and Growth Matrix are employed in the study.

5.2.1 Boston Consulting Group Growth Share Matrix

The aim of this section is to combine the macro-economic perspective with company-based perspective when taking strategic decisions for an insurance company manager. While forecasting the future market growth in relation with macro-economic indicators, the dynamics of special business units should also be analyzed carefully.

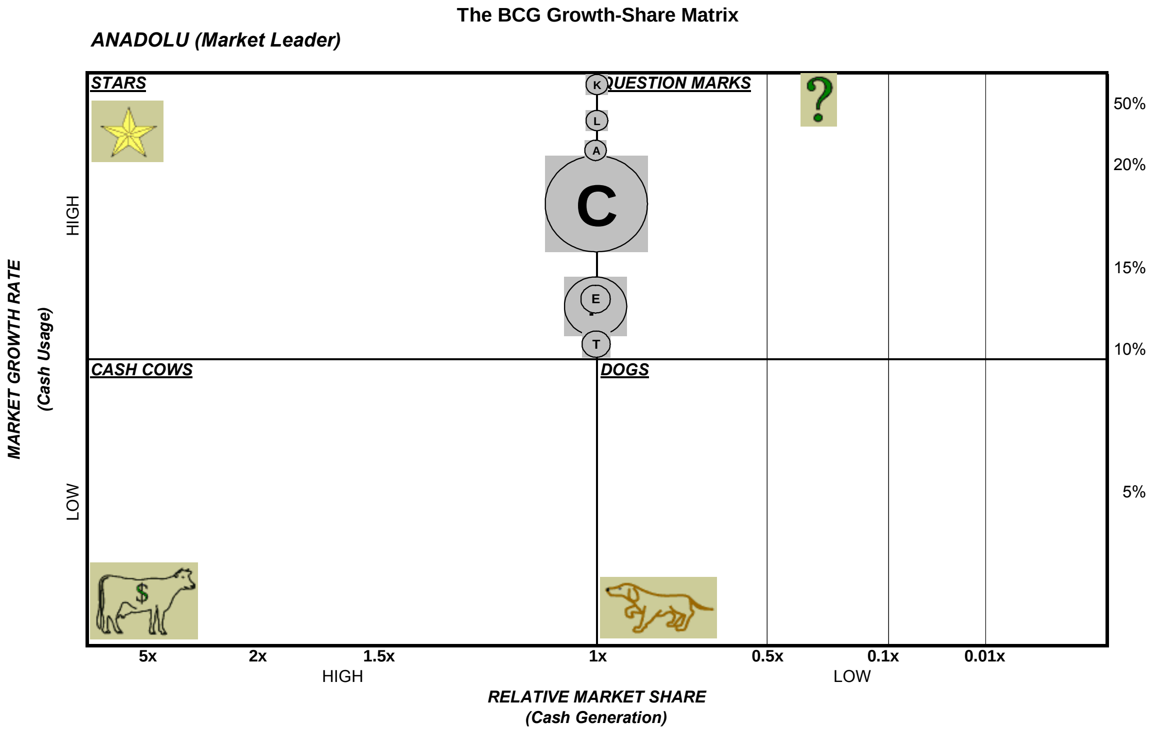
The BCG Growth Share Matrix is based on the assumption that a company's business units can be classified into four categories based on the combinations of market growth and market share relative to the largest competitor. Market growth implies industry attractiveness and relative market share shows competitive advantage. The growth share matrix maps the positions of the business units within a company by considering two determinants of profitability. According to the model, an increase in relative market share will lead to generation of cash. Another assumption is that a growing market requires investment in assets to increase capacity and hence results in consumption of cash. The growth-share matrix indicates cash generation and cash consumption positions of its business units (Kotler and Armstrong, 2004).

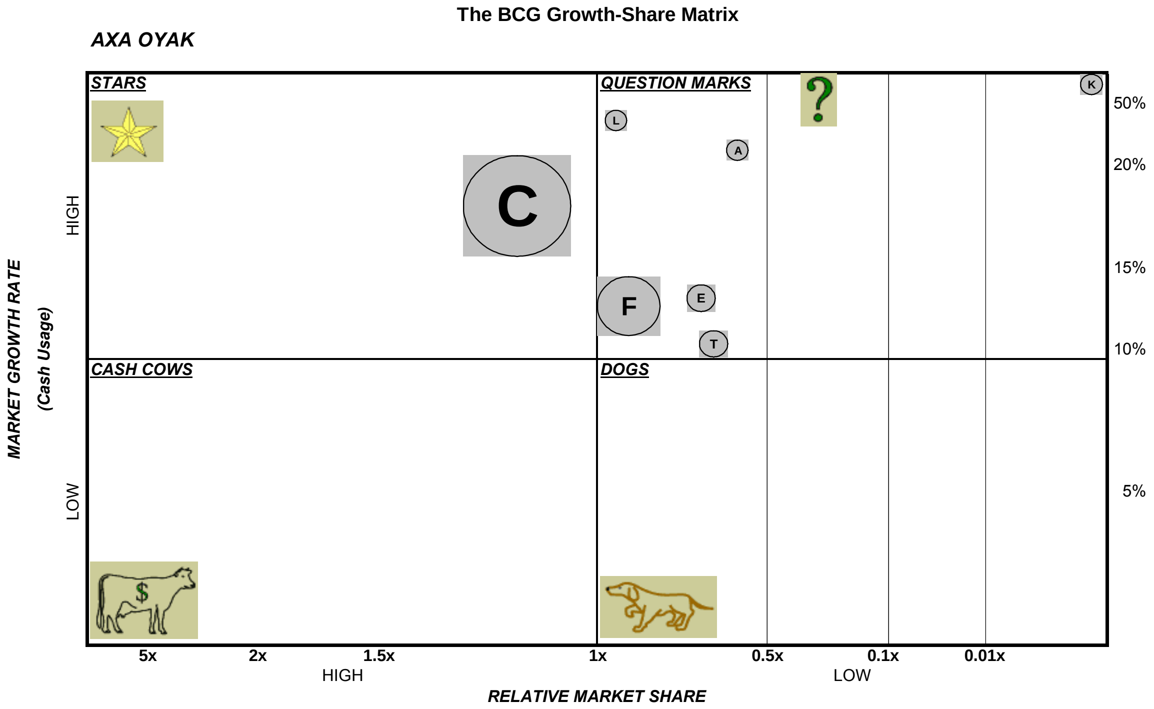
The four categories in the BCG Growth Share Matrix are dogs, question marks, stars and cash cows. Dogs have low market share and low growth rate. They neither generate nor consume a large amount of cash. But they are candidates for divestiture because the money tied up in a business has little potential. Question marks consume large amounts of cash as they are growing rapidly. However they do not generate much cash as they have low market shares. A question mark can become a star if it gains market share or can turn into a dog if it does not succeed in becoming market leader and when the market growth declines.

It is important to analyze question marks carefully whether they are worth investment. Stars generate large amounts of cash because of their strong relative market share and also they consume a great deal of cash because of their high growth rate. A star can be a cash cow if it succeeds in maintaining large market share. A diversified company should have stars in its portfolio to have cash cows in the future and ensure cash generation. Cash cows are the leaders in a mature market and generate more cash than they consume They provide cash to turn question marks into market leaders and to cover costs of a company in addition to paying dividends to shareholders. As an industry matures and its growth rate declines, a business unit will become either a cash cow or a dog. Each special business unit has a life cycle. Many of them start as question marks, either they become star if succeeds and later turn into cash cows as market growth diminishes or can turn into a dog if they do not succeeds in.

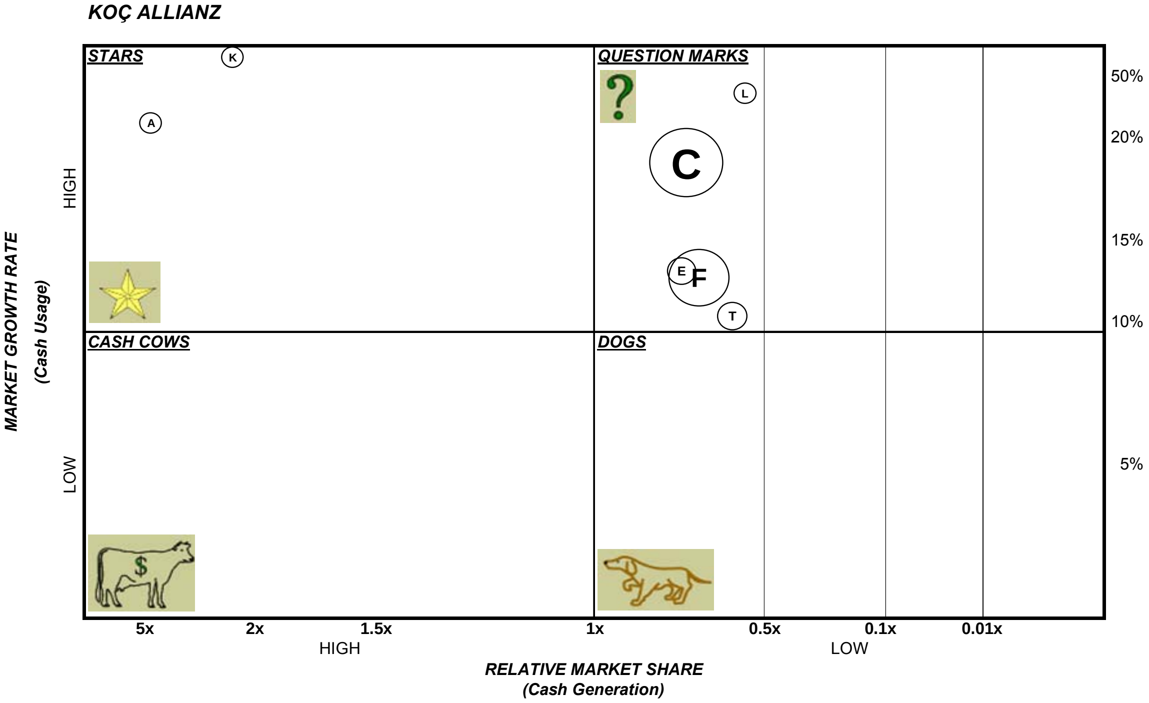
In the below charts, the companies in Turkish insurance sector are analyzed separately within the framework of BCG Growth Share Matrix (Figures 5.1, 5.2, 5.3). Secondary data which was used for data collection purposes were obtained from the Undersecretariat of Turkish Treasury. Anadolu Sigorta is taken as the largest competitor in the sector. Diameter of circles represents the size of the business (in terms of premium production) in relation to the sizes of other businesses in the portfolio. The circles with C, F, T, E, L, A, and K stand for Casualty, Fire, Transportation, Engineering, Legal protection, Agriculture and Credit insurance business lines of the companies respectively. The market share and growth rates are determined according to five year averages. The growth rates are reduced to reel rates to eliminate impact of inflation. Turkish insurance sector is a high growth sector and there are a lot of question marks for companies which will turn into either stars or dogs in the future. Since the sector in Turkey is newly developing, there are opportunities for companies to grow their market shares and to turn question marks into stars. A few companies have stars which may become cash cows in the future.

Figure 5.1 BCG growth share matrix- upper segment non-life insurance companies

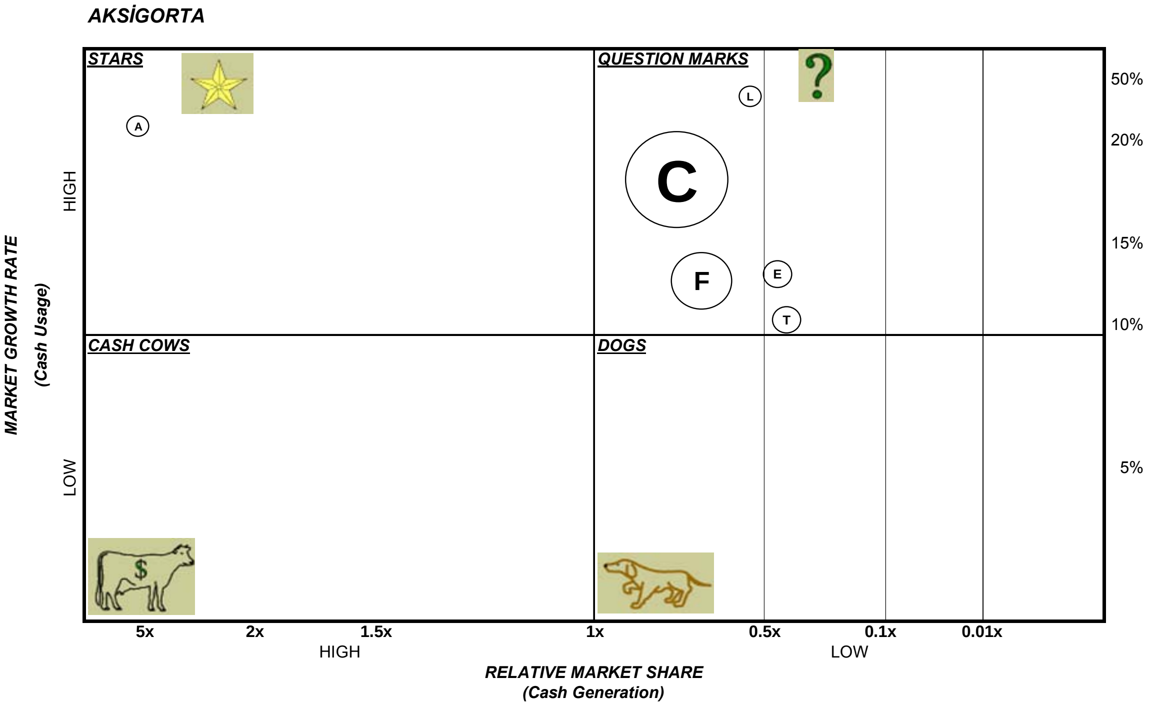




The BCG Growth-Share Matrix

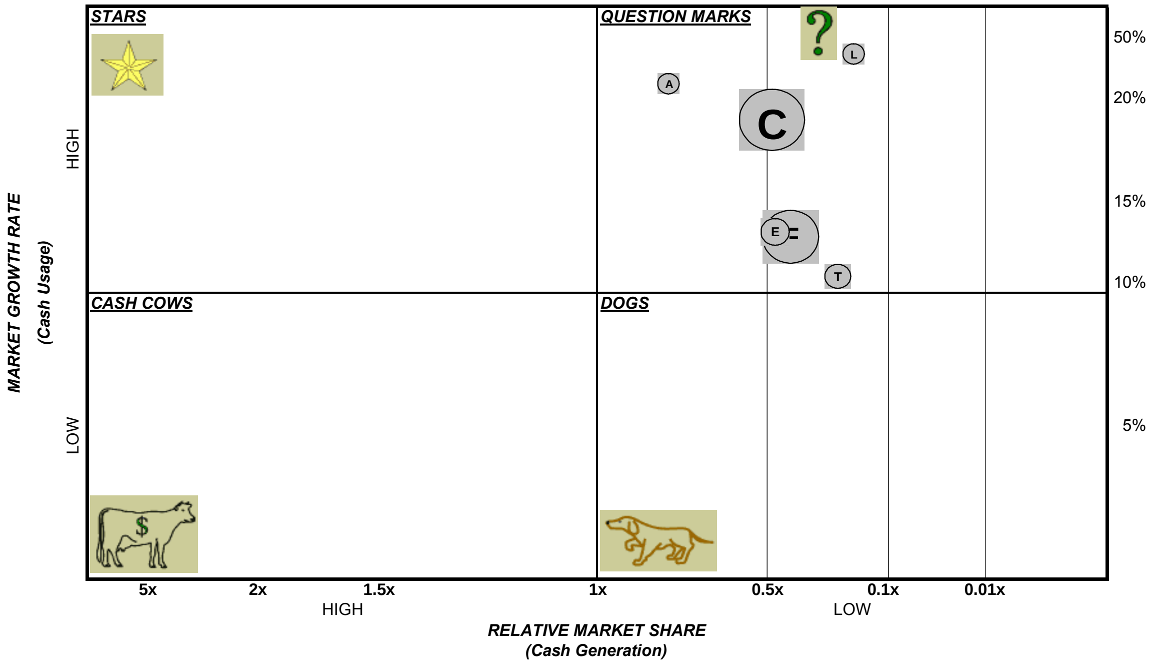


The BCG Growth-Share Matrix



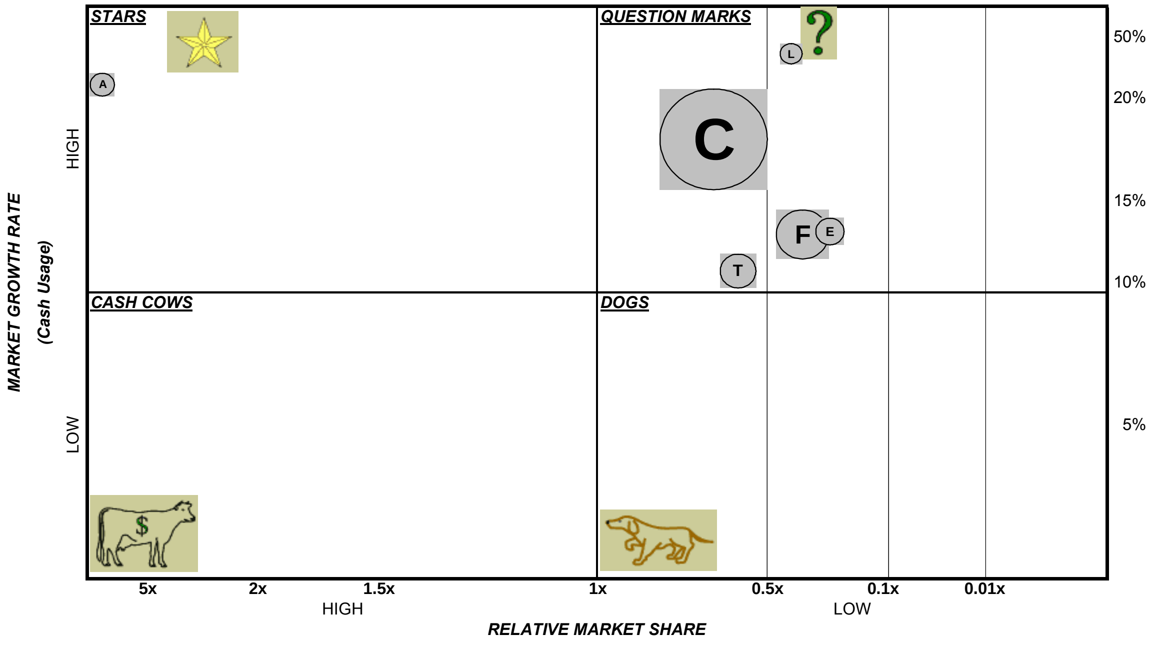
The BCG Growth-Share Matrix

YAPI KREDİ



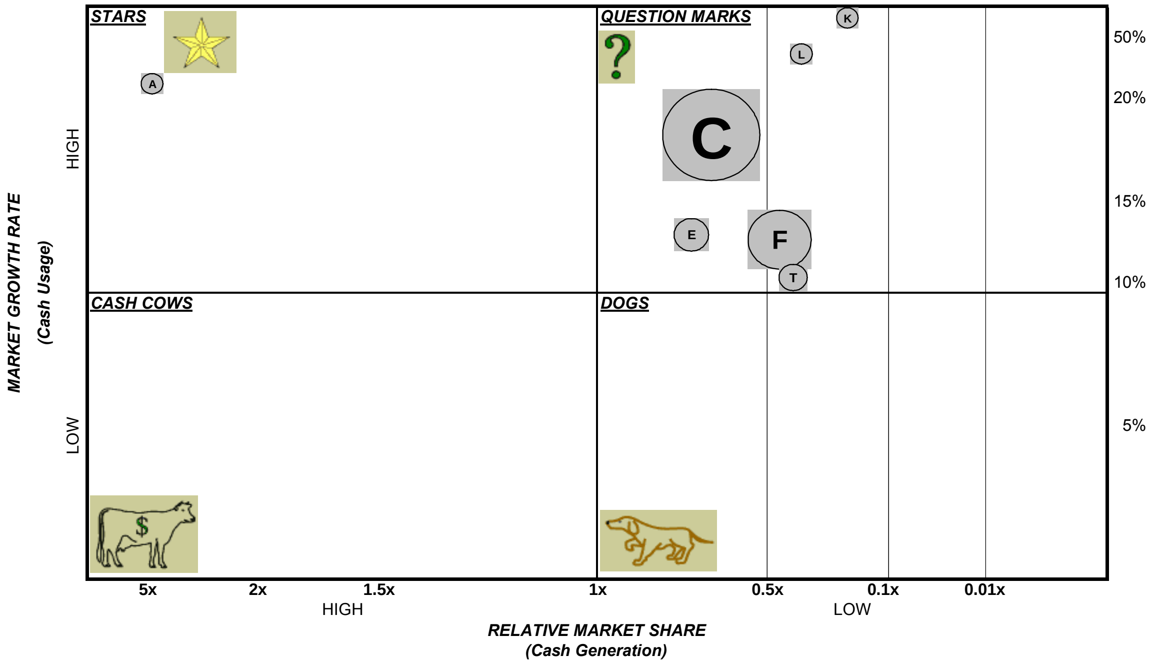
The BCG Growth-Share Matrix

ERGO İSVİÇRE



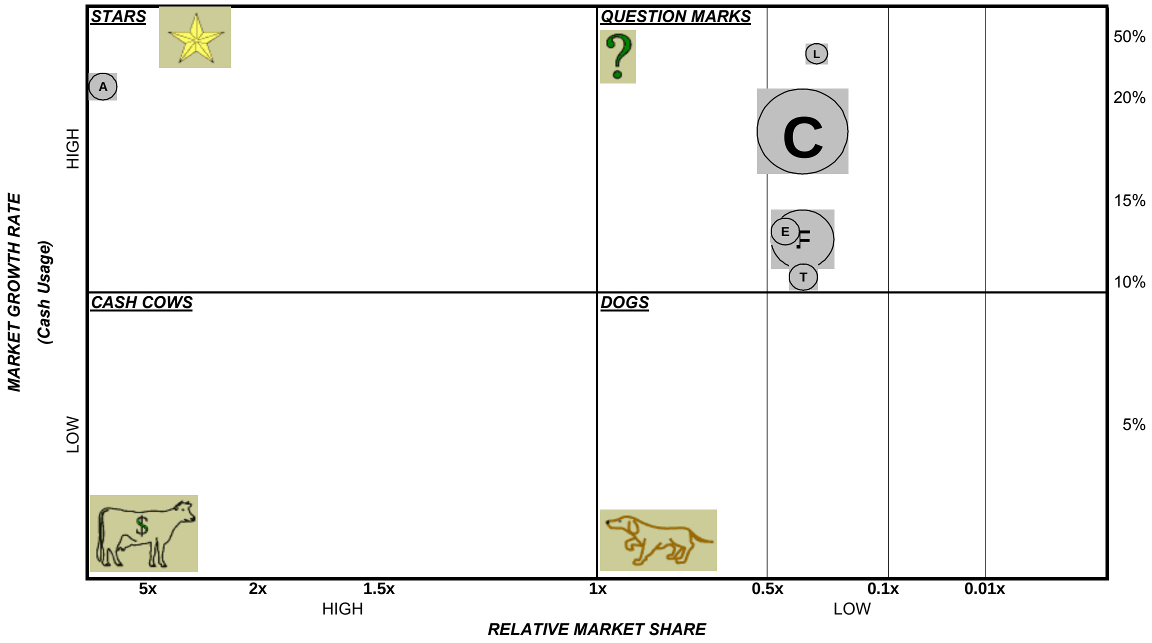
The BCG Growth-Share Matrix

GÜNEŞ



The BCG Growth-Share Matrix

BAŞAK GROUPAMA



The BCG Growth-Share Matrix

TÜRKİYE GENEL

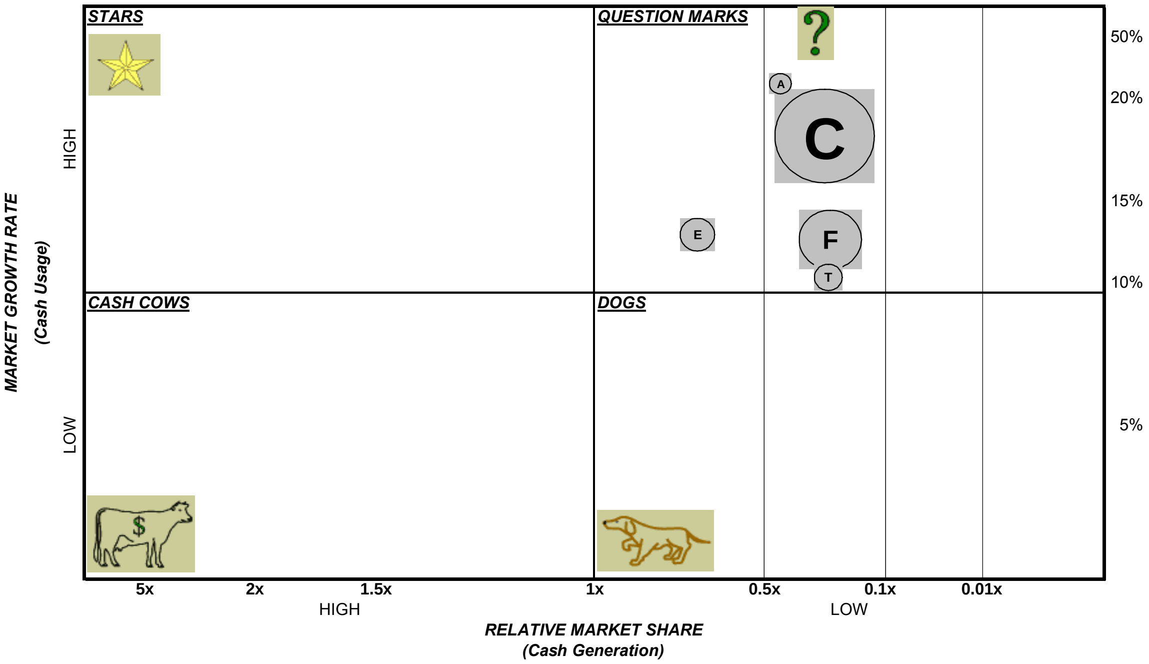
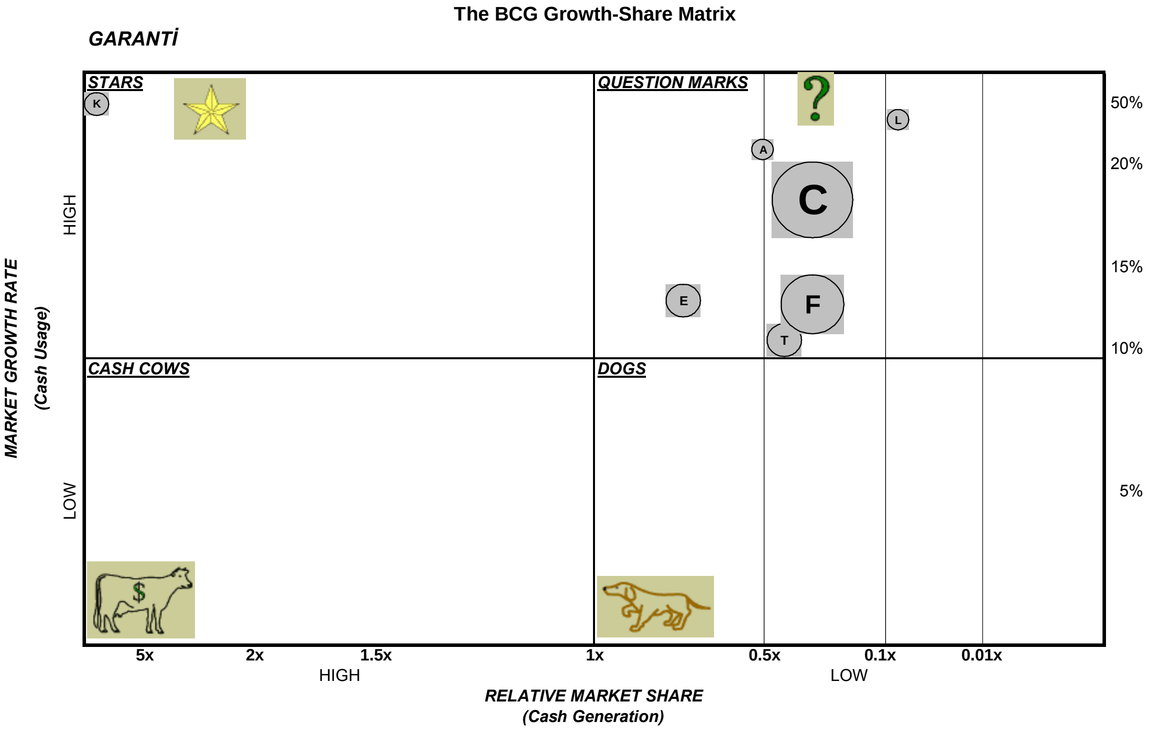
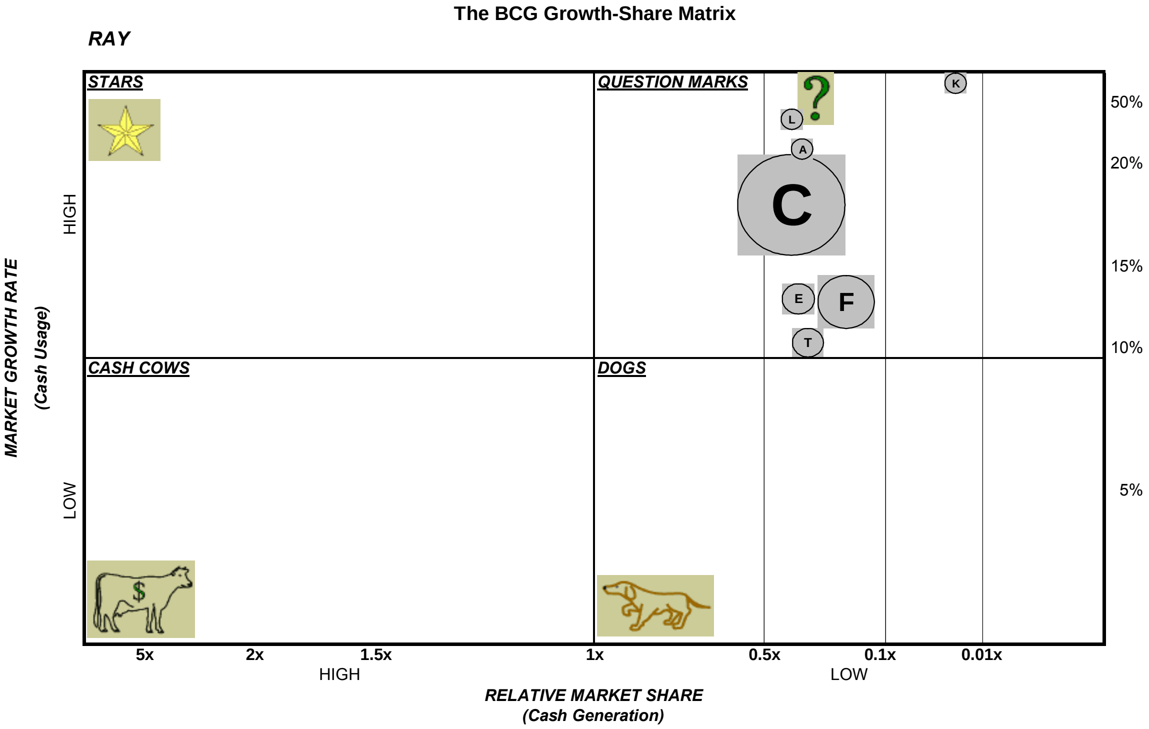


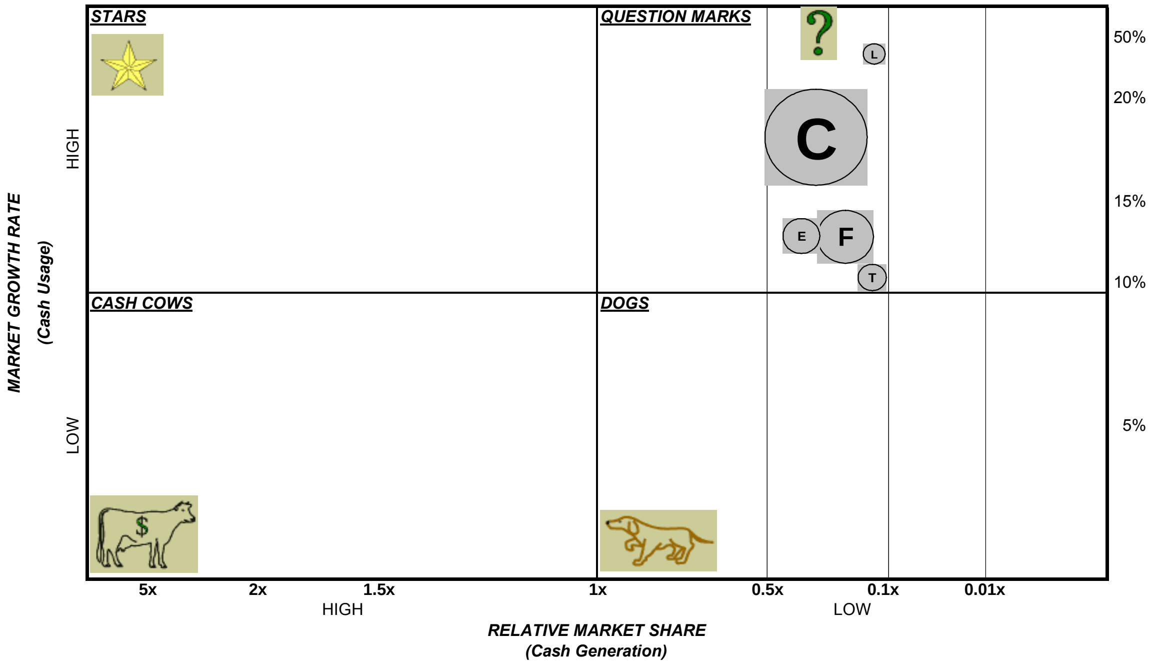
Figure 5.2 BCG growth share matrix- middle segment non-life insurance companies





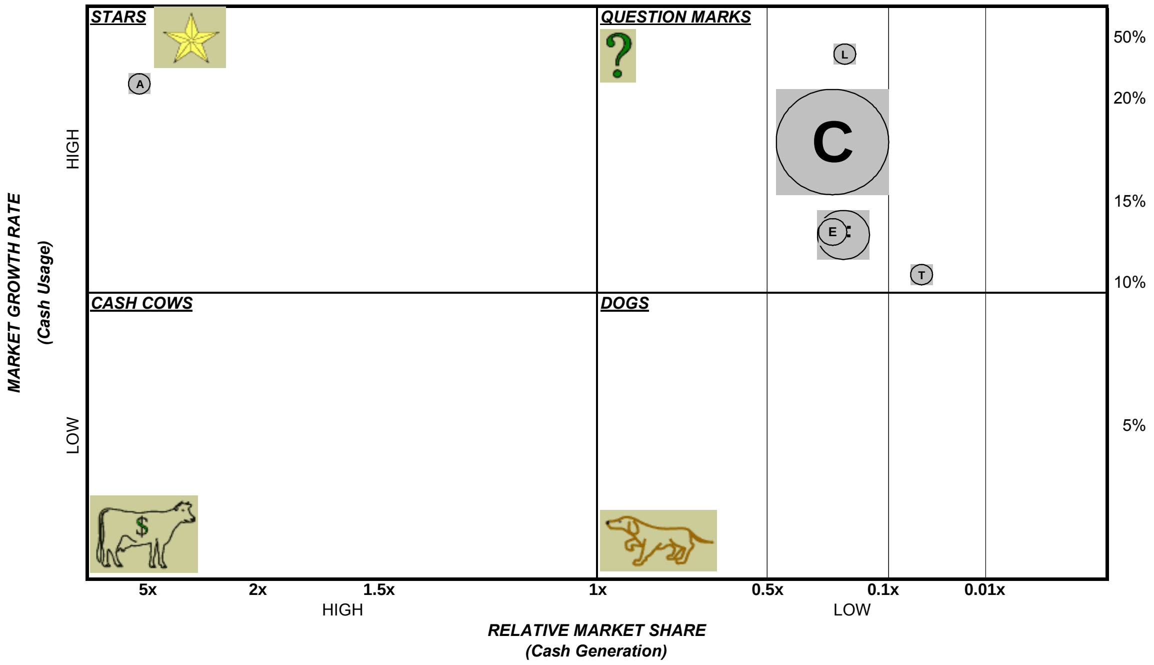
The BCG Growth-Share Matrix

FİNANS

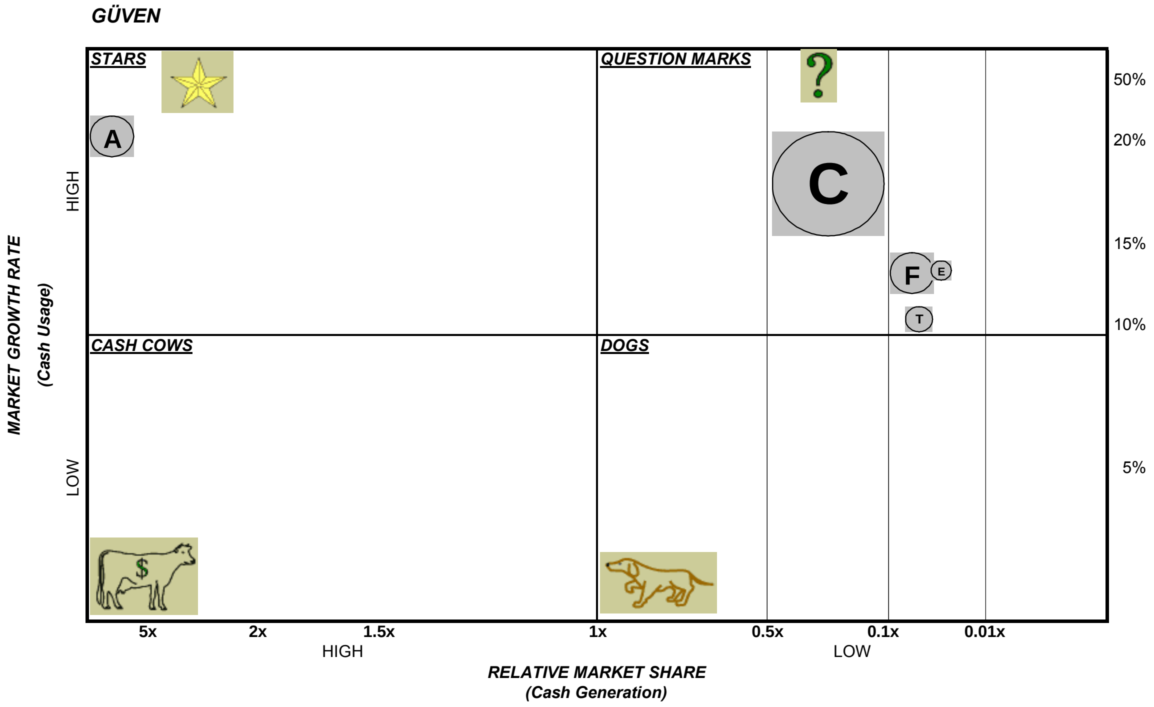


The BCG Growth-Share Matrix

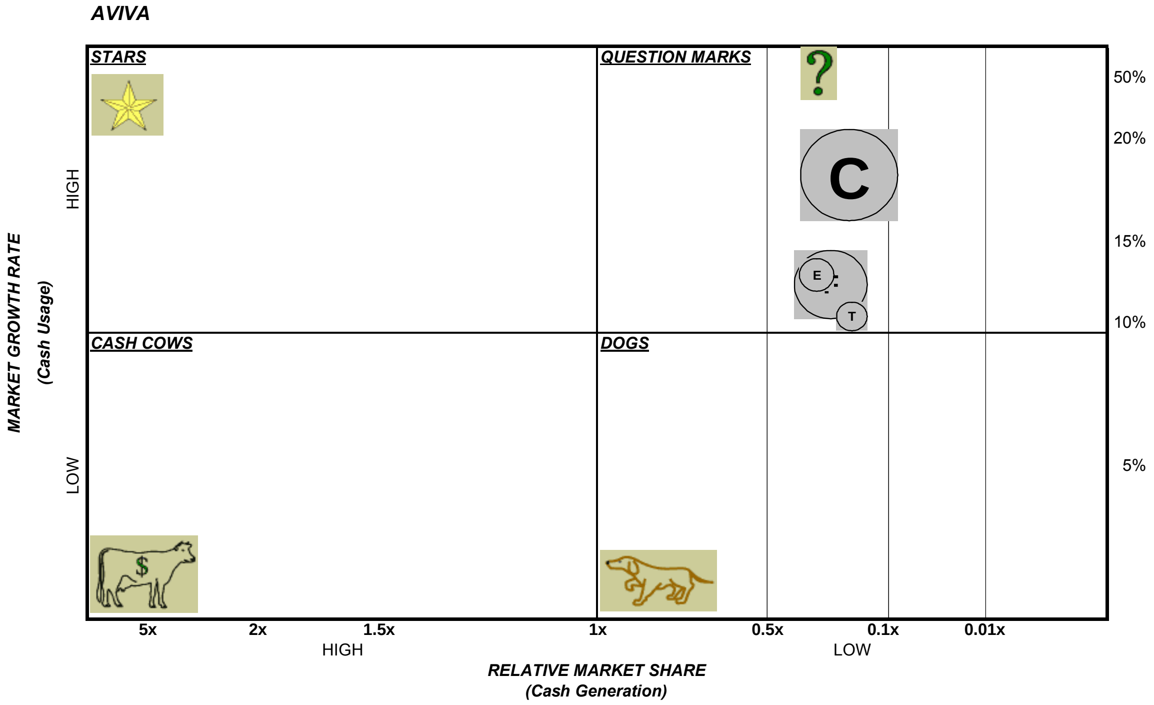
ANKARA



The BCG Growth-Share Matrix

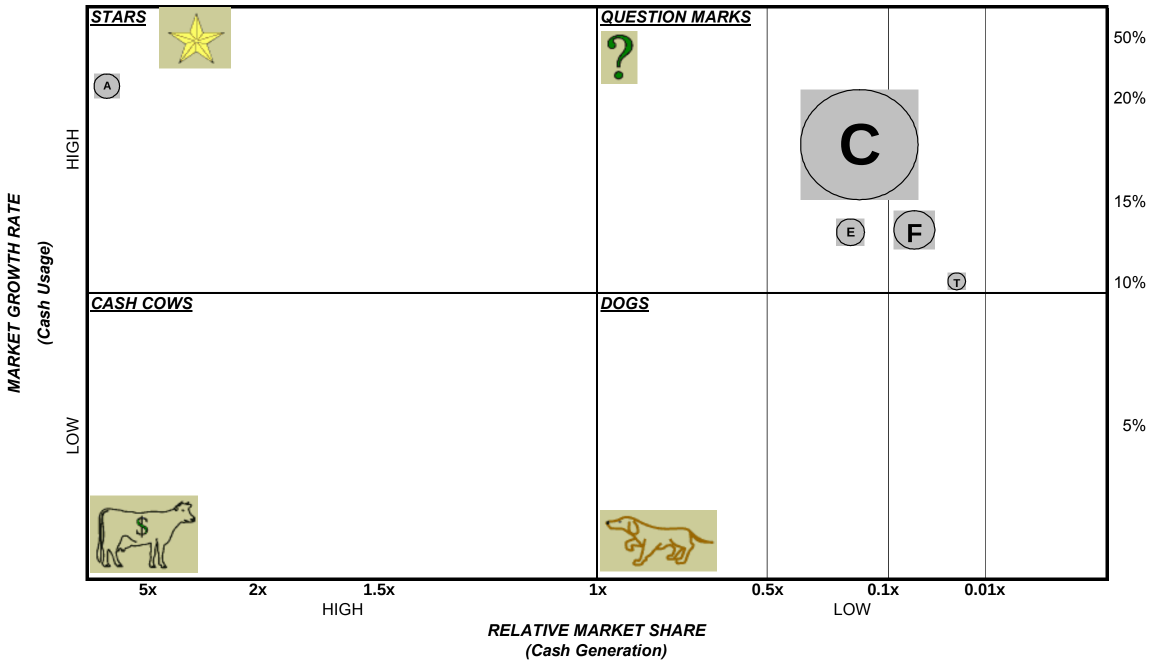


The BCG Growth-Share Matrix



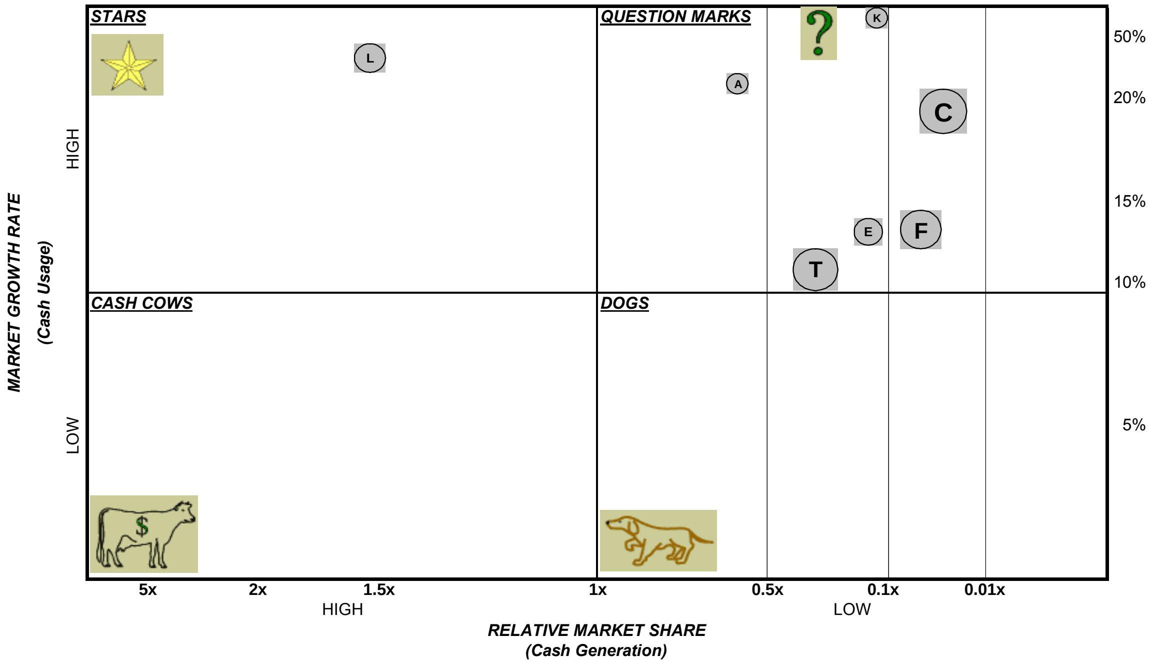
The BCG Growth-Share Matrix

ŞEKER



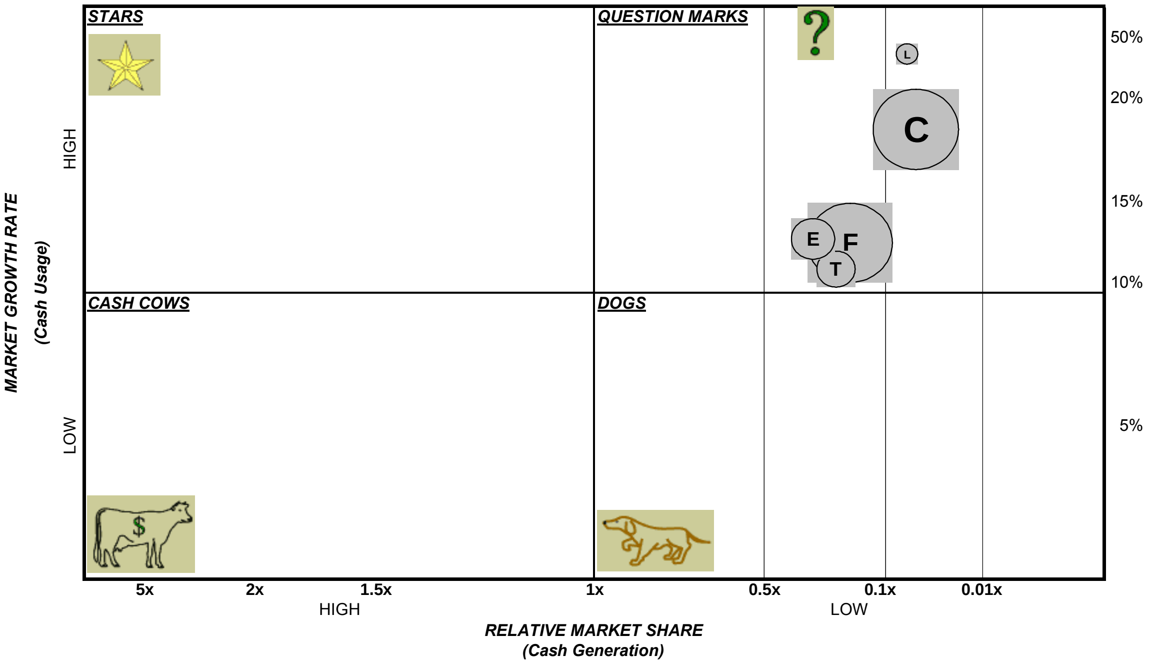
The BCG Growth-Share Matrix

AIG



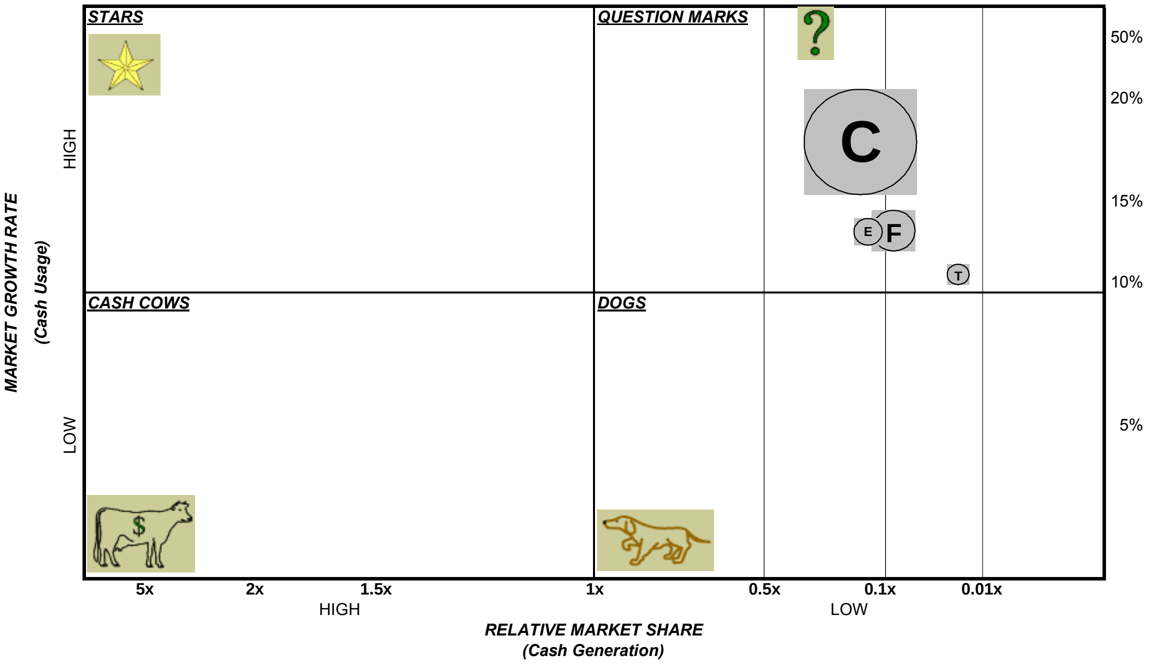
The BCG Growth-Share Matrix

TEB



The BCG Growth-Share Matrix

BİRLİK



The BCG Growth-Share Matrix

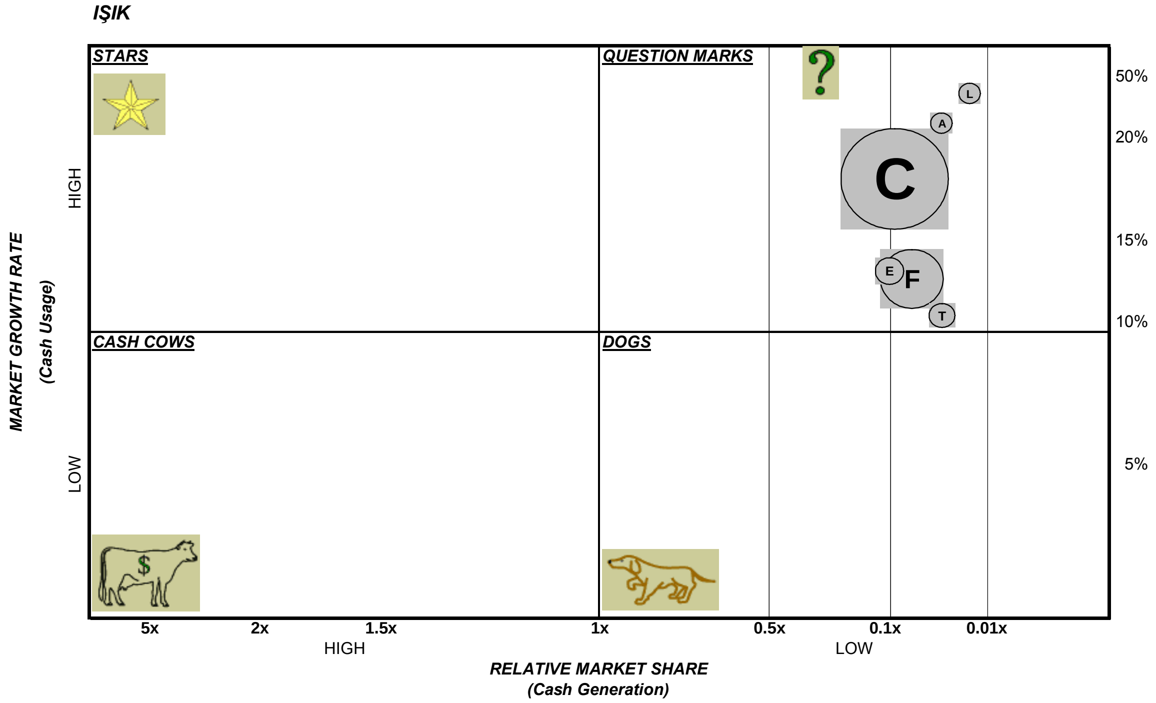
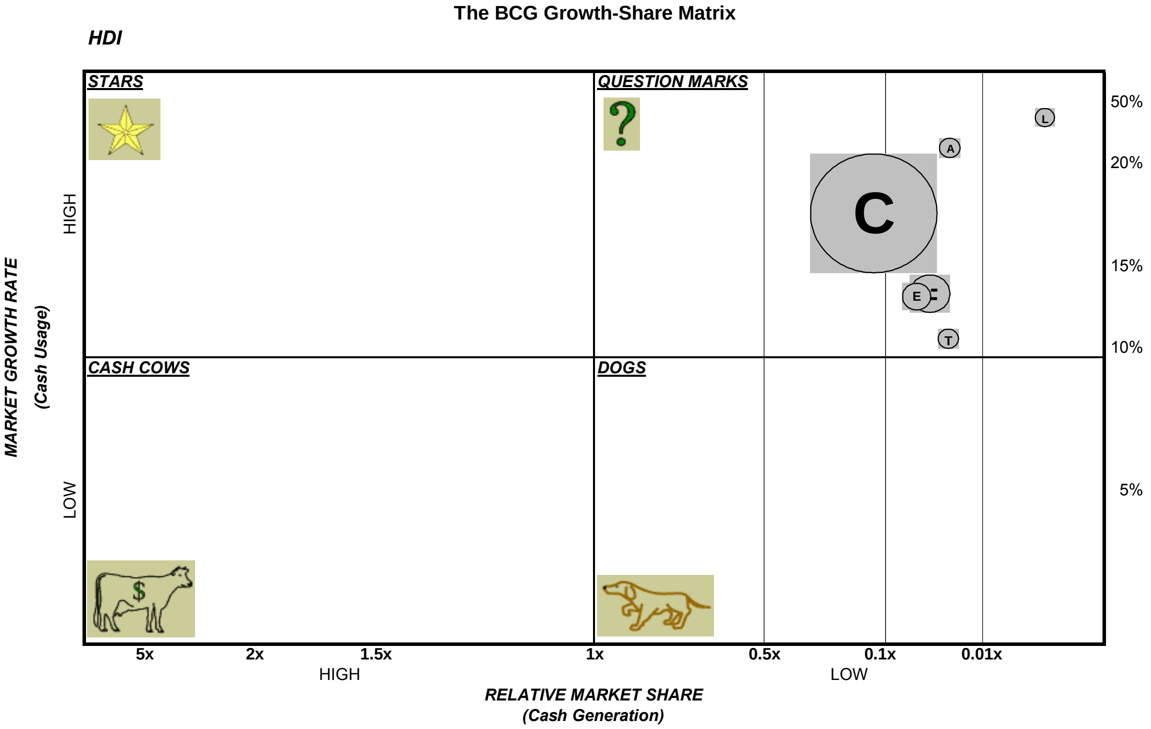
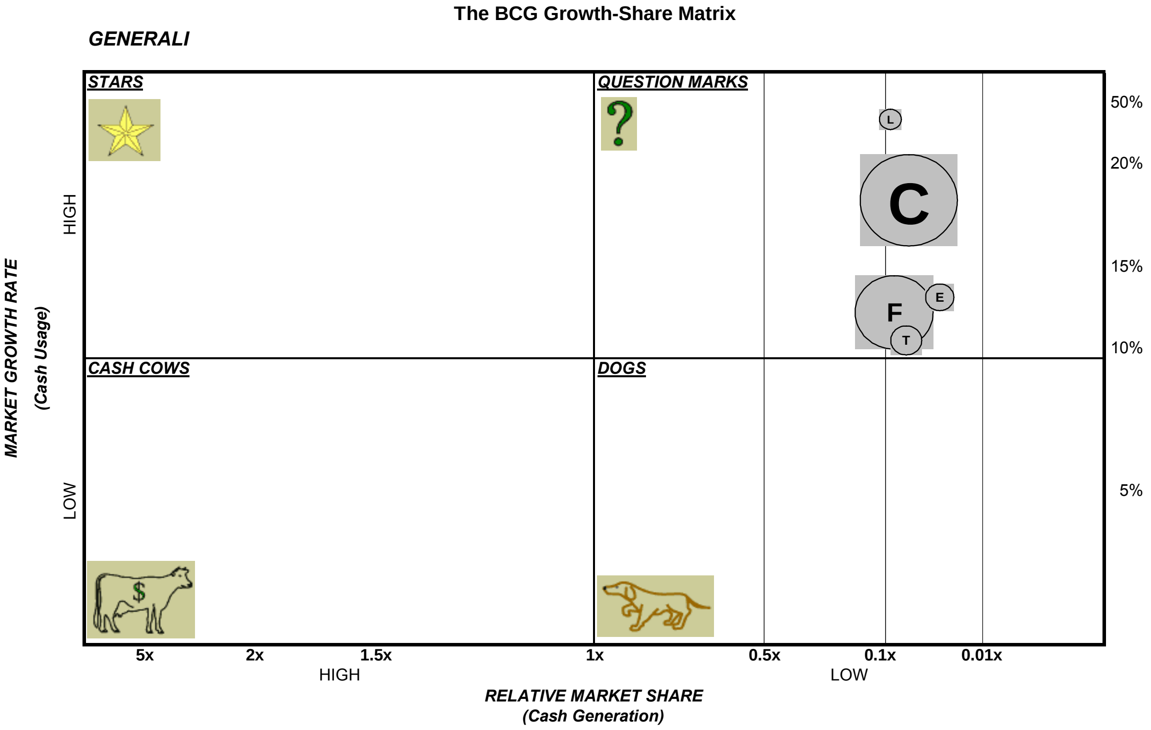


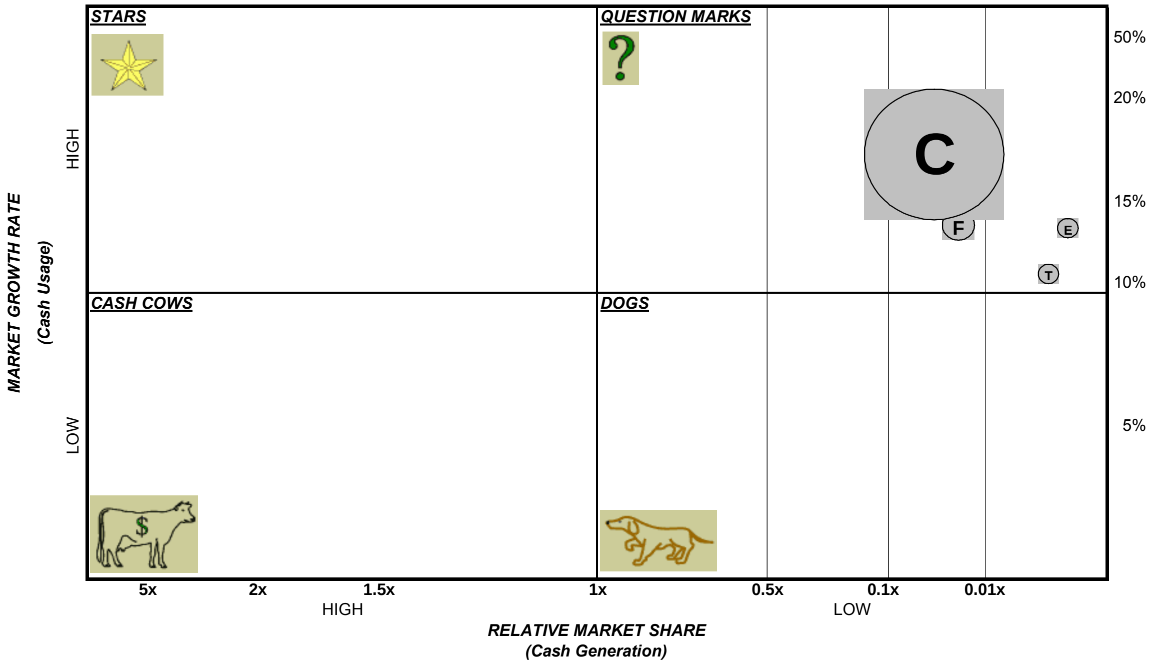
Figure 5.3 BCG growth share matrix- lower segment non-life insurance companies





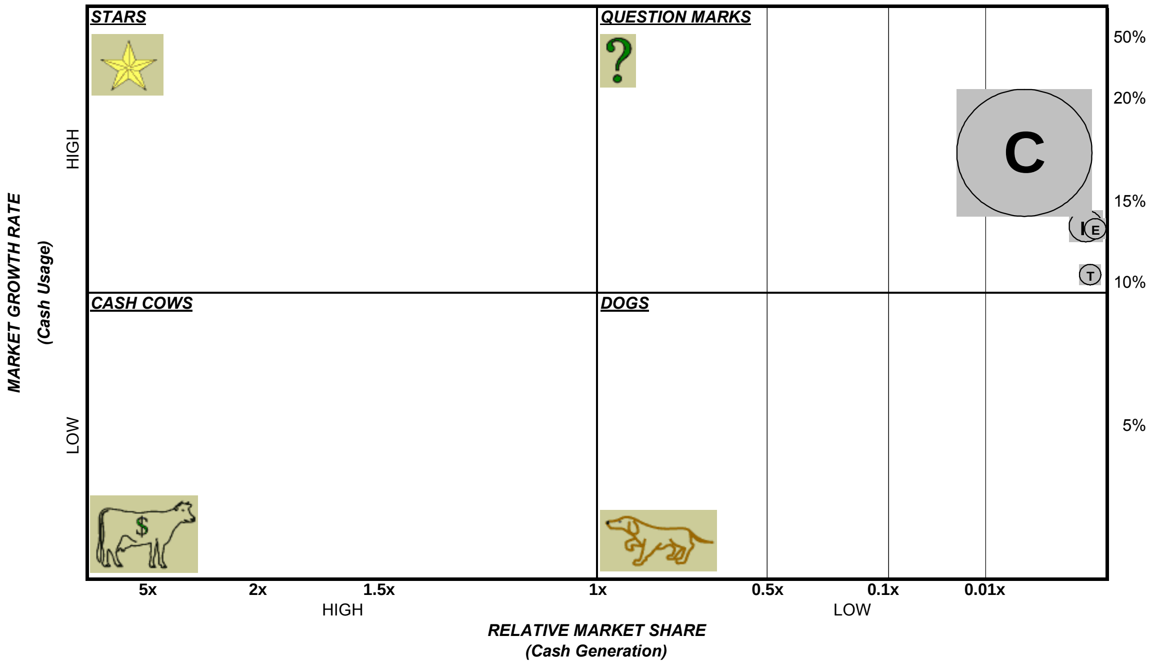
The BCG Growth-Share Matrix

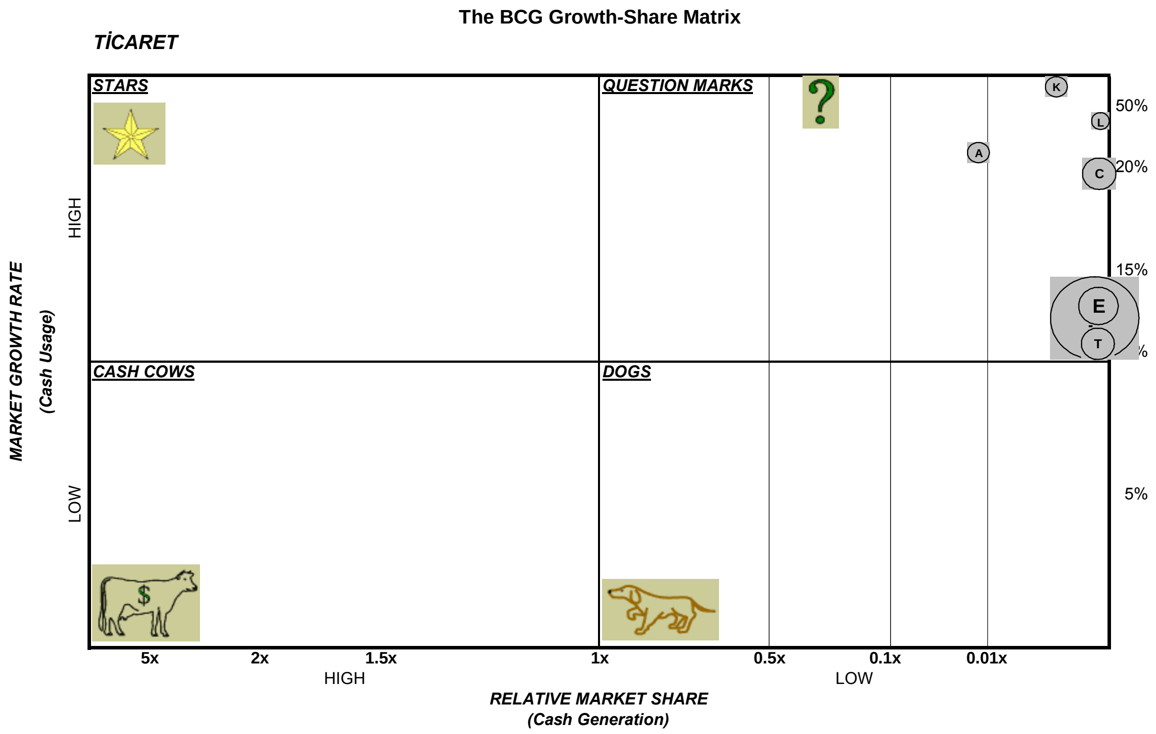
HÜR



The BCG Growth-Share Matrix

TOPRAK





Casualty has the largest share both in the sector and among the business units of insurance companies in general. Only one insurance company succeeds in making casualty branch star in the sector. There are stars for agriculture, legal protection and credit branches for a few companies. For the sector to have cash cows and more stars, there must be mergers among companies and global players are needed to increase competition.

The insurance companies in the previous chapter were segmented as upper, middle and lower segment companies. If the BCG matrix is considered within this framework, it is seen that upper segment companies largely pay attention to fire which has 14,71 percent share in the upper segments' total premium production while lower segment companies are trying to increase their shares in casualty branch which has a 77,69 percent share in their total premium production. For the other branches, namely credit, legal protection, agriculture, transportation and engineering, middle segment firms are trying to be competitive because in these branches they have the largest share in their portfolios when compared to other segment's shares. This picture explains in fact why lower segment companies are not successful players in the market. They are trying to compete on the casualty branch where there are big players in the sector but unfortunately not concentrating on the areas where there is not real competitive environment yet in a niche market like agriculture, credit, transportation or legal protection. Middle segment companies are on the way to increase their market shares in various kinds of branches because they are not the big players for the casualty and fire branches. Those companies may need to mergers with some other players to compete in the upper segment.

In the BCG matrix, relative market share is the only factor for competitive advantage and relative growth is the only factor for industry attractiveness. The matrix does not look into many other factors. It is assumed that each special business unit is independent of each other. However, a business unit may help others to gain competitive advantage and low share businesses can be profitable, too. Moreover, the matrix is based on the breadth of the definition of market. But a business unit though having very low market share may dominate its small niche. It considers the units only in relation to one competitor; the market leader. It looks over small competitors with fast growing market shares.

If an insurance company is able to use the matrix to its advantage, it should be able to get effective strategic decisions for marketing. The BCG model aims to help management in evaluating the firm’s current balance among stars, cash cows, question marks and dogs. This model is especially applicable to large insurance companies that look for volume and experience effects. Besides all, the model is simple and easy to understand. Management should decide upon the courses of action under the framework of the matrix by reconciling it with macro-economic indicators.

5.2.2 The Relative Profitability and Growth Matrix

In the previous section, market shares of the companies’ insurance products relative to market leader and growth rates of these companies’ products relative to market growth are studied within the BCG matrix.

In this section, profitability of the companies is also considered within another competitive analysis 2 x 2 matrix introduced by Joseph Calandro Jr. and Scott Lane. They first define relative profitability and relative growth and introduce the nomenclature of matrix quadrants. Then they apply relative profitability and growth matrix to the insurance industry and banking industry. (Calandro and Lane, 2007)

Relative profitability and relative growth means the difference between a firm's profitability and growth measures and the profitability and growth measures of its industry. They classified the quadrants as franchise, harvest, unprofitable growth, and under-performer (Figure 5.4)

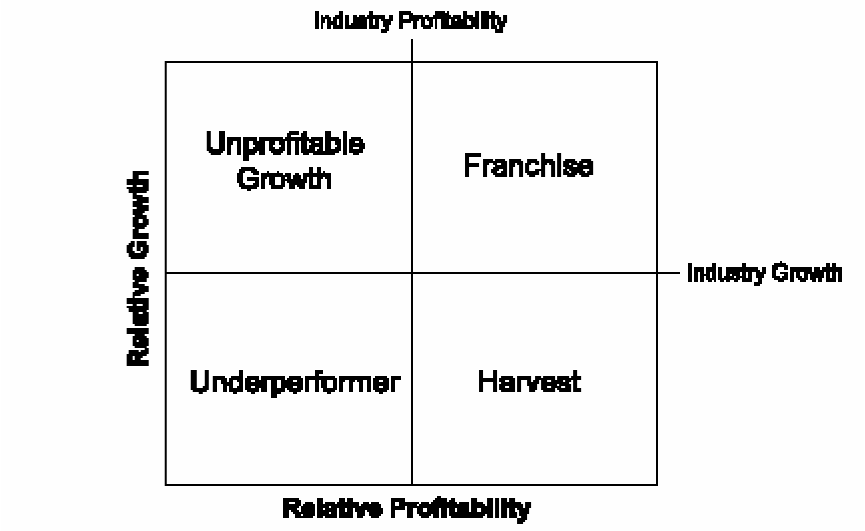


Figure 5.4 The relative profitability and growth matrix

The relative profitability and growth matrix is a tool enabling a graphic assessment of a company relative to its industry. The matrix identifies four types of firms:

1. Franchise: These firms are both more profitable and growing faster than their industry.
2. Harvest: Firms that are more profitable than their industry but are growing at a slower rate.
3. Unprofitable growth: These are firms that are less profitable than their industry but are growing faster.
4. Under-performer: These firms are both less profitable than their industry and are growing slower.

Profitability can be defined as the return on equity (ROE), which is the ratio of net income to average book equity. In the study, ROE is used to calculate relative profitability for purposes of constructing a Relative Profitability and Growth Matrix by subtracting a firm's

ROE from the ROE of its industry. Secondary data which was used for data collection purposes were obtained from the Undersecretariat of Turkish Treasury.

Both profitability and growth fluctuate from year-to-year, for this reason the analysis is conducted for five years term. Relative profitability is calculated for 25 non-life insurance companies in Turkey by taking five years average and subtracting the industry average ROE from each firm's ROE in average. A similar procedure is used for calculating relative growth. Results are shown in the tables 5.5 and 5.6.

Table 5.5 Relative profitability calculations for non-life insurance companies in Turkey

NON-LIFE INSURANCE COMPANIES	**Average ROE_{Firm} (1)**	**Average $ROE_{Industry}$ (2)**	**Average $ROE_{Relative}$ (3) = (1) - (2)**
AIG	13.5%	14.6%	-1.1%
AKSİGORTA	14.3%	14.6%	-0.3%
ANADOLU	27.5%	14.6%	12.9%
ANKARA	-27.3%	14.6%	-41.9%
AVIVA	12.3%	14.6%	-2.3%
AXA OYAK	29.2%	14.6%	14.6%
BAŞAK GROUPAMA	-5.4%	14.6%	-20.0%
BİRLİK	15.9%	14.6%	1.3%
ERGOİSVİÇRE	33.2%	14.6%	18.6%
FİNANS	8.0%	14.6%	-6.6%
GARANTİ	16.7%	14.6%	2.1%
GENERALİ	3.2%	14.6%	-11.4%
GÜNEŞ	11.5%	14.6%	-3.1%
GÜVEN	-2.3%	14.6%	-16.9%
HDI	-6.3%	14.6%	-21.0%
HÜR	20.2%	14.6%	5.6%
IŞIK	2.8%	14.6%	-11.8%
KOÇ ALLIANZ	30.6%	14.6%	16.0%
RAY	-11.7%	14.6%	-26.3%
ŞEKER	-9.1%	14.6%	-23.7%
TEB	-6.8%	14.6%	-21.4%
TİCARET	-13.0%	14.6%	-27.6%
TOPRAK	0.6%	14.6%	-14.0%
TÜRKİYE GENEL	18.2%	14.6%	3.6%
YAPI KREDİ	7.8%	14.6%	-6.9%

Table 5.6 Relative growth calculations for non-life insurance companies in Turkey

NON-LIFE INSURANCE COMPANIES	Average Growth$_{Firm}$ (1)	Average Growth$_{Industry}$ (2)	Average Growth$_{Relative}$ (3) = (1) - (2)
AIG	34.2%	18.0%	16.2%
AKSİGORTA	18.3%	18.0%	0.2%
ANADOLU	23.9%	18.0%	5.8%
ANKARA	36.4%	18.0%	18.4%
AVIVA	6.8%	18.0%	-11.2%
AXA OYAK	17.6%	18.0%	-0.4%
BAŞAK GROUPAMA	17.1%	18.0%	-1.0%
BİRLİK	34.7%	18.0%	16.7%
ERGOİSVİÇRE	20.0%	18.0%	2.0%
FİNANS	29.8%	18.0%	11.7%
GARANTİ	26.0%	18.0%	7.9%
GENERALİ	9.1%	18.0%	-9.0%
GÜNEŞ	14.1%	18.0%	-3.9%
GÜVEN	28.3%	18.0%	10.2%
HDI	27.5%	18.0%	9.5%
HÜR	18.2%	18.0%	0.2%
IŞIK	12.2%	18.0%	-5.9%
KOÇ ALLIANZ	15.9%	18.0%	-2.2%
RAY	12.1%	18.0%	-5.9%
ŞEKER	17.6%	18.0%	-0.5%
TEB	28.8%	18.0%	10.8%
TİCARET	-27.8%	18.0%	-45.9%
TOPRAK	-27.8%	18.0%	-45.8%
TÜRKİYE GENEL	18.4%	18.0%	0.3%
YAPI KREDİ	10.9%	18.0%	-7.2%

With the data contained in Tables 5.5 and 5.6, a relative profitability and growth matrix is constructed as illustrated in Figure 5.5. The horizontal axis and vertical axis of the matrix stands for profitability and growth relative to industry performance.

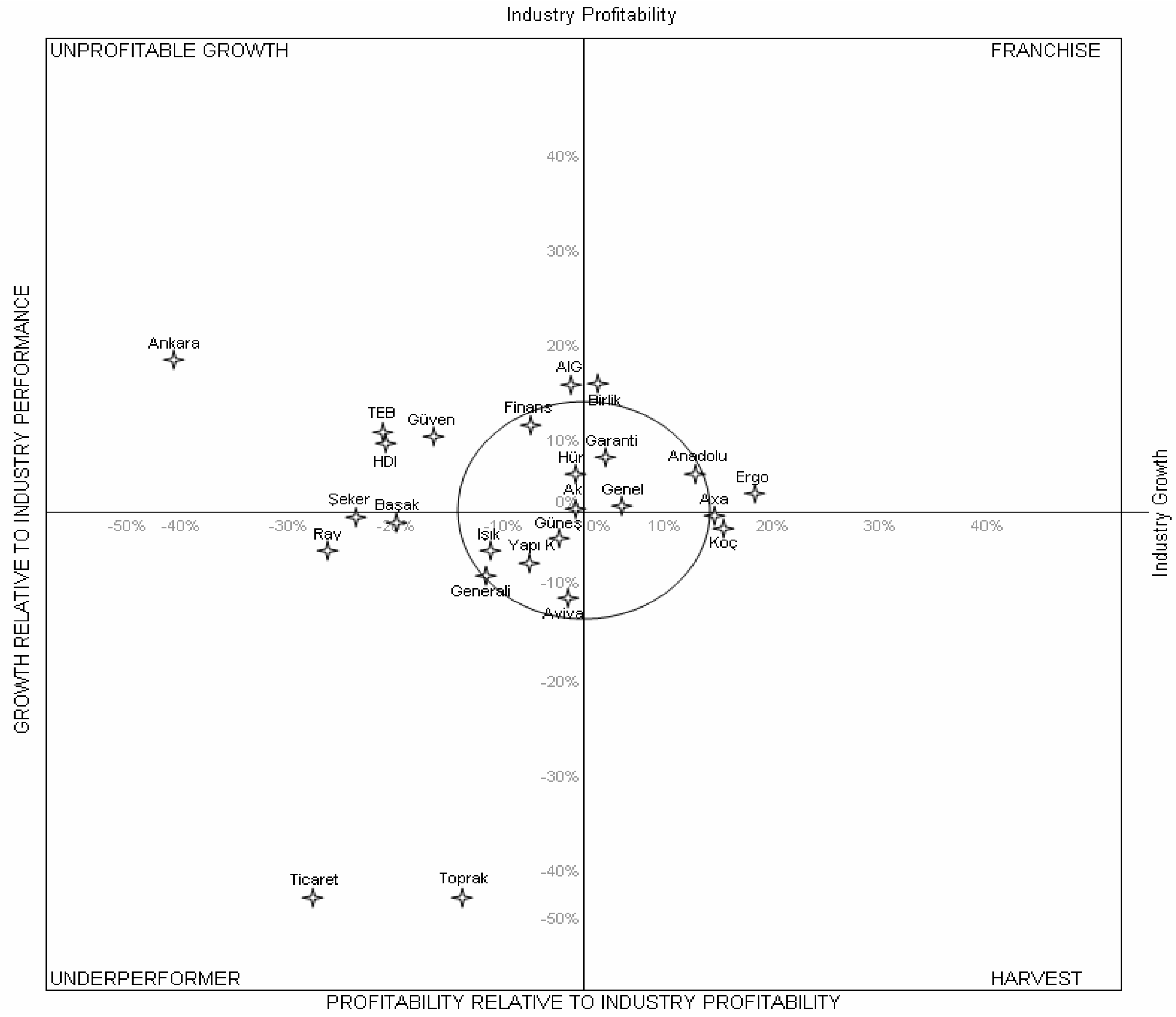


Figure 5.5 Relative profitability and growth matrix

In terms of profitability there are a limited number of firms standing on the right side of the matrix. An important amount of companies are on the both underperformer and unprofitable side; meaning that majority of non-life insurance companies in Turkey are not profitable. There are only two companies on the harvest part. Five companies out of twenty five can be called as franchise, in other words only five companies in the sector achieved both profitability and growth higher than the sector. Ten insurance companies are neither profitable nor growing enough relative to sector. Those companies should increase their growth rates and profitability. On the unprofitable growth quadrant, we see eight insurance companies which grow rapidly compared to industry. They should increase their profits.

If three segmented group of companies are analyzed separately;

- Lower segment companies are not profitable and they do not have enough growth rates (except HDI).
- Middle segment companies are not profitable (except Garanti and Birlik) and they have different growth rates relative to industry.
- Nearly half of the upper segment companies are profitable and nearly half of them are growing faster than the sector.

Profitability is the basic aim of a private establishment. In Turkey, according to our model, majority of non-life companies are unprofitable. Insurance firms should establish infrastructures and form strategies for higher profitability. More companies should try to place themselves on the harvest side. Underperformers should either increase their profitability or exit the sector.

Competitive advantage leads to profitability. Focusing on more profitable customers creates a competitive advantage in terms of profitability. However creating this advantage requires a developed CRM infrastructure. Handling insurance claims effectively is another way of creating profitability. Focusing on narrowly defined lines enables companies to make use of economies of scope through which cost savings are achieved. In turn, this approach may also lead to higher profitability. Different managerial strategies position companies on one of those four quadrants.

Macro-economic factors are not alone in affecting non-life insurance sales. Each firm should also look at its position with regard to sector growth and sector profitability. Growth without profitability is not favorable. An insurance firm should decide its strategies by making predictions related with macro economy and reconcile those predictions with different sectoral and micro factors.

6. DISCUSSION and CONCLUSION

Insurance business stems from the concept of risk. Being a system of financial protection, insurance facilitates the better functioning of economies by providing a safeguard against potential risks. Insurance is a social device for the well-being of members of a society, as well as being a part of financial system. Need for insurance arises even in non-monetary economies as we can witness insurance in the form of helping each other. In other words, concept of insurance inevitably requires a mutual relationship in its core meaning.

As the insurance business is a part of financial system, macro economic factors should influence the volume of premium produced in the sector. Four macro economic factors that may potentially have an effect on insurance premium production namely, inflation rates, USD, interest rates and GDP per capita are studied in this work.

The linkage between an economy's financial market development and insurance market development is an important phenomenon discussed in the literature. Among the outstanding authors, Outreville (1990) has made an important empirical contribution to the discussion. He finds a positive relationship between a nation's economic development and property-liability insurance consumption. Ward and Zurbruegg (2000) further advance Outreville's work and find that casual relationships that exist between economic growth and insurance market development vary across countries due to country specific factors. Beenstock, Dickinson and Khajuria (1988) defend that premiums are correlated to interest rate and GNP. Hofstede (1995) looks at the discussion from a different perspective and argues that insurance level within an economy will depend on the national culture and the willingness of individuals to use insurance contracts as a means of dealing with risk. Park, Borde and Choi (2002) study the relationship between insurance penetration and GNP, and some socio-economic factors adopted by Hofstede (1983). They find a positive relationship between insurance penetration and GNP, masculinity, socio-political instability and economic freedom. Browne, Chung and Frees (2000) look at the relationship between premium density and some independent variables namely income, market share of foreign insurers, risk aversion, urbanization, wealth and legal system. They defend that the relationship between premium density and income (GNP per capita in US dollars) is appeared to be positive and significant.

In the light of past researches, this study aims to contribute further to the discussion from the perspective of non-life insurance. Linear regression modeling is used to explain to what extend the four macroeconomic factors affect premium production. First we set four separate linear regression models to asses the individual effects of each of the four macroeconomic variables on non-life premium production. Then we focus on the results taken by employing four macroeconomic variables altogether on the premium production using a multiple linear regression model.

In the analysis, high coefficient of determination (R-square) values observed imply that the economic factors employed in the models are doing a very good job in explaining the change in non-life insurance premium production volume. The highest R-square value of 0,995 is recorded in Model 5 in which all the four macroeconomic variables employed altogether. Then, significance tests are employed to determine if the macroeconomic variables employed in the model are statistically significant and are meaningful in explaining changes in the premium production.

Results obtained by the hypothesis tests indicate that the effects of USD and GDP per capita on premium production are statistically significant within 95% confidence interval implying the existence of a linear relationship between these variables and the premium production. On the contrary, tests show that the effects of inflation rate and average annual interest rates on the premium production are not statistically significant.

Once dropping the insignificant variables out of the analysis, our model is revised by employing only two variables, namely USD and GDP per capita. The new multiple linear regression model has an R-square value of 0,994 implying that 99,4% of the sample variability in non-life insurance premium production volume is explained by its linear dependence on the two macroeconomic variables we employed in the model.

Hypothesis tests employed on the revised model show that the effects of the two variables on premium production are statistically significant within 95% confidence interval and a linear relationship does exist between the two variables and the premium production.

The positive sign of the coefficients indicates that when there is an increase in the independent variable, there is also an increase in the dependent variable. So we can say that, every 1,00 TRY of increase in GDP per capita increases insurance non-life premium production volume by approximately 969.601,88 TRY.

Contrary to this, the negative sign of the coefficients indicates that when there is an increase in the independent variable, there is a decrease in the dependent variable. Therefore, every 0,01 TRY of increase in USD currency rate decreases non-life insurance premium production volume by approximately 4.789.611,96 TRY.

GDP is one of the ways for measuring the size of economy. Findings of the research imply that GDP per capita is directly proportional to the insurance premium production. In other words, the more developed the economy of a country, the more premium volume is expected to be created. GDP per capita is an important indicator of the welfare of the people in a country. As people's welfare rises, they become more interested in their future and they are more likely to buy insurance policies with their excess funds. The evidence in this study is in line with the Outreville's (1990) research where he finds a positive relationship between GDP and property-liability insurance consumption. Another finding of the study is that USD in TRY is inversely proportional to the insurance premium production volume. This result implies that the more valuable the TRY against USD, the more premium production is likely to occur; or the less valuable the TRY against USD, the less premium production will be observed in the sector. USD is an alternative investment device to insurance. In the case of depreciation of TRY against USD, people may prefer to invest on USD instead of buying insurance policies, especially in a conjecture with the expectancy of devaluation of local currency. The possible effects of changes in national currencies vis a vis USD with respect to consumer behavior in the field of insurance is another area of investigation.

On the other hand, no causal relationship is found between interest rates and non-life insurance sales in the current study. This finding is contrary to the findings of Beenstock, Dickinson and Khajuria (1988) who find a correlation between interest rates and premiums. Besides interest rates, inflation rates are also found to be as non-determining factor on the non-life insurance sales in our analysis. In sum, among four macro-economic factors employed in the analysis, only two of them, namely GDP and USD, have effects on non-life insurance sales.

The analysis is further deepened by segmenting insurance companies into three categories namely upper, middle and lower segments. Macro-economic factors which were found to be having effects on non-life insurance premium production namely GDP and USD are reanalyzed on the basis of segmented categories. The results of the analysis are in line with the previous findings. Both GDP and USD have effects on non-life insurance sales. Every 1 TRY of increase in USD decreases insurance non-life premium production volume of the the companies in upper, middle, lower segments by approximately 726 million TRY, 361 million TRY and 25 million TRY respevtively. In contrast, every 1 TRY of increase in GDP per capita increases insurance non-life premium production volume of the all the companies in upper, middle, lower segments by approximately 853.500 TRY, 298.470 TRY and 30.050 TRY.

In addition to GDP and USD, some other macro-economic variables are also added to the study, namely automobile sales and consumer loans. Results of the analysis show that both automobile sales and consumer loans variables are also very good at explaining non-life insurance sales.

High coefficient of determination (R-square) values of 0,86, 0,87 and 0,82 for the companies in upper, middle and lower segments suggest that automobile sales variable is doing a very good job in explaining the change in non-life insurance premium production volume. Every automobile sale increases insurance non-life premium production volume of the all the companies in upper, middle, lower segments by approximately 6.794 TRY, 2.279 TRY and 240 TRY.

High coefficient of determination (R-square) values of 0,90, 0,94 and 0,88 for the companies in upper, middle and lower segments suggest that consumer loans variable is also doing a very good job in explaining the change in non-life insurance premium production volume. Every 1 TRY of increase in consumer loans increases insurance non-life premium production volume of the all the companies in upper, middle, lower segments by approximately 118 TRY, 40 TRY and 4 TRY respectively.

The study is further expanded by applying two different matrix approaches on Turkish insurance industry. Both the Boston Consulting Group Growth Share Matrix and the Relative Profitability and Growth Matrix are used for the analysis of 25 insurance companies and three different segments. The aim is to combine the macro-economic perspective with company-based perspective when taking strategic decisions for an insurance company manager. Forecasting the future market growth in relation with macro-economic indicators should be considered carefully without underestimating the dynamics of special business units.

Non-life insurance companies are analyzed separately within the framework of BCG Growth Share Matrix. The market share and growth rates are determined according to five year averages. The growth rates are reduced to reel rates to eliminate impact of inflation. Results show that Turkish insurance sector is a high growth sector and there are a lot of question marks for companies which will turn into either stars or dogs in the future. There are opportunities for companies to grow their market shares and to turn question marks into stars. A few companies have stars which will become cash cows in the future.

The Turkish insurance sector is at the very first stages if one looks at the positions of branches on BCG matrix. There are yet no cash cows in the sector. Casualty has the largest share both in the sector and among the business units of insurance companies in general. Only one insurance company succeeds in making casualty branch star in the sector while there are stars for agriculture, legal protection and credit branches for a few companies. Mergers among companies and global players may obviously change the positions in the market.

If the BCG matrix is considered within a segmented framework, it is observed that upper segment companies mostly pay attention to fire branch. It has 14,71 percent share in the upper segments' total premium production. Lower segment companies tend to increase their shares in casualty branch which has a 77,69 percent share in their total premium production. Middle segment firms are trying to be competitive for the rest of the branches. They seem to be expecting to increase their market shares in various kind of branches because they are not the big players for the casualty and fire branches. Mergers in the middle segment may give a competitive advantage to those companies.

Although market shares and growth rates of companies are important strategic tools for future decisions, profitability is the basic aim for the establishment of private firms. For this reason, another matrix approach is added to the analyses. Relative profitability and relative growth matrix by Joseph Calandro Jr. and Scott Lane is applied to the Turkish insurance industry. They classified the quadrants as franchise, harvest, unprofitable growth, and under-performer. According to the matrix, it is obvious that majority of non-life insurance companies in Turkey are not profitable. If three segmented group of companies are analyzed separately; Lower segment companies are not profitable and they do not have enough growth rates (except HDI); Middle segment companies are not profitable (except Garanti and Birlik) and they have different growth rates relative to industry; Nearly half of the upper segment companies are profitable and nearly half of them are growing faster than the sector.

Besides macro-economic factors, positions of each firm with regard to sector growth and sector profitability should also be considered while taking strategic decisions and predicting the future trends in insurance industry.

6.1 Implications

This research has implications for insurance and economy researchers and insurance industry managers. The insurance sector has not received an extensive attention in this regard and a few researchers have made contribution to the issue with their studies. There are studies on the aggregate sector on the one hand and also there are studies limited to one of the main branches of insurance business designed under the headings of life, non-life or life/health, property casualty. The current study is based on non-life aspect of the insurance business. Life insurances are substitute saving vehicles and within the market for intermediated savings, mainly life insurance companies reduce the market share of banks. Although the basic function of the insurance is risk transfer and indemnification, life and non-life insurances would be better to deal with separately because of saving substitution effects of life insurance.

The study contributes to insurance researches by bringing the economic growth-insurance market debate into a country specific framework. In the literature there is a general understanding that casual relationships between economic growth and insurance market development vary across countries.

For practice, a major relevant contribution for insurance managers is offered; Understanding the possible tendencies in their insurance sales with respect to economic conditions is essential to get satisfying outcomes out of their strategic decisions.

6.2 Limitations

The research is based on linear and multiple linear regression models. It is assumed that an almost linear relationship exits between the non-life sales and some macro-economic indicators. Findings suggest that there is a positive linear relationship between GDP and non-life insurance sales, a negative linear relationship between USD and non-life insurance sales. However, interest rates and inflation rates are dropped out of the model as they are not statistically significant. Those factors should also be dealt with caution considering whether or not a non-linear relationship exists.

6.3 Recommendations for Future Research

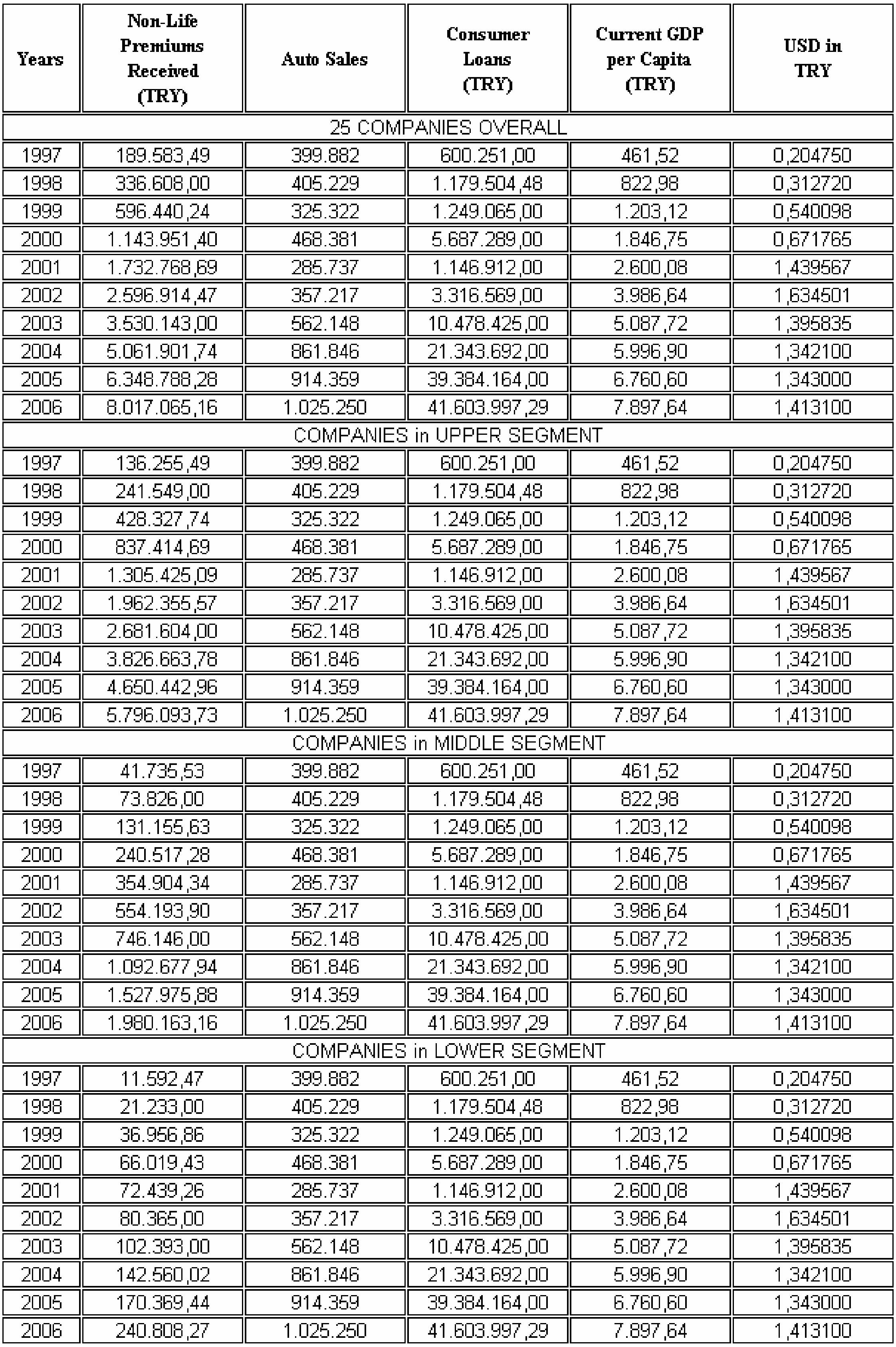
The research focuses on the effects of macro-economic indicators on non-life insurance sales. The study can be expanded by employing some other macro economic factors such as employment, investments, foreign trade figures etc. which may have different implications for academicians and insurer managers.

In conclusion, this study enables insurers and academicians to anticipate future insurance sales by employing expected values of GDP per capita, USD in TRY, automobile sales and consumer loans. Changes in those factors are determinant in explaining insurance consumption with high explanatory powers. Insurance managers may apply the findings of the study in making their budgeting decisions. Analyzing economic developments and reconciling the results with company’s position in the sector in terms of growth, market share and profitability, are important tools for taking strategic decisions in non-life insurance business.

APPENDIX A : DATA SET EMPLOYED in the REGRESSIONS (Section 3)

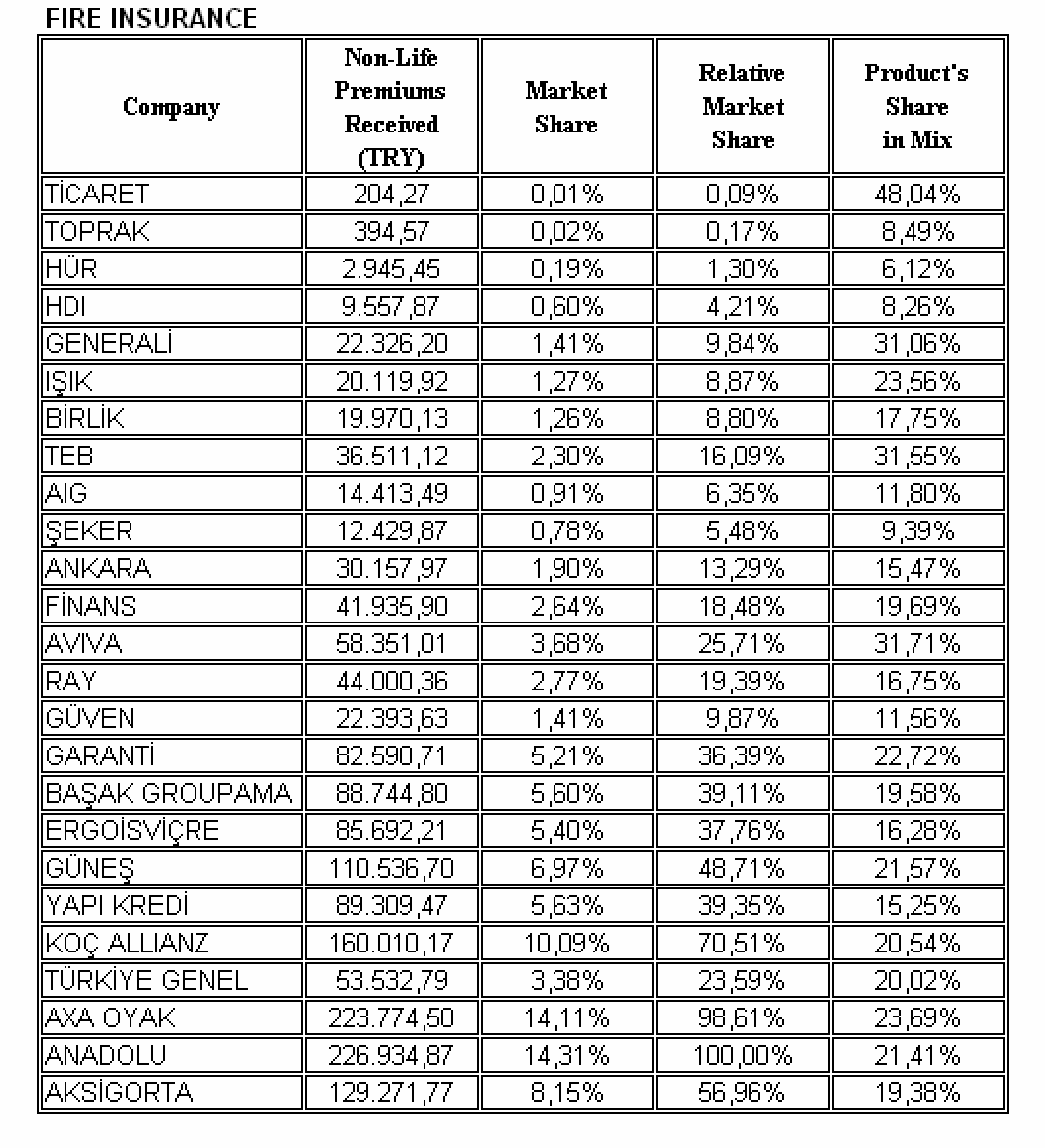
Years	Non-Life Direct Premiums Received (YTL)	USD in TRY	Inflation Rate - TÜFE Index (%)	Average of Annual Interest Rates (%)	Current GDP per Capita (YTL)
1986	180.982	0,000756	34,60	48,00	0,993
1987	288.643	0,001018	38,90	52,00	1,422
1988	522.371	0,001813	73,70	68,66	2,406
1989	887.682	0,002311	63,30	66,29	4,141
1990	1.759.110	0,002927	60,30	57,28	6,994
1991	3.186.150	0,005075	66,00	66,13	10,996
1992	6.600.450	0,008556	70,10	73,65	18,722
1993	14.713.133	0,014458	66,10	74,46	33,314
1994	27.899.400	0,036323	106,30	102,64	63,861
1995	55.129.717	0,061054	93,60	91,65	125,924
1996	109.352.606	0,107505	80,40	92,79	235,611
1997	238.332.120	0,204750	85,70	93,03	461,522
1998	456.599.471	0,312720	84,60	93,31	822,977
1999	790.428.141	0,540098	64,90	85,49	1203,124
2000	1.448.384.552	0,671765	54,90	38,19	1846,748
2001	2.019.406.079	1,439567	54,40	62,17	2600,082
2002	2.964.034.076	1,634501	45,00	53,88	3986,644
2003	3.928.782.243	1,395835	25,30	40,28	5087,721
2004	5.397.079.626	1,342100	10,60	23,61	5996,900

APPENDIX B : DATA SET EMPLOYED in the REGRESSIONS (Section 5)



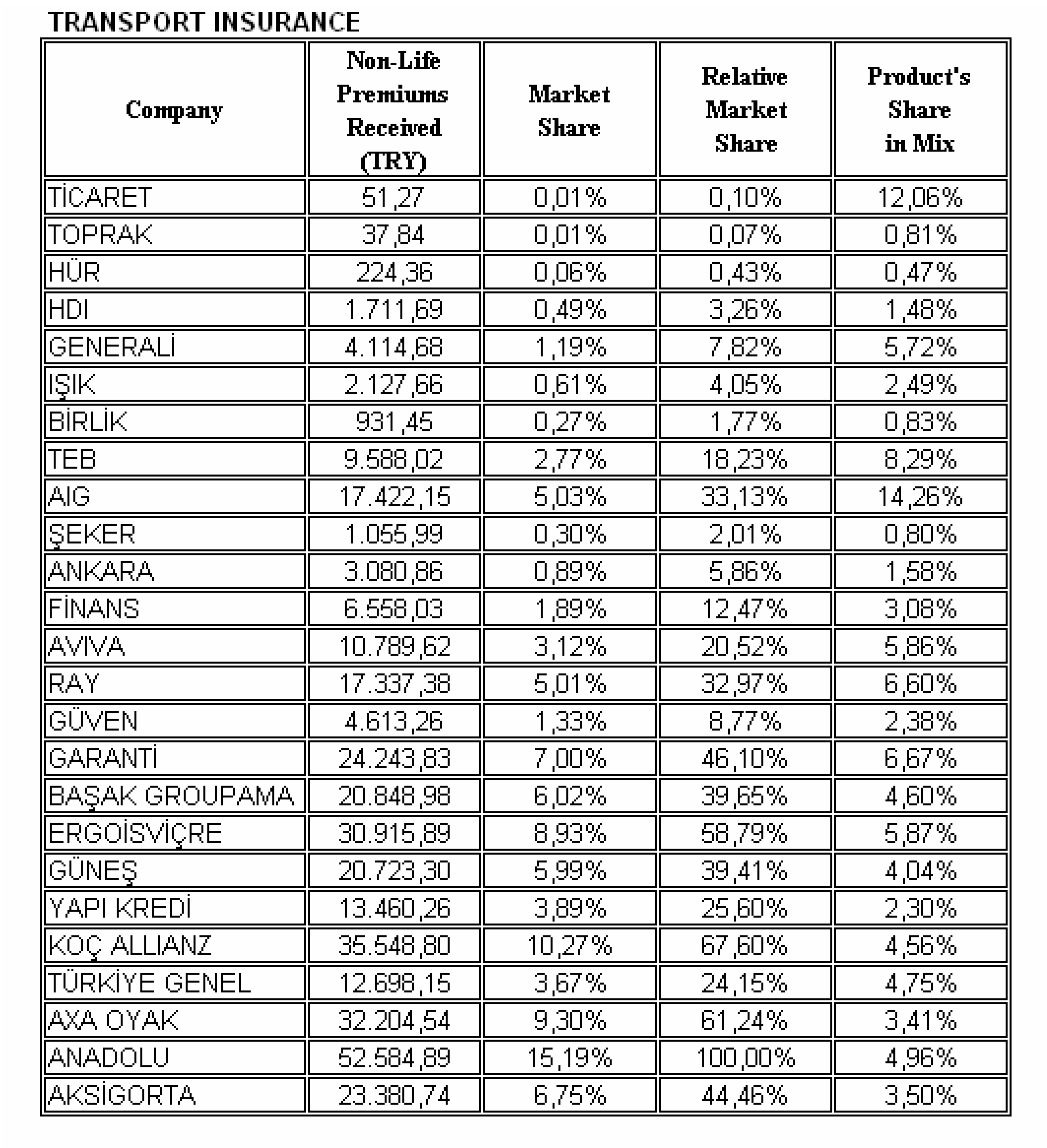
Years	Non-Life Premiums Received (TRY)	Auto Sales	Consumer Loans (TRY)	Current GDP per Capita (TRY)	USD in TRY
25 COMPANIES OVERALL					
1997	189.583,49	399.882	600.251,00	461,52	0,204750
1998	336.608,00	405.229	1.179.504,48	822,98	0,312720
1999	596.440,24	325.322	1.249.065,00	1.203,12	0,540098
2000	1.143.951,40	468.381	5.687.289,00	1.846,75	0,671765
2001	1.732.768,69	285.737	1.146.912,00	2.600,08	1,439567
2002	2.596.914,47	357.217	3.316.569,00	3.986,64	1,634501
2003	3.530.143,00	562.148	10.478.425,00	5.087,72	1,395835
2004	5.061.901,74	861.846	21.343.692,00	5.996,90	1,342100
2005	6.348.788,28	914.359	39.384.164,00	6.760,60	1,343000
2006	8.017.065,16	1.025.250	41.603.997,29	7.897,64	1,413100
COMPANIES in UPPER SEGMENT					
1997	136.255,49	399.882	600.251,00	461,52	0,204750
1998	241.549,00	405.229	1.179.504,48	822,98	0,312720
1999	428.327,74	325.322	1.249.065,00	1.203,12	0,540098
2000	837.414,69	468.381	5.687.289,00	1.846,75	0,671765
2001	1.305.425,09	285.737	1.146.912,00	2.600,08	1,439567
2002	1.962.355,57	357.217	3.316.569,00	3.986,64	1,634501
2003	2.681.604,00	562.148	10.478.425,00	5.087,72	1,395835
2004	3.826.663,78	861.846	21.343.692,00	5.996,90	1,342100
2005	4.650.442,96	914.359	39.384.164,00	6.760,60	1,343000
2006	5.796.093,73	1.025.250	41.603.997,29	7.897,64	1,413100
COMPANIES in MIDDLE SEGMENT					
1997	41.735,53	399.882	600.251,00	461,52	0,204750
1998	73.826,00	405.229	1.179.504,48	822,98	0,312720
1999	131.155,63	325.322	1.249.065,00	1.203,12	0,540098
2000	240.517,28	468.381	5.687.289,00	1.846,75	0,671765
2001	354.904,34	285.737	1.146.912,00	2.600,08	1,439567
2002	554.193,90	357.217	3.316.569,00	3.986,64	1,634501
2003	746.146,00	562.148	10.478.425,00	5.087,72	1,395835
2004	1.092.677,94	861.846	21.343.692,00	5.996,90	1,342100
2005	1.527.975,88	914.359	39.384.164,00	6.760,60	1,343000
2006	1.980.163,16	1.025.250	41.603.997,29	7.897,64	1,413100
COMPANIES in LOWER SEGMENT					
1997	11.592,47	399.882	600.251,00	461,52	0,204750
1998	21.233,00	405.229	1.179.504,48	822,98	0,312720
1999	36.956,86	325.322	1.249.065,00	1.203,12	0,540098
2000	66.019,43	468.381	5.687.289,00	1.846,75	0,671765
2001	72.439,26	285.737	1.146.912,00	2.600,08	1,439567
2002	80.365,00	357.217	3.316.569,00	3.986,64	1,634501
2003	102.393,00	562.148	10.478.425,00	5.087,72	1,395835
2004	142.560,02	861.846	21.343.692,00	5.996,90	1,342100
2005	170.369,44	914.359	39.384.164,00	6.760,60	1,343000
2006	240.808,27	1.025.250	41.603.997,29	7.897,64	1,413100

APPENDIX C : DATA SET EMPLOYED in the BCG MATRIX



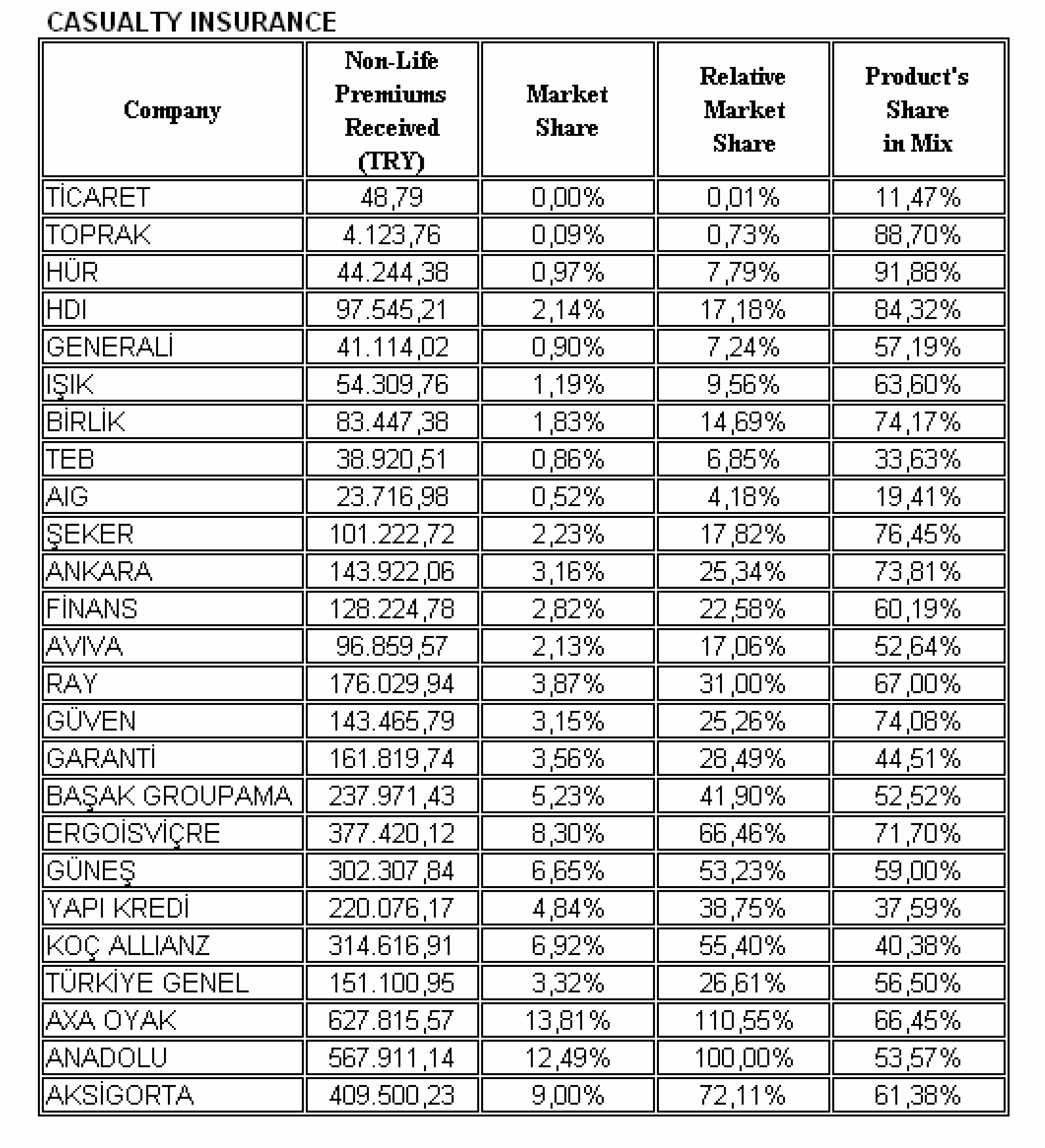
FIRE INSURANCE

Company	Non-Life Premiums Received (TRY)	Market Share	Relative Market Share	Product's Share in Mix
TİCARET	204,27	0,01%	0,09%	48,04%
TOPRAK	394,57	0,02%	0,17%	8,49%
HÜR	2.945,45	0,19%	1,30%	6,12%
HDI	9.557,87	0,60%	4,21%	8,26%
GENERALİ	22.326,20	1,41%	9,84%	31,06%
IŞIK	20.119,92	1,27%	8,87%	23,56%
BİRLİK	19.970,13	1,26%	8,80%	17,75%
TEB	36.511,12	2,30%	16,09%	31,55%
AIG	14.413,49	0,91%	6,35%	11,80%
ŞEKER	12.429,87	0,78%	5,48%	9,39%
ANKARA	30.157,97	1,90%	13,29%	15,47%
FİNANS	41.935,90	2,64%	18,48%	19,69%
AVIVA	58.351,01	3,68%	25,71%	31,71%
RAY	44.000,36	2,77%	19,39%	16,75%
GÜVEN	22.393,63	1,41%	9,87%	11,56%
GARANTİ	82.590,71	5,21%	36,39%	22,72%
BAŞAK GROUPAMA	88.744,80	5,60%	39,11%	19,58%
ERGOİSVİÇRE	85.692,21	5,40%	37,76%	16,28%
GÜNEŞ	110.536,70	6,97%	48,71%	21,57%
YAPI KREDİ	89.309,47	5,63%	39,35%	15,25%
KOÇ ALLIANZ	160.010,17	10,09%	70,51%	20,54%
TÜRKİYE GENEL	53.532,79	3,38%	23,59%	20,02%
AXA OYAK	223.774,50	14,11%	98,61%	23,69%
ANADOLU	226.934,87	14,31%	100,00%	21,41%
AKSİGORTA	129.271,77	8,15%	56,96%	19,38%



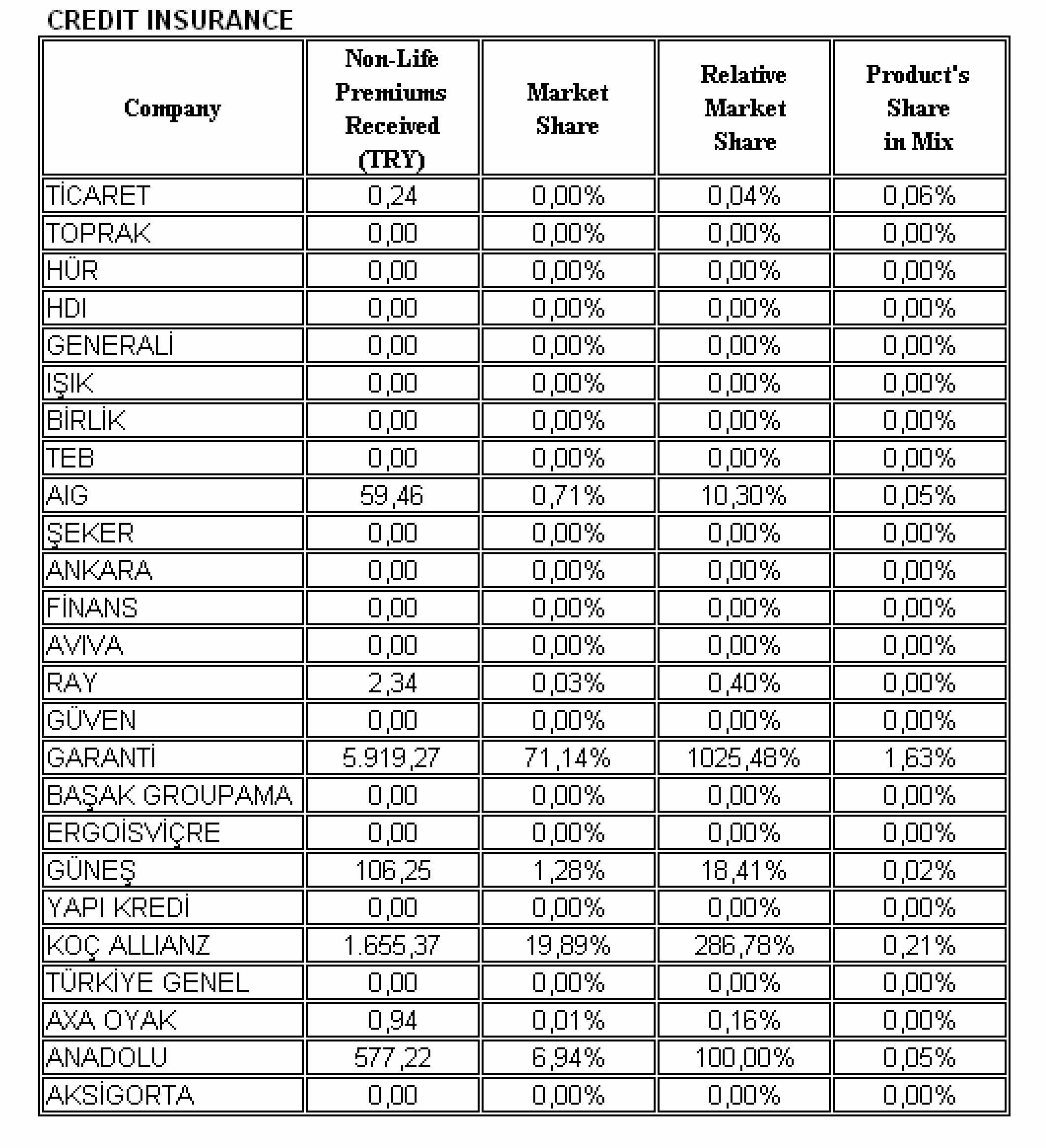
TRANSPORT INSURANCE

Company	Non-Life Premiums Received (TRY)	Market Share	Relative Market Share	Product's Share in Mix
TİCARET	51,27	0,01%	0,10%	12,06%
TOPRAK	37,84	0,01%	0,07%	0,81%
HÜR	224,36	0,06%	0,43%	0,47%
HDI	1.711,69	0,49%	3,26%	1,48%
GENERALİ	4.114,68	1,19%	7,82%	5,72%
IŞIK	2.127,66	0,61%	4,05%	2,49%
BİRLİK	931,45	0,27%	1,77%	0,83%
TEB	9.588,02	2,77%	18,23%	8,29%
AIG	17.422,15	5,03%	33,13%	14,26%
ŞEKER	1.055,99	0,30%	2,01%	0,80%
ANKARA	3.080,86	0,89%	5,86%	1,58%
FİNANS	6.558,03	1,89%	12,47%	3,08%
AVIVA	10.789,62	3,12%	20,52%	5,86%
RAY	17.337,38	5,01%	32,97%	6,60%
GÜVEN	4.613,26	1,33%	8,77%	2,38%
GARANTİ	24.243,83	7,00%	46,10%	6,67%
BAŞAK GROUPAMA	20.848,98	6,02%	39,65%	4,60%
ERGOİSVİÇRE	30.915,89	8,93%	58,79%	5,87%
GÜNEŞ	20.723,30	5,99%	39,41%	4,04%
YAPI KREDİ	13.460,26	3,89%	25,60%	2,30%
KOÇ ALLIANZ	35.548,80	10,27%	67,60%	4,56%
TÜRKİYE GENEL	12.698,15	3,67%	24,15%	4,75%
AXA OYAK	32.204,54	9,30%	61,24%	3,41%
ANADOLU	52.584,89	15,19%	100,00%	4,96%
AKSİGORTA	23.380,74	6,75%	44,46%	3,50%



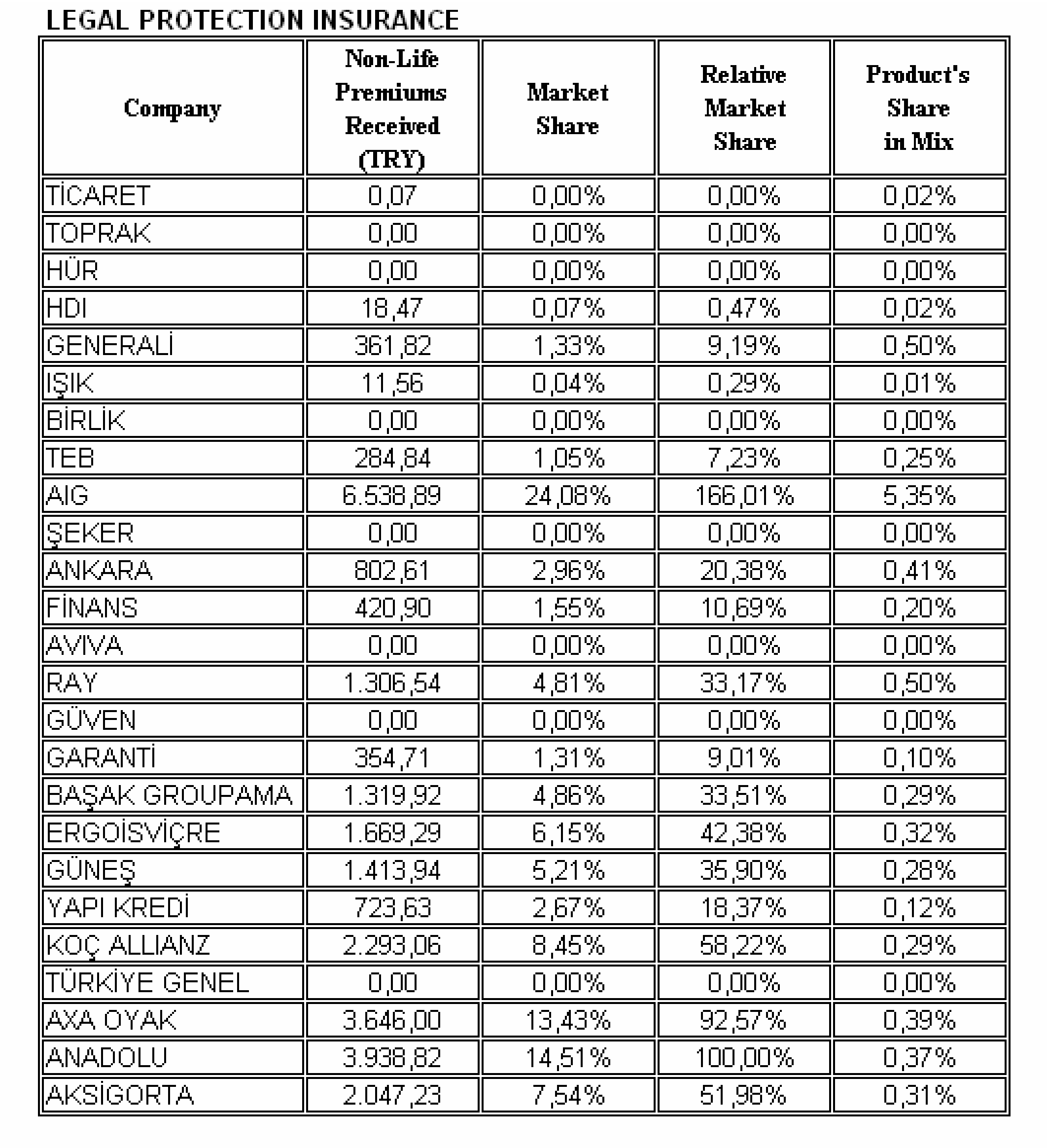
CASUALTY INSURANCE

Company	Non-Life Premiums Received (TRY)	Market Share	Relative Market Share	Product's Share in Mix
TİCARET	48,79	0,00%	0,01%	11,47%
TOPRAK	4.123,76	0,09%	0,73%	88,70%
HÜR	44.244,38	0,97%	7,79%	91,88%
HDI	97.545,21	2,14%	17,18%	84,32%
GENERALİ	41.114,02	0,90%	7,24%	57,19%
IŞIK	54.309,76	1,19%	9,56%	63,60%
BİRLİK	83.447,38	1,83%	14,69%	74,17%
TEB	38.920,51	0,86%	6,85%	33,63%
AIG	23.716,98	0,52%	4,18%	19,41%
ŞEKER	101.222,72	2,23%	17,82%	76,45%
ANKARA	143.922,06	3,16%	25,34%	73,81%
FİNANS	128.224,78	2,82%	22,58%	60,19%
AVIVA	96.859,57	2,13%	17,06%	52,64%
RAY	176.029,94	3,87%	31,00%	67,00%
GÜVEN	143.465,79	3,15%	25,26%	74,08%
GARANTİ	161.819,74	3,56%	28,49%	44,51%
BAŞAK GROUPAMA	237.971,43	5,23%	41,90%	52,52%
ERGOİSVİÇRE	377.420,12	8,30%	66,46%	71,70%
GÜNEŞ	302.307,84	6,65%	53,23%	59,00%
YAPI KREDİ	220.076,17	4,84%	38,75%	37,59%
KOÇ ALLIANZ	314.616,91	6,92%	55,40%	40,38%
TÜRKİYE GENEL	151.100,95	3,32%	26,61%	56,50%
AXA OYAK	627.815,57	13,81%	110,55%	66,45%
ANADOLU	567.911,14	12,49%	100,00%	53,57%
AKSİGORTA	409.500,23	9,00%	72,11%	61,38%



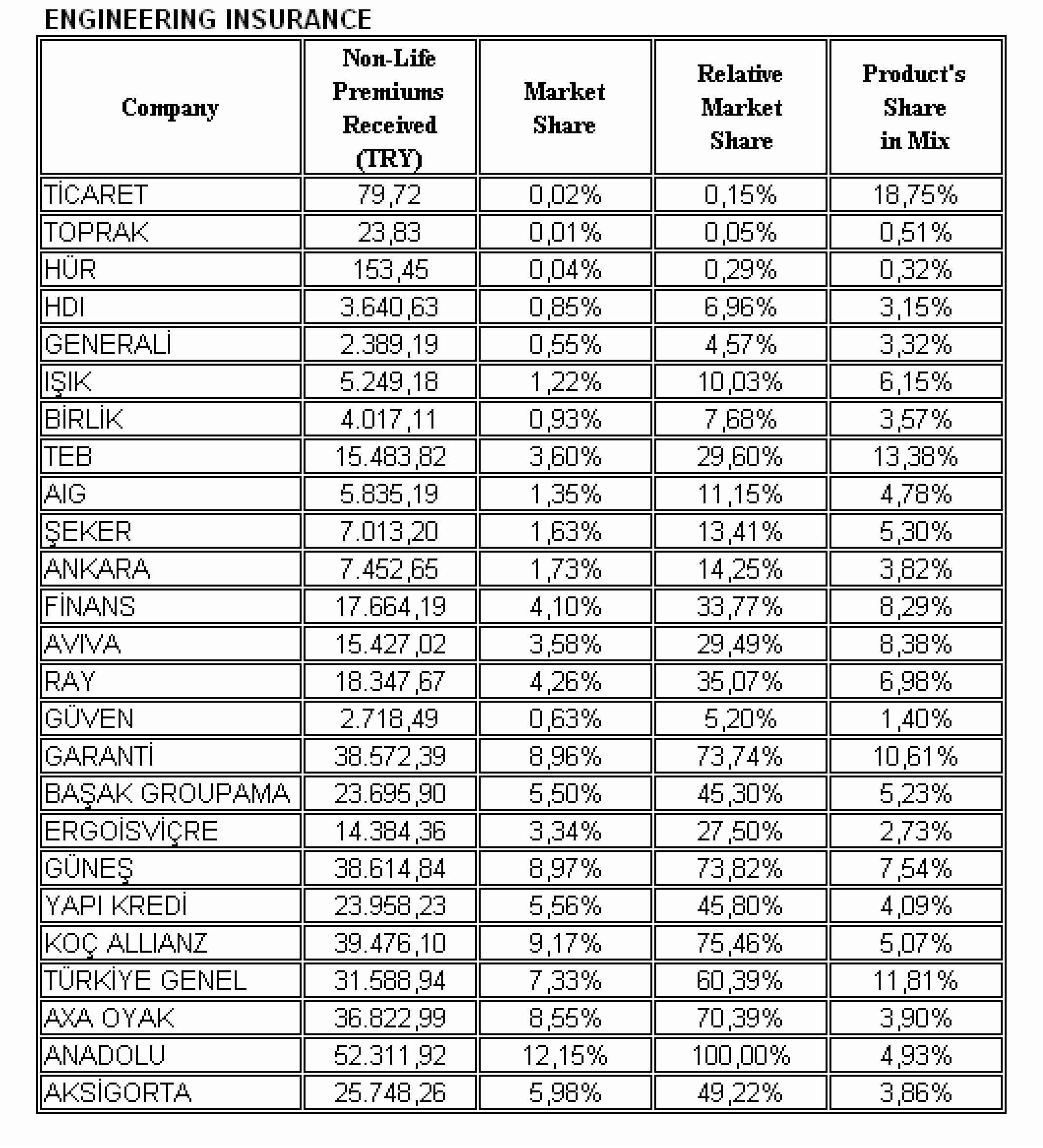
CREDIT INSURANCE

Company	Non-Life Premiums Received (TRY)	Market Share	Relative Market Share	Product's Share in Mix
TİCARET	0,24	0,00%	0,04%	0,06%
TOPRAK	0,00	0,00%	0,00%	0,00%
HÜR	0,00	0,00%	0,00%	0,00%
HDI	0,00	0,00%	0,00%	0,00%
GENERALİ	0,00	0,00%	0,00%	0,00%
IŞIK	0,00	0,00%	0,00%	0,00%
BİRLİK	0,00	0,00%	0,00%	0,00%
TEB	0,00	0,00%	0,00%	0,00%
AIG	59,46	0,71%	10,30%	0,05%
ŞEKER	0,00	0,00%	0,00%	0,00%
ANKARA	0,00	0,00%	0,00%	0,00%
FİNANS	0,00	0,00%	0,00%	0,00%
AVIVA	0,00	0,00%	0,00%	0,00%
RAY	2,34	0,03%	0,40%	0,00%
GÜVEN	0,00	0,00%	0,00%	0,00%
GARANTİ	5.919,27	71,14%	1025,48%	1,63%
BAŞAK GROUPAMA	0,00	0,00%	0,00%	0,00%
ERGOİSVİÇRE	0,00	0,00%	0,00%	0,00%
GÜNEŞ	106,25	1,28%	18,41%	0,02%
YAPI KREDİ	0,00	0,00%	0,00%	0,00%
KOÇ ALLIANZ	1.655,37	19,89%	286,78%	0,21%
TÜRKİYE GENEL	0,00	0,00%	0,00%	0,00%
AXA OYAK	0,94	0,01%	0,16%	0,00%
ANADOLU	577,22	6,94%	100,00%	0,05%
AKSİGORTA	0,00	0,00%	0,00%	0,00%



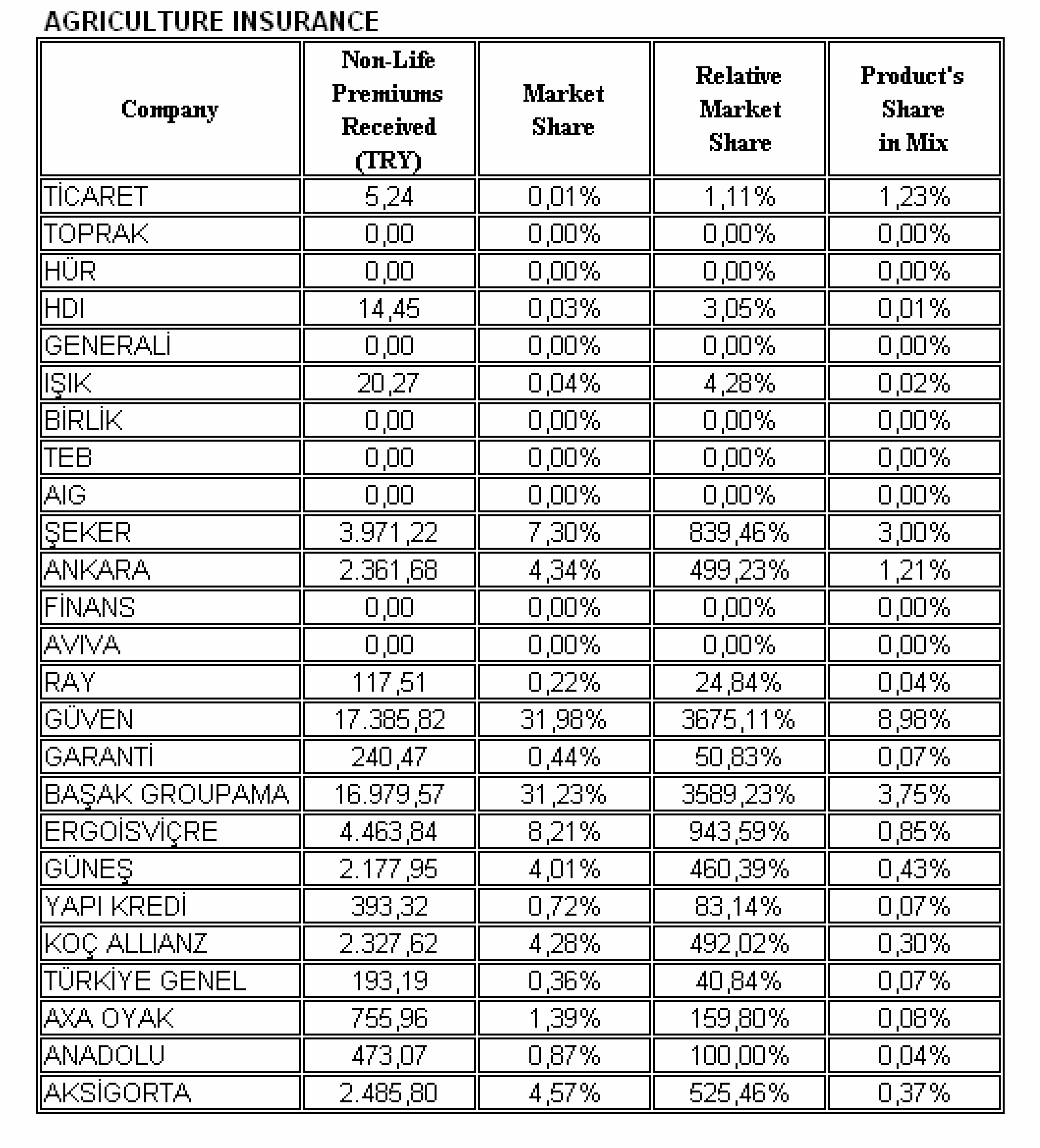
LEGAL PROTECTION INSURANCE

Company	Non-Life Premiums Received (TRY)	Market Share	Relative Market Share	Product's Share in Mix
TİCARET	0,07	0,00%	0,00%	0,02%
TOPRAK	0,00	0,00%	0,00%	0,00%
HÜR	0,00	0,00%	0,00%	0,00%
HDI	18,47	0,07%	0,47%	0,02%
GENERALİ	361,82	1,33%	9,19%	0,50%
IŞIK	11,56	0,04%	0,29%	0,01%
BİRLİK	0,00	0,00%	0,00%	0,00%
TEB	284,84	1,05%	7,23%	0,25%
AIG	6.538,89	24,08%	166,01%	5,35%
ŞEKER	0,00	0,00%	0,00%	0,00%
ANKARA	802,61	2,96%	20,38%	0,41%
FİNANS	420,90	1,55%	10,69%	0,20%
AVIVA	0,00	0,00%	0,00%	0,00%
RAY	1.306,54	4,81%	33,17%	0,50%
GÜVEN	0,00	0,00%	0,00%	0,00%
GARANTİ	354,71	1,31%	9,01%	0,10%
BAŞAK GROUPAMA	1.319,92	4,86%	33,51%	0,29%
ERGOİSVİÇRE	1.669,29	6,15%	42,38%	0,32%
GÜNEŞ	1.413,94	5,21%	35,90%	0,28%
YAPI KREDİ	723,63	2,67%	18,37%	0,12%
KOÇ ALLIANZ	2.293,06	8,45%	58,22%	0,29%
TÜRKİYE GENEL	0,00	0,00%	0,00%	0,00%
AXA OYAK	3.646,00	13,43%	92,57%	0,39%
ANADOLU	3.938,82	14,51%	100,00%	0,37%
AKSİGORTA	2.047,23	7,54%	51,98%	0,31%



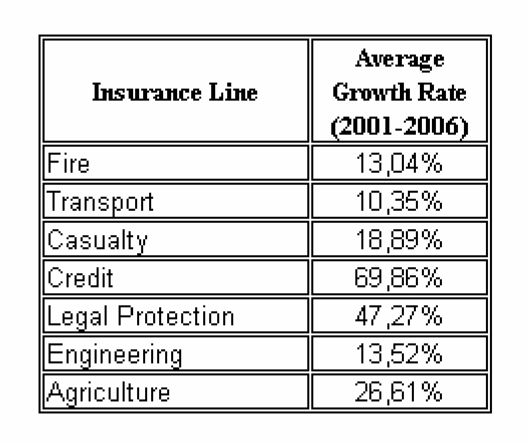
ENGINEERING INSURANCE

Company	Non-Life Premiums Received (TRY)	Market Share	Relative Market Share	Product's Share in Mix
TİCARET	79,72	0,02%	0,15%	18,75%
TOPRAK	23,83	0,01%	0,05%	0,51%
HÜR	153,45	0,04%	0,29%	0,32%
HDI	3.640,63	0,85%	6,96%	3,15%
GENERALİ	2.389,19	0,55%	4,57%	3,32%
IŞIK	5.249,18	1,22%	10,03%	6,15%
BİRLİK	4.017,11	0,93%	7,68%	3,57%
TEB	15.483,82	3,60%	29,60%	13,38%
AIG	5.835,19	1,35%	11,15%	4,78%
ŞEKER	7.013,20	1,63%	13,41%	5,30%
ANKARA	7.452,65	1,73%	14,25%	3,82%
FİNANS	17.664,19	4,10%	33,77%	8,29%
AVIVA	15.427,02	3,58%	29,49%	8,38%
RAY	18.347,67	4,26%	35,07%	6,98%
GÜVEN	2.718,49	0,63%	5,20%	1,40%
GARANTİ	38.572,39	8,96%	73,74%	10,61%
BAŞAK GROUPAMA	23.695,90	5,50%	45,30%	5,23%
ERGOİSVİÇRE	14.384,36	3,34%	27,50%	2,73%
GÜNEŞ	38.614,84	8,97%	73,82%	7,54%
YAPI KREDİ	23.958,23	5,56%	45,80%	4,09%
KOÇ ALLIANZ	39.476,10	9,17%	75,46%	5,07%
TÜRKİYE GENEL	31.588,94	7,33%	60,39%	11,81%
AXA OYAK	36.822,99	8,55%	70,39%	3,90%
ANADOLU	52.311,92	12,15%	100,00%	4,93%
AKSİGORTA	25.748,26	5,98%	49,22%	3,86%



AGRICULTURE INSURANCE

Company	Non-Life Premiums Received (TRY)	Market Share	Relative Market Share	Product's Share in Mix
TİCARET	5,24	0,01%	1,11%	1,23%
TOPRAK	0,00	0,00%	0,00%	0,00%
HÜR	0,00	0,00%	0,00%	0,00%
HDI	14,45	0,03%	3,05%	0,01%
GENERALİ	0,00	0,00%	0,00%	0,00%
IŞIK	20,27	0,04%	4,28%	0,02%
BİRLİK	0,00	0,00%	0,00%	0,00%
TEB	0,00	0,00%	0,00%	0,00%
AIG	0,00	0,00%	0,00%	0,00%
ŞEKER	3.971,22	7,30%	839,46%	3,00%
ANKARA	2.361,68	4,34%	499,23%	1,21%
FİNANS	0,00	0,00%	0,00%	0,00%
AVIVA	0,00	0,00%	0,00%	0,00%
RAY	117,51	0,22%	24,84%	0,04%
GÜVEN	17.385,82	31,98%	3675,11%	8,98%
GARANTİ	240,47	0,44%	50,83%	0,07%
BAŞAK GROUPAMA	16.979,57	31,23%	3589,23%	3,75%
ERGOİSVİÇRE	4.463,84	8,21%	943,59%	0,85%
GÜNEŞ	2.177,95	4,01%	460,39%	0,43%
YAPI KREDİ	393,32	0,72%	83,14%	0,07%
KOÇ ALLIANZ	2.327,62	4,28%	492,02%	0,30%
TÜRKİYE GENEL	193,19	0,36%	40,84%	0,07%
AXA OYAK	755,96	1,39%	159,80%	0,08%
ANADOLU	473,07	0,87%	100,00%	0,04%
AKSİGORTA	2.485,80	4,57%	525,46%	0,37%



Insurance Line	**Average Growth Rate (2001-2006)**
Fire	13,04%
Transport	10,35%
Casualty	18,89%
Credit	69,86%
Legal Protection	47,27%
Engineering	13,52%
Agriculture	26,61%

APPENDIX D : DATA SET EMPLOYED in the RELATIVE PROFITABILITY and RELATIVE GROWTH MATRIX

Companies	Return Firm (x1000 YTL)					Shareholders' Equity Firm (x1000 YTL)					ROE Firm %					Average ROE Firm % (1)	ROE Relative % (1-2)
	2002	**2003**	**2004**	**2005**	**2006**	**2002**	**2003**	**2004**	**2005**	**2006**	**2002**	**2003**	**2004**	**2005**	**2006**		
TİCARET	-376	147	-1.005	-2.032	-1.007	5.476	8.076	8.146	7.243	5.192	-6,9%	1,8%	-12,3%	-28,1%	-19,4%	-13,0%	-27,6%
TOPRAK	124	749	7	21	-878	4.344	5.938	6.531	6.875	6.928	2,9%	12,6%	0,1%	0,3%	-12,7%	0,6%	-14,0%
HÜR	-82	234	1.243	1.712	2.167	3.019	3.766	4.118	5.503	5.949	-2,7%	6,2%	30,2%	31,1%	36,4%	20,2%	5,6%
HDI	412	-1.017	214	1.016	-8.141	6.078	7.827	6.783	9.879	20.913	6,8%	-13,0%	3,2%	10,3%	-38,9%	-6,3%	-21,0%
GENERALİ	423	1.309	26	144	-730	6.569	7.943	8.577	8.791	8.428	6,4%	16,5%	0,3%	1,6%	-8,7%	3,2%	-11,4%
IŞIK	838	-1.314	1.055	605	421	4.571	5.966	9.402	13.820	19.335	18,3%	-22,0%	11,2%	4,4%	2,2%	2,8%	-11,8%
BİRLİK	2.074	538	-1.218	2.562	2.907	5.420	7.499	7.935	9.942	12.258	38,3%	7,2%	-15,3%	25,8%	23,7%	15,9%	1,3%
TEB	582	-2.977	-13.792	1.843	3.714	4.228	12.128	24.482	15.484	17.326	13,8%	-24,5%	-56,3%	11,9%	21,4%	-6,8%	-21,4%
AIG	914	-475	2.183	141	2.177	4.010	5.048	5.119	20.689	20.469	22,8%	-9,4%	42,6%	0,7%	10,6%	13,5%	-1,1%
ŞEKER	946	-5.757	1.058	4.510	-13.119	8.392	14.664	9.984	22.937	27.452	11,3%	-39,3%	10,6%	19,7%	-47,8%	-9,1%	-23,7%
ANKARA	142	-5.470	1.285	-752	-66.772	10.480	11.327	14.927	26.049	70.009	1,4%	-48,3%	8,6%	-2,9%	-95,4%	-27,3%	-41,9%
FİNANS	-72	-2.280	-2.287	5.246	19.121	5.178	12.244	10.064	15.834	38.684	-1,4%	-18,6%	-22,7%	33,1%	49,4%	8,0%	-6,6%
AVIVA	-8.009	-3.106	5.182	11.798	14.638	16.157	8.132	11.497	22.017	28.986	-49,6%	-38,2%	45,1%	53,6%	50,5%	12,3%	-2,3%
RAY	4.175	-891	-2.626	-3.983	-16.221	22.041	30.065	29.174	25.892	32.417	18,9%	-3,0%	-9,0%	-15,4%	-50,0%	-11,7%	-26,3%
GÜVEN	109	-4.635	4.075	-4.941	4.201	14.764	16.749	25.418	38.139	33.370	0,7%	-27,7%	16,0%	-13,0%	12,6%	-2,3%	-16,9%
GARANTİ	133	4.608	6.600	-3.445	30.854	13.938	25.356	36.828	46.566	57.406	1,0%	18,2%	17,9%	-7,4%	53,7%	16,7%	2,1%
BAŞAK GROUPAMA	14.061	3.445	4.629	677	-79.130	51.590	67.869	68.244	120.439	118.376	27,3%	5,1%	6,8%	0,6%	-66,8%	-5,4%	-20,0%
ERGOİSVİÇRE	14.522	12.986	18.446	16.144	13.890	22.842	38.298	51.060	81.927	108.358	63,6%	33,9%	36,1%	19,7%	12,8%	33,2%	18,6%
GÜNEŞ	16.725	9.275	6.771	9.616	2.533	57.695	72.034	84.828	162.143	158.635	29,0%	12,9%	8,0%	5,9%	1,6%	11,5%	-3,1%
YAPI KREDİ	15.715	299	7.520	-465	19.897	76.147	101.976	103.202	189.298	183.648	20,6%	0,3%	7,3%	-0,2%	10,8%	7,8%	-6,9%
KOÇ ALLIANZ	15.295	28.319	37.132	49.242	17.076	50.377	73.463	97.220	141.399	153.621	30,4%	38,5%	38,2%	34,8%	11,1%	30,6%	16,0%
TÜRKİYE GENEL	34.087	31.678	27.184	54.519	61.223	118.248	157.087	167.599	441.995	449.067	28,8%	20,2%	16,2%	12,3%	13,6%	18,2%	3,6%
AXA OYAK	3.101	15.184	28.809	60.513	76.439	56.166	70.222	73.369	155.662	186.629	5,5%	21,6%	39,3%	38,9%	41,0%	29,2%	14,6%
ANADOLU	46.624	41.881	78.175	55.922	31.081	101.183	142.170	183.847	426.131	481.259	46,1%	29,5%	42,5%	13,1%	6,5%	27,5%	12,9%
AKSİGORTA	28.246	41.230	66.480	84.188	79.251	154.088	237.722	252.718	1.692.463	1.697.900	18,3%	17,3%	26,3%	5,0%	4,7%	14,3%	-0,3%
Total (2)	***190.709***	***163.960***	***277.146***	***344.801***	***195.593***	***823.001***	***1.143.569***	***1.301.073***	***3.707.115***	***3.942.614***	***23,2%***	***14,3%***	***21,3%***	***9,3%***	***5,0%***	***14,6%***	

Company	Total Premium Production (x1000)						Growth Rate					Inflation Corrected Growth Rate (%)					Average Growth Rate Firm (%) (1)	Growth Relative (%) (1-2)
	2001	2002	2003	2004	2005	2006	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006		
TİCARET	6.266	6.415	4.317	6.021	6.066	425	1,023753	0,672954	1,394816	1,007444	0,070089	-21,1%	-43,2%	27,6%	-8,9%	-93,6%	-27,8%	-45,9%
TOPRAK	13.359	7.662	6.086	5.461	4.879	4.649	0,573549	0,79431	0,897334	0,893403	0,95288	-55,8%	-32,9%	-17,9%	-19,2%	-13,1%	-27,8%	-45,8%
HÜR	10.974	12.748	16.494	26.628	34.281	48.153	1,161612	1,29385	1,6144	1,287424	1,40465	-10,4%	9,3%	47,7%	16,5%	28,1%	18,2%	0,2%
HDI	18.399	22.002	30.067	45.775	65.350	115.689	1,195814	1,366558	1,522425	1,427637	1,770299	-7,8%	15,4%	39,3%	29,2%	61,5%	27,5%	9,5%
GENERALİ	23.441	31.538	45.429	58.675	59.793	71.892	1,345444	1,440453	1,29157	1,019059	1,202347	3,7%	21,7%	18,2%	-7,8%	9,7%	9,1%	-9,0%
IŞIK	24.172	34.517	41.970	56.487	61.846	85.388	1,427993	1,215915	1,345878	1,094888	1,380639	10,1%	2,7%	23,1%	-0,9%	25,9%	12,2%	-5,9%
BİRLİK	12.983	22.170	29.225	49.254	66.588	112.503	1,707656	1,318223	1,685322	1,351944	1,689545	31,7%	11,3%	54,2%	22,3%	54,1%	34,7%	16,7%
TEB	16.810	27.793	36.799	43.250	73.321	115.715	1,653338	1,324038	1,175311	1,695275	1,578192	27,5%	11,8%	7,5%	53,4%	43,9%	28,8%	10,8%
AIG	15.122	32.133	36.241	60.952	94.837	122.195	2,124937	1,127844	1,681845	1,555936	1,288478	63,8%	-4,7%	53,9%	40,8%	17,5%	34,2%	16,2%
ŞEKER	33.617	59.092	55.979	87.949	86.466	132.402	1,757823	0,947319	1,571099	0,983143	1,531262	35,5%	-20,0%	43,7%	-11,1%	39,7%	17,6%	-0,5%
ANKARA	22.711	36.782	54.492	115.236	172.415	194.978	1,619544	1,481486	2,11474	1,496184	1,130868	24,9%	25,1%	93,5%	35,4%	3,1%	36,4%	18,4%
FİNANS	0	17.868	74.510	119.422	161.298	213.024	-	4,170025	1,602769	1,35065	1,32069	-	-	46,6%	22,2%	20,4%	29,8%	11,7%
AVIVA	68.322	75.464	85.276	117.648	142.864	183.995	1,104533	1,130022	1,379618	1,214333	1,2879	-14,8%	-4,6%	26,2%	9,9%	17,5%	6,8%	-11,2%
RAY	73.467	115.442	145.536	166.521	200.746	262.726	1,571351	1,260685	1,144191	1,20553	1,308748	21,2%	6,5%	4,7%	9,1%	19,4%	12,1%	-5,9%
GÜVEN	28.269	45.832	68.222	108.680	167.874	193.658	1,621273	1,488523	1,593037	1,544661	1,153589	25,0%	25,7%	45,7%	39,8%	5,2%	28,3%	10,2%
GARANTİ	59.432	87.101	117.896	167.279	299.721	363.579	1,465557	1,35356	1,41887	1,791739	1,213059	13,0%	14,3%	29,8%	62,1%	10,6%	26,0%	7,9%
BAŞAK GROUPAMA	109.102	166.280	226.552	379.164	374.677	453.146	1,524079	1,362473	1,673631	0,988165	1,20943	17,5%	15,1%	53,1%	-10,6%	10,3%	17,1%	-1,0%
ERGOİSVİÇRE	106.886	158.145	235.018	363.451	418.325	526.380	1,479573	1,486092	1,54648	1,150981	1,258305	14,1%	25,5%	41,5%	4,1%	14,8%	20,0%	2,0%
GÜNEŞ	131.027	204.097	283.811	366.114	445.438	512.419	1,557666	1,390569	1,289993	1,216665	1,15037	20,1%	17,4%	18,0%	10,1%	4,9%	14,1%	-3,9%
YAPI KREDİ	172.387	250.146	305.350	385.491	469.738	585.459	1,451072	1,220687	1,262457	1,218542	1,246353	11,9%	3,1%	15,5%	10,2%	13,7%	10,9%	-7,2%
KOÇ ALLIANZ	190.275	259.604	302.678	447.950	636.339	779.181	1,364357	1,165924	1,479956	1,420557	1,224475	5,2%	-1,5%	35,4%	28,5%	11,7%	15,9%	-2,2%
TÜRKİYE GENEL	57.384	81.519	111.874	166.162	206.768	267.419	1,420596	1,372367	1,485259	1,244378	1,293328	9,5%	15,9%	35,9%	12,6%	18,0%	18,4%	0,3%
AXA OYAK	212.033	283.246	430.778	641.136	759.854	944.759	1,335861	1,520862	1,488322	1,185168	1,243343	3,0%	28,5%	36,2%	7,2%	13,4%	17,6%	-0,4%
ANADOLU	181.477	296.759	431.842	665.385	825.932	1.060.160	1,635242	1,455194	1,540806	1,241285	1,283592	26,1%	22,9%	41,0%	12,3%	17,1%	23,9%	5,8%
AKSİGORTA	144.854	262.560	353.701	411.810	513.373	667.171	1,812579	1,347124	1,16429	1,246624	1,299585	39,8%	13,8%	6,5%	12,8%	18,5%	18,3%	0,2%
Growth Industry (%) (2)	***1.732.769***	***2.596.914***	***3.530.143***	***5.061.902***	***6.348.788***	***8.017.065***	***1,498708***	***1,359361***	***1,433908***	***1,25423***	***1,262771***	***15,6%***	***14,8%***	***31,2%***	***13,5%***	***15,2%***	***18,0%***	

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