

Housing Finance in High and Uncertain Inflationary Environments
(A Turkish Case)

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by

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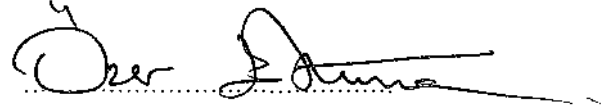
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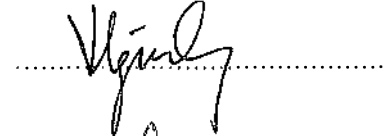
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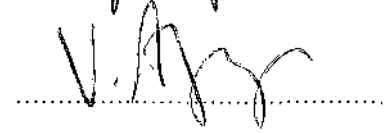
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ABSTRACT

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Today, one of the main problems of the countries facing high and volatile inflation is not to manage to establish the model for housing finance. The implementations of classical housing finance systems applied in the developed countries cannot succeed in high and volatile inflationary environments.

The studies that are carried out in the countries facing high and volatile inflation formed the common basis of the suitable housing finance model for house buyers, investors and governments. The suitability criteria for the participants of housing finance are specified by the help of literature survey conducted for this purpose. The contradictions between the suitability criteria of the participants cause difficulties for housing finance.

Being an alternative mortgage tool, Dual Index Mortgage Credits remove the contradictions between the participants suitability criteria. But the use of Dual Index Mortgage Credits is not sufficient enough to create new resources for housing finance. Securitization of the mortgage credits is the only possible way to create new resources for the housing finance sector.

A suitable housing finance model is proposed at the end of this thesis study. The model gives access to DIM credits for house buyers and afterwards creates new

resources for housing finance by the use of securitization. The model not only provides the house buyers affordable payment opportunities but also offers real interest rates to investors.

It is observed that the model works perfectly in high and volatile inflationary environments, but two important factor could effect this perfection. These are falling real wages and timing mistakes in index adjustments.

KISA ÖZET

Yüksek ve Değişken Enflasyonlu Ortamlarda Konut Finansmanı
(Türkiye için Uygun bir Konut Finansman Modeli Çalışması)

Merter Gürgün

Günümüzde yüksek ve değişken enflasyon gözlenen ülkelerdeki en büyük sorunlardan biri de uygun bir konut finansman modelinin oluşturulamamasıdır. Gelişmiş ülkelerde oluşmuş klasik konut finansman sistemlerinin uygulamaları, yüksek ve değişken enflasyonlu ortamlarda yeterli bir başarı gösterememektedirler. Yüksek ve değişken enflasyon gözlenen ülkeler üzerinde yapılan çalışmaların yardımı ile bu tür ortamlarda konut sahibi olmak isteyenlerin, yatırımcıların ve hükümetlerin uygun bir konut finansmanı modelinde birleştirilmesi, bu çalışmanın esasını oluşturmaktadır. Bu amaç doğrultusunda yapılan literatür araştırmalarının yardımı ile konut finansmanı katılımcıları için uygunluk şartları belirlenmiştir. Belirlenen uygunluk şartlarının katılımcılar arasında çelişkilere yol açması yüksek ve değişken enflasyonlu ortamlarda konut finansmanını zor kılmaktadır.

Alternatif bir ipotekli kredi şekli olan Çift Endeksli İpotek Kredisi katılımcılar arasında oluşan çelişkileri ortadan kaldırmaktadır. Ancak Çift Endeksli İpotek Kredilerinin kullanılması konut finansmanına yeni kaynaklar aktarılması için yeterli olmamaktadır. Konut Finansmanı için yeni kaynaklar oluşturulması ipotekli kredilerin menkul kıymetleştirilmesi ile mümkün olmaktadır.

Bu çalışmanın sonunda Türkiye için uygun bir konut finansman modeli önerilmiştir. Bu model Çift Endeksli İpotek Kredilerinin ev alıcılarına kullanılması

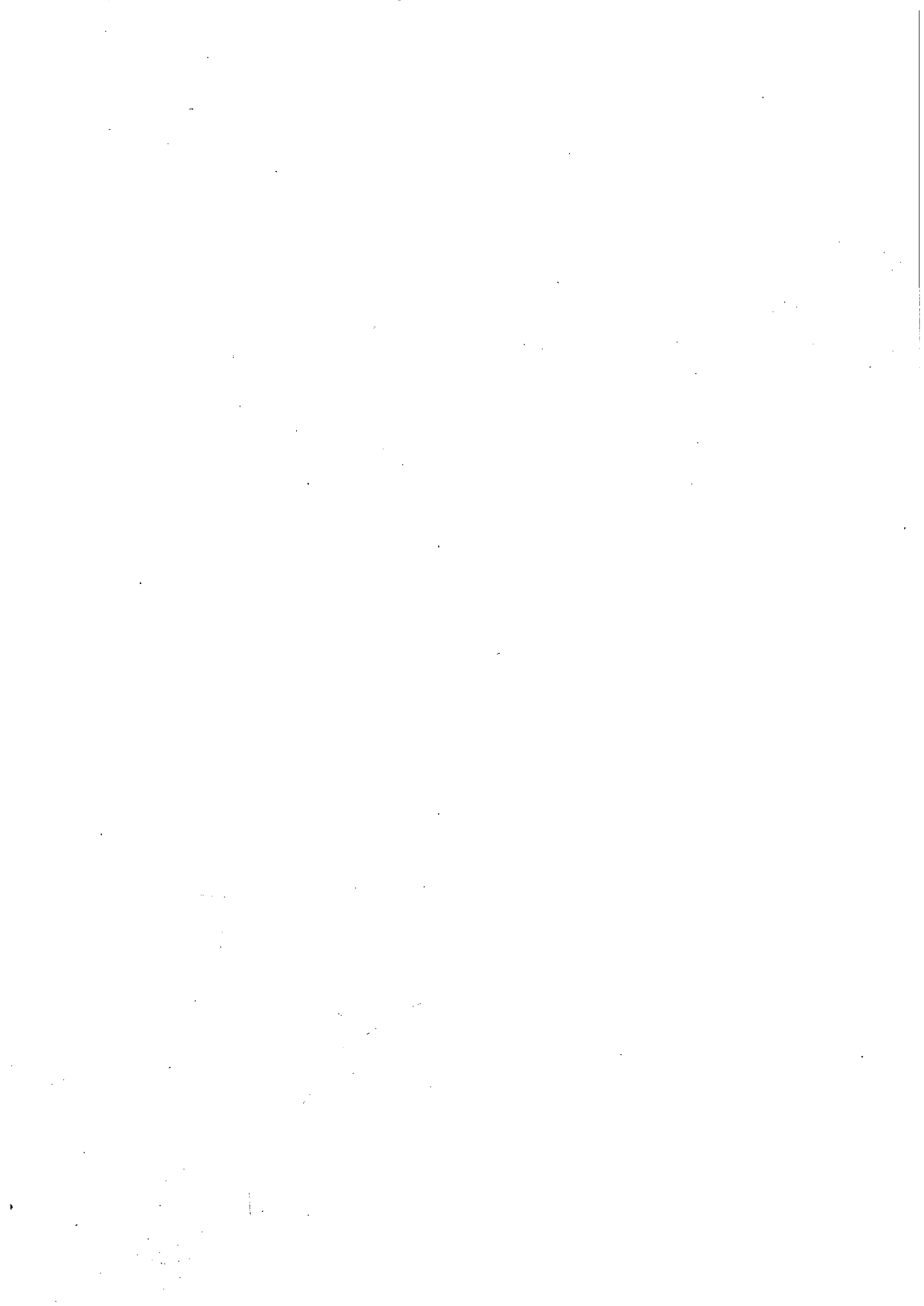
ve sonra bu kredilerin Menkul Kıymetleştirilerek yatırımcılara satılması ile konut almak isteyenler için yeni kaynak oluşturulmasından ibarettir. Model, ev alıcılara ödeme kolaylığı sağlarken yatırımcılara da reel faiz getirisi sunmaktadır.

Yapılan araştırma sonucunda yüksek ve deęişken enflasyonlu ortamlarda modelin aksamadan çalıştığı görülmüştür, fakat iki önemli faktör modeli olumsuz etkileyebilmektedir. Bunlar reel maaş seviyelerinin korunamaması ve farklı zamanlarda yapılan maaş ve borç bakiyesinin yeniden deęerlendirilmesidir. Hükümetler reel maaş seviyelerini korudukları sürece modelin aksaması söz konusu değildir. Model maaş ve borç bakiyelerinin deęerlemelerinin altı ayda bir ve aynı tarihlerde yapılmasını şart koşmaktadır.

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LIST OF SYMBOLS

P	:	Principal loan amount
A	:	Yearly repayments
i	:	Nominal interest rate
j	:	Graduation rate
m	:	Number of graduation periods
n	:	Number of periods to maturity
r	:	Prefixed repayment income ratio
V_0	:	Value of housing unit purchased
LTV	:	Loan to value ratio
P_0	:	Principal loan amount
P_t	:	Remaining mortgage balance at year t
A_0	:	Initial year repayment
A_t	:	Repayment at year t
i_t	:	The interest rate at year t
f_t	:	Annual inflation rate at year t
i^*	:	Annual real interest rate
A_t^*	:	Real repayment at year t
RB_t^*	:	Remaining balance of loan at year t (by constant prices of the beginning year of the contract)
I_t^*	:	Real interest payment at year t

NI_t^*	:	Yearly net real income at year t
E_t^*	:	Real value of equity purchased at year t
r_E	:	CSH effective loan rate
r_C	:	CSH contract loan rate
r_I	:	Intermediate loan rate where applicable
r_S	:	Market rate (expected after tax yield)
L	:	Contract loan amount
I	:	Interim loan amount
S	:	Contract savings amount

LIST OF ABBREVIATIONS

ARM	Adjustable Rate Mortgage
BHN	National Housing Bank of Brazil
CAV	Corporaciones de Ahorro y Vivienda
COLA	Cost of Living Allowance
CPI	Consumer Price Index
CSH	Contractual Savings for Housing
DIM	Dual Index Mortgage
EB	Property Bank
EKB	Real Estate and Credit Bank
FCVS	Fund for Compensation of Salary Variation
FGPM	Fully Graduated Payment Mortgage
FRM	Fixed Rate Mortgage
GEM	Growing Equity Mortgage
GNP	Gross National Product
GPM	Graduated Payment Mortgage
IRR	Internal Rate of Return
İİB	Ministry of Reconstruction and Resettlement of Turkish Republic
LTV	Loan to Value
MBB	Mortgage Backed Bond
MTR	Mid-term Review of The Global Strategy for Shelter to The Year 2000
OYAK	Mutual Help Organization of Army Officers

PLAM	Price Level Adjusted Mortgage
SFH	Housing Financial System of Brazil
SFRM	Standard Fixed Rate Mortgage
SSK	Workers Social Security Fund
TKF	Mass Housing Fund
TKI	Mass Housing Administration
UPAC	Units of Constant Purchasing Power
USA	United States of America

1. INTRODUCTION

1.1. OBJECTIVES

In the broadest term, this study will try to define a suitable housing finance model in high and volatile inflationary environments. Different housing finance models were brought into application in Argentina, Brazil, Colombia, Israel, Mexico and Turkey. The experiences of these countries show that designing a housing finance model that can deal with inflation and the side shocks is much like fighting with a many-headed monster. The above exaggeration was because of the interrelations between the different aspects of housing finance, particularly the countervailing forces of sustainability of funds for the lending institution and affordability of funds for the borrower. The aim of the study is to define and examine these balancing forces in order to design a suitable housing finance model.

Here, the concept of suitable model should be well understood. The word "suitable" is for the sake of the participants involved in the transaction of funds. One of the objectives is finding out the suitability of the criteria for the participants taking a role in housing finance models. The model consists of three aspects:

1. Financial tools and contracts
2. Acts and Regulations
3. Government policies

Determining the effects of these three aspects on the sustainability of the model will also be one of the objectives of this thesis.

1.2. SCOPE OF THESIS

The housing problems of the developing countries experiencing high and volatile inflation can not be solved simply by the establishment of the classical housing finance systems. Those systems should first generate funds from the out of government resources and also should deal with the effect of the inflation over the long term repayment, by establishing the trade off between the borrower's affordability and lender's profitability[1].

The study relies on recent applications of countries facing high and volatile inflation. The second chapter of the study is in the form of literature survey which is evaluating the classical housing finance systems and their institutions all around the world. At the end of that chapter, the housing finance models of countries experiencing high and volatile inflation are explained.

Criteria of suitability for participants are defined in the third chapter. The criteria are brought up from the country case studies, World Bank and Habitat Conference reports. The objectives are to define these criteria which are also demonstrating interrelations between the different aspects of housing finance and the probable existing problems in inflationary environments.

After defining the suitability of criteria and the problems, the fourth chapter deals with the potential for using alternative instrument designs. It outlines the problems which inflation causes in a traditional system of housing finance (based on fixed-term fixed rate loans) and the drawbacks associated with using subsidized credit as a mean of resolving these problems. The standard forms of the various alternative instruments are described, also their advantages and disadvantages associated with

high and volatile inflation are discussed in this chapter. The characteristics of the various mortgage instruments are illustrated by simulating their application in the Turkish economy between years 1970-1990. The fourth chapter also discusses the advantages and disadvantages of administrating Dual Index Mortgages (DIMs).

The Turkish Housing Finance System is examined from the point of view of the participants in chapter five. The model applied by institutions are discussed in order to support the hypothesis that, Turkey as a country facing high and volatile inflation, has not developed a suitable housing finance model.

The final chapter summarizes the study and suggests a housing finance model for Turkey as a country facing high and volatile inflation. The proposed model, its objectives and assumptions that are taken into account will be explained in details at the final chapter.

2. LITERATURE SURVEY

2.1. CLASSICAL HOUSING FINANCE SYSTEMS

It has been established that to work effectively, any housing finance system has to raise money from those who do not intend to borrow and be able to lend it over long periods of time. There are just four routes by which this can be achieved, two of which can be only partially successful and which do not make full use of the intermediation process [2].

a) The direct route, by which those who need funds to acquire a home obtain those funds directly from individuals with surplus financial assets, either because of a personal relationship or because of a business relationship, for example, a vendor may supply to a purchaser.

b) Contractual route by which part, but not all, of the funds which a home buyer requires are raised from the savings of other potential home buyers, or from other contractual savings schemes.

c) The deposit financing route, by which short term savings of individuals are channeled into long term loans by intermediaries, generally retail banks, either generally or which specialize in the provision of housing finance.

d) The mortgage bank route, by which institutions making mortgage loans fund these by bond issues, which are purchased by institutional investors and, to a much lesser extent, by individuals.

These four types of system will now be considered in detail, but it is important to note at this stage that these are the main four types of system, although there is scope for substantial variation on them.

2.1.1. The Direct Route

In an economy where there is no well developed housing finance system, the funds which house-buyers require may be obtained directly from other individuals with funds which are surplus to the requirements. In many cases funds will be obtained from a relative. Typically, older people will lend money to their children to enable them to purchase homes. Even in advanced countries it is not unknown for parents to help their children purchase their homes, perhaps by the provision of a substantial down payment. This route, of course, is an extremely ineffective form of financial intermediation, because it is unlikely that the requirements of the borrower will match exactly those of the lender. Nevertheless, in the absence of any alternative, the direct route is one which is used in less advanced economies and also in the more advanced economies by those who are not able to use established financial mechanisms.

Somewhat paradoxically, even in advanced countries the direct route has been used increasingly in recent years by vendors providing funds to purchasers. The vendors do not, of course, lend money to purchasers, but, rather, sell a house but do not insist on taking the full purchase price immediately. Part, or even all, of the purchase price may be deferred for some years. The effect is that the vendor is making

a loan to purchaser, even if this is not what actually happens. The financing technique is known as “creative financing” and was used extensively in the USA in the late 1970s and early 1980s when the traditional housing finance system was breaking down for a variety of reasons. It has also been used in Sweden and, to a lesser extent, in other countries. This mechanism is used similar circumstances to relatives providing funds to home buyers, that is, the institutional framework is not adequate to meet demand. However, it occurs not because the institutional framework has not been developed but, rather, because it is prevented from operating, generally by government regulations.

It has not possible to say much more about the direct method of financing because, almost by definition, no statistics are available and no institutions are involved. All that can be said at this stage is that direct financing is used extensively in the less developed economies but is used in more advanced economies only when normal institutions are prevented from operating effectively.

2.1.2. The Contractual System

The point has already been made that savings of potential home-buyers are not adequate to provide all the finance which home-buyers need. However, this does not mean that funds gathered from potential home-buyers can not provide part of the finance which is required. Formal contractual systems exist in number of countries, most notably, West Germany through special institutions, the Bausparkassen, and in France through the housing savings system, which can be operated by a large number

of financial institutions. The essence of any contractual system is that regular savings are made over a period of years receive an interest at below market level, following which the investor becomes entitled to a loan, again at an interest rate below market level. Generally government bonuses are available to those who take part in contractual savings schemes. Arguably, it is the bonuses which make the schemes attractive.

These schemes are best suited to those countries where people do not purchase their first houses until a relatively late age. The system would be no use in country like the United Kingdom, for example, where households seek to purchase their first homes at a young age, before they have had opportunity to accumulate significant savings. The system works very well in countries like Germany and France, where there is substantial rented sector which most young people are content to use until such time as they settle their roots firmly, and that can often be in their mid 30s.

However it is used, the contractual system can still not provide more than a proportion of the funds which a home buyer requires, perhaps %40 of the purchase price at a maximum. The system therefore has to be used in tandem with one of the other systems. In practice, loans provided on the contractual basis are frequently used to repay loans obtained on the open market in anticipation of a contractual cheap loan being made available. To the extent that this occurs, then the contractual system is being used partly as a method of tax-efficient saving rather than funding house-purchase. Because the contractual system needs to be operated in tandem with other systems, the institutions that operate it generally are either controlled by other financial institutions (as in the case of Germany) or they are themselves general institutions, as in the case in France.

In developing countries a variant of the contractual system is the use of social security funds to provide housing loans. These funds are likely to be large in relation to other institutional sources of funds and may be the only substantial source of funds. Typically, people are allowed effectively to borrow their contributions to the funds or the funds may lend directly to those who have contributed. Brazil makes the most extensive use of this system; among other countries using social security funds for housing loans are Mexico and The Philippines.

2.1.3. The Deposit Taking System

Perhaps the most common system of housing finance is for deposit taking institutions to use a proportion of these deposits to make house-purchase loans. There are variety of types of deposit taking institution and they can, broadly speaking, be subdivided into commercial banks, which offer the complete range of banking facilities, savings banks which deal largely, although not exclusively, with the personal sector, and specialist housing finance organizations known as building societies or saving and loan associations typically, which deal almost entirely with personal sector and generally differ from savings banks by providing a saving service rather than a money transmission service.

All of these institutions operate by raising deposits and then lending these deposits in a variety of ways. The important point is that the deposit taking comes first and then the institution has to decide what to do with the funds. This means that

house purchase loans may be competing with loans for other purposes and if the interest rate is not at an appropriate market level, then shortages may well occur.

The deposit financing system generally means the employment of a variable rate on the house-purchase loan. This is because deposit taking institutions usually do not have long term fixed rate funds with which they can make matching long term fixed rate loans.

2.1.4. The Mortgage Bank System

The final type of housing finance system can be described as the mortgage bank or mortgage bond system. Through this system an institution will make loans to house-buyers, generally at fixed rates of interest, and it will seek to fund those loans by selling bonds on the capital markets at the ongoing market rate. Almost by definition, such a system must meet the demand fully, unless there are artificial restrictions on interest rate, or indeed on the supply of bonds to the market. This system can, of course, work effectively only where there is an active bond market in which private sector institutions can participate. In some countries, for example the United Kingdom, the bond market has been dominated by the government, because of special tax rules applying to government securities. It is not therefore open for institutions to fund house-purchase loans through bond issue, because they simply can not compete with existing instruments.

The mortgage bank system does not entail the raising of any retail deposits, and it follows that institutions which use this system do not have the branch networks that the banks have.

Typically, bond issued by mortgage banks are purchased by financial intermediaries, such as insurance companies and pension funds, and also banks. Indeed, in some countries, for example in Sweden, financial institutions are required to purchase a certain quantity of mortgage bonds. It is also possible that bonds will be purchased directly by individual investors.

There is a refinement of this system, one which is rapidly developing in the United States. A new institution appears on the scene. That institution in the United States is called a mortgage bank, which is a singularly inappropriate name, as the institution is not a bank in any sense of the word. An American mortgage bank makes and services loans, but immediately sells them to an institutional investor, having previously insured them or obtained a government guarantee. This refinement can be regarded merely as one variation of the mortgage bank route, except that the bank itself becomes a mere servicing organization, selling loans to investors rather than raising funds from investors. Alternatively it can be regarded as a very sophisticated direct route between investors and house-buyers, the improvement on the simple direct route being that the investor has a marketable security which he is able to sell at any time.

2.2. INSTITUTIONS OF CLASSICAL HOUSING FINANCE SYSTEMS

There are five basic types of housing finance institution, two of which are general financial institutions which make house-purchase loans, the other three of which are specialist. In a number of countries, one or perhaps two types of institution predominate, the United Kingdom being a good example. In other countries, such as the USA and West Germany, most of the types of institution exist. It should also be noted that in many countries there are substantial government agencies finance market, New Zealand and Norway being good examples. However, a government owned institution is merely a type of institution and does not make the institution itself any different. Typically, the government institutions are mortgage banks. It is now necessary to discuss fairly briefly the five types of housing finance institution [2].

2.2.1. General Banks

General Banks can be described by a number of other terms, including joint stock banks, commercial banks and deposit taking banks. These institutions are full service banks, providing the complete range of retail, wholesale and, generally international banking business. Deposit taking is a major part of the business of some of these banks, but a more minor part of the business of others. Most general banks have a presence in the mortgage market. A typical position is one where perhaps 20%

of outstanding mortgage debt is held by general banks, either directly through house-purchase loans or indirectly through ownership of bonds issued by housing finance organizations. Also, a general bank will typically have about 20% of its domestic assets in house-purchase loans.

Most of the big banks in the world have a significant mortgage portfolio. In some countries, France, Italy, Japan and Switzerland for example, the banks are the dominant lenders. There are various ways of measuring the size of banks, and under one definition the French *Crédit Agricole* is one of the largest banks in the world. Alternatively, it can be regarded as merely a loose grouping of 3,000 small banks. The *Crédit Agricole* is the largest single house-purchase lender in France.

Not only are the general banks significant lenders in their own right, but in many countries they own specialist institutions, which will be described subsequently. For example, Australian commercial banks own savings banks (in New Zealand as well as in Australia), Dutch general banks own mortgage banks, and in West Germany the large deposit taking banks have an interest in the specialist *Bausparkassen* and the mortgage banks. The complicated inter-relationships make it difficult at times to analyze the precise nature of the role of banks in the housing finance market.

2.2.2. Savings Banks

A savings bank can be defined as an institution which raises its funds almost entirely from the personal sector and which uses these funds to lend to the personal sector and also to small business. In developing countries the funds are frequently

passed on to the government. In some countries, particularly France and West Germany, savings banks are huge organizations and provide a full banking service to individuals and to small businesses. In other countries, for example the United Kingdom, savings banks are relatively small compared with other institutions and have no significant role in the housing finance or indeed in other markets.

The savings banks have a particularly large share of the housing finance markets in Spain, Italy, New Zealand and Japan. Typically, house-purchase loans will account for between 20% and 50% of the assets of savings banks, although there are substantial variations. In some countries the savings banks, for various reasons, cannot make direct loans to home-buyers, but indirectly they can finance house-purchase loans through buying bonds issued by mortgage banks, in some cases by mortgage banks which are owned by the savings banks. This happens in Sweden, for example, and in Denmark the savings banks are major purchasers of bonds issued by specialist mortgage banks.

In some countries, regional groupings of savings banks own specialist housing finance organizations. Germany is a good example, where the savings banks are grouped together in Landesbanks which, in turn, control Bausparkassen and mortgage banks.

2.2.3. Special Savings Banks

Some savings banks devote almost all of their lending to house-purchase. Such institutions are generally not called savings banks as such, but rather are called

building societies in the United Kingdom, Australia, South Africa and New Zealand, mortgage loan companies in Canada, and savings and loan associations in United States and South America. The dividing line between what might be called a general savings banks and a specialist building society (the term being used here to embrace savings and loan associations) is a very blurred one. The main distinction between the two types of institution is that the specialist building society will probably have about 80% of assets in mortgage loans compared with a much smaller proportion for the more general savings banks.

There has, however, been a significant increase in some countries in competition between savings banks and building societies over the last few years. This has reached such a stage in the United States that savings banks and savings and loan associations are virtually indistinguishable and indeed it is comparatively easy for an institution to switch from one type of organization to the other.

2.2.4. Contractual Institutions

The one advanced industrialized country where there are substantial contractual institutions is West Germany. The Bausparkassen play a major role in the financing of house-purchase, although they provide only a proportion of the funds to each home-buyer. Although the Bausparkassen are specialist institutions, it should be noted that they are not independent, and indeed the nature of the contractual savings system is such that independent institutions are unlikely to be very effective. The Bausparkassen are largely owned by the regional organizations of savings banks and

also the large deposit taking banks (21 private ones, of which all but three are owned by commercial banks, and 13 public ones owned by the regional central banks or Landesbanken). However, there are one or two independent institutions.

Conceptually, a CSH provider is no different than other types of financial institutions. It mobilizes funds and makes loans. Its sources and uses of funds depend on whether it is a specialized institution or a generalized credit provider. The Bausparkassen are specialized institutions. They obtain funds from savings contracts, cash flow from assets (i.e., interest and loan amortization) and other borrowed funds (mainly bank deposits). They invest in CSH loans, interim loans, government securities and bank deposits. The aggregate balance sheet for the Bausparkassen in 1992 shows that 81 percent of the assets are CSH related loans and 73 percent of the liabilities are CSH contracts. The aggregate capital ratio was 5.3 percent [3].

In France there are specialist deferred credit institutions, but in practice these hardly exist, except on paper, instead being part of more general financial institutions or specialist mortgage banks. The point has already been made that the French contractual system for housing finance is operated by general financial institutions rather than specific ones. In France Epargne-Logement contracts can be offered by any deposit institution as part of a diversified portfolio of activities. 80.4 percent of the savings are with the dominant commercial banks, 14.3 percent with the private savings banks (Réseau Ecureuil), 5.3 percent with the branches of the public savings bank (Caisse Nationale D'Epargne).

In France, there is no published, consolidated balance sheet covering all Epargne-Logement providers. CSH loans are one of many assets of French banks and CSH deposits are one of a number of liabilities. Like in Germany, the system is entirely administrated with continuity by financial regulators who in addition to

providing the basic framework of the system and decide on the value of each of its parameters. It is therefore upon the authorities rather than the individual banks themselves that rest the financial equilibrium of the system. Excess liquidities deriving from CSH deposits can be used to fund a number of different types of housing investments, most predominantly regulated mortgage loans and the mortgage bond market. Conversely, if at any time there were insufficient CSH funds to meet CSH funding requirements such loans would have to be funded by the deposit institutions from other sources.

2.2.5. Mortgage Banks

Mortgage banks are financial intermediaries in the origination and closing of mortgage loans. Their role includes making a credit review of the prospective borrower and appraising the property before the loan closing. Most mortgage originators employ an approved outside appraiser to evaluate the property proposed as the security for the mortgage. The mortgage banking process also encompasses warehousing the loans. Warehousing refers to the interim holding period from the time of the closing of the loan to its subsequent marketing to secondary market investors. The period from the taking of applications from prospective mortgage borrowers to the point of marketing the loans is collectively referred to as mortgage pipeline. Finally, the mortgage banking business is the ongoing management or servicing of loans through the loan's repayment term. Mortgage bankers generate

revenue in each of the four stages of the mortgage banking process: origination, warehousing, marketing, and servicing [4].

In some countries, mortgage banks are completely independent institutions, Denmark being a good example, while in other countries they are owned by one of the other types of institution listed above. A mortgage bank will not have a substantial branch network, because it is not a deposit taking institution. However, one cannot be a successful housing finance institution unless there is a way of attracting customers, and, for this reason, mortgage banks have to work through other institutions as their agents. These institutions will invariably be another financial institution, hence the ownership patterns which have been described previously.

The classical housing finance systems give us a clue about how funds that are needed for purchasing a house channels from investors to borrowers. In economically developed countries these four routes channel the funds from investors to borrowers perfectly, but in high and inflationary environments some of these routes do not work well and cause problems in mobilizing the funds.

2.3. HOUSING FINANCE MODELS IN HIGH AND VOLATILE INFLATIONARY ENVIRONMENT

Until now we have examined the classical housing finance systems. The studies showed that housing finance systems work well in economically developed countries, but it is clear that in high and volatile inflationary environments system analysts face with problems. The nature of these problems should be well understood. In order to solve these problems Mexico, Brazil, Colombia and Israel are selected as

case studies reflecting good examples of the problems of housing finance systems in high and volatile inflationary environments.

2.3.1. Mexico

- ◉ In 1982 , economic crises, characterized by low growth, high levels of inflation, failing wages [5].
- ◉ 3% of banks' deposits be directed to fixed rate mortgages with mandating policy of government.
- ◉ Inflation rose to over 100 per cent while mortgage loan rates remained fixed at 14 per cent and lower.
- ◉ Large negative costs to the banks carrying these loans with negative real interest rates caused the banks to incur major losses.
- ◉ Interest rates on mortgages raised to levels sufficient to cover the costs of inflation, making housing unaffordable to all households, even to borrowers with high income levels.
- ◉ In 1984, Mexican Central Bank developed an alternative mortgage instrument based on the standard DIM. The system is named as "FOVI" in order not to use the word "index"[5].
- ◉ In 1990, following the end of mandatory portfolio requirements in 1988, commercial banks lent over 8 percent of their deposit base for housing, this is higher than the 6 percent which had been previously required by the government.

Mexico, as a country facing high and volatile inflation has developed one of the successful housing finance system after the crash in 1983. Until 1982 housing finance system of Mexico experienced problems related with inflation and SFRM. The major cause of the banks losses were the mandating policy of the government of Mexico. Here we could observe the ineffective intervention of government to the housing finance system.

In response to the impacts of inflation on banks mandatory interest rates, the Central Bank of Mexico devised a form of mortgage instrument(DIM), safeguarding the interest of both borrowers and lenders, increasing the mobilization of the funds to the housing finance system.

The key to the success of the use of DIM in Mexico was the balancing link between economic policy and housing finance policy of the government. The Mexican case has attractive features which shows how the government acknowledged the link between economic policy and housing finance policy.

2.3.2. Brazil

- In 1964 indexation was introduced into bond issues, savings accounts (in the housing finance system), mortgages, rents , inventory valuation and tax liabilities [6].
- The Housing Financial System (SFH) was to be administered by the National Housing Bank (BHN) specially created with the mandate to encourage housing construction and ownership, especially to lower income families.

- ⊙ Rising complaints that wages were not rising as fast as prices, the mortgage installments of all but high income borrowers were changed to an adjustment based on increase in minimum wage or an occupational category collective-bargaining agreement.
- ⊙ The debtor balance continued to be adjusted quarterly. The switch to wage indexation meant that not only were different indices used for assets and liabilities, but also because salaries are adjusted annually the adjustment periods were different.
- ⊙ The asymmetry between savers and borrowers was addressed with variations in the length of the mortgage contract and the creation of the fund “FCVS” which guaranteed the entire amortization after a maximum extension of 50 percent of the contracted term[6].
- ⊙ Inflation outstripped salary increases
- ⊙ In 1986, system’s financial crash

Brazil has had the most comprehensive use of indexation of the countries facing high and volatile inflation. Crashing of the Brazilian housing finance system is related with the problems of indexation. The housing finance system of Brazil is a good example for pointing out two types of problems related to the indexation structure. These are adjusting indices with a time lag and different index uses for loans and savings.

2.3.3. Colombia

- In 1971 the government adopted the “Plan of the Four Strategies” which was premised on the idea that the economy should be boosted through special treatment for sectors: exports and construction [7].
- Construction was encouraged by the development of a completely new indeed loans and savings system. Also wages were indexed to the cost of living.
- The first Corporaciones de Ahorro y Vivienda (CAVs) began operation in 1972 by issuing savings certificates and deposit accounts. These new certificates and accounts were both denominated in a new unit of account known as “unidades de poder adquisitivo constante”(UPAC).
- CAV deposits became close substitutes for currency, a vehicle for avoiding the inflation tax[7].
- In an effort to combat inflation and in response to criticism of indexation, the Government in 1974 and 1977 imposed a number of restrictions on the UPAC system. These include a ceiling on monetary correction and changes in tax treatment of UPAC deposits.
- Government intervention has had a strong effect on the UPAC system's effectiveness.

Economic policy of the government of Colombia worked well as indexing loans, savings and wages to prices. Colombia is one of the few countries being successful in indexation. The way to success was the capability of the government dealing with prices. Also the government had relied on the foreign exchange income

gained from coffee exports. The reflection of this success of the government was also viewed in the housing finance system of Colombia. The effective intervention of the government when supported with a good economic policy, has secured the sustainability of the system in Colombia.

2.3.4. Israel

- A combination of rising inflation and legal ceilings on interest rates in the early 1950's led to a shortage of capital. Mortgage banks begin the use of loans and matching liabilities linked to US dollar [8].
- 66 percent devaluation in 1962 forced the conversion of most dollar linked mortgages to Price Level Adjusted Mortgages (PLAMs) indexed to consumer price index (CPI).
- Losses to the lending institutions resulting from this conversion were covered out of the government budget.
- The use of PLAM's soon became problematic as price rises between 1963 to 1965 outstripping wage increases.
- In 1965, a government commission recommended that the reference index be switched from the CPI to the cost of living allowance (COLA).
- COLA index was linked to the CPI, but was adjusted only once or twice annually and only if the CPI had increased by more than five percent since the COLA adjustment. This change was meant to improve the synchronization between the

adjustment of wages and mortgage payments while still maintaining the link to price level. This change was adopted in 1966 for all new mortgages.

- ⊗ In 1967 annual rise in the CPI brought below 4 percent. In the face of popular resistance to indexation (which was seen by households as unfairly requiring them to bear most of the inflation risk) and lower inflation, the government quickly responded to the demand to replace PLAMs with mortgages unlinked to CPI[8].
- ⊗ However by the end of the 1970's the inflation rate exceeded 60 percent annually and indexation of mortgages (in the form of PLAM) was reimposed in 1979.
- ⊗ After 1985 mortgage banks returned to the bond market to raise funds for mortgage lending. Mortgage Banks are also lengthening the terms of their loans and some trading in a secondary mortgage market.

Israel is a good example showing that foreign currency indexation of loan balances will create disasters. The devaluation of the Israel currency in 1962 forced the conversion of most dollar linked mortgages to PLAMs indexed to the CPI, which brought out huge losses to lending institutions. The losses resulting from this conversion were covered out of the government budget. After 1965, Government of Israel shows a good example of managing housing loans by changing mortgage contracts according to the economical conditions as well as dealing with inflation.

Country case studies show that high and volatile inflation causes three big problems for the participants taking role in housing finance transactions. These are unaffordable housing for borrowers, negative real rate of return to lenders, enormous amounts of subsidy that governments should pay. These problems are the three leading ones which make housing finance hard to deal with and also interrupting the mobilization of funds. The country case studies point out two main implementations

dealing with the problems of housing finance systems in high and volatile inflationary environments. The first implementation is using alternative mortgage instruments which are different than standard fixed rate mortgages. The second one is the correct set of supporting actions and policies of governments and financial institutions. The effectiveness of the implementations will be discussed in chapter three while defining a suitable housing finance model for the participants.

3. PROBLEMS OF DEFINING A SUITABLE MODEL FOR THE PARTICIPANTS

Findings of the country case studies indicated the interrelations between different aspects of housing finance and the existing problems of high and volatile inflationary environments. In this chapter the interrelations and existing problems will be discussed in detail in order to define a suitable housing finance model for the participants. Participants are the parties taking role in housing finance as borrowers, lenders and governments. The suitability criteria of the participants are brought up from the country case studies, World Bank and Habitat Conference reports.

3.1. BORROWERS

Borrower is the person who is trying to buy a house or a flat. Borrowers will be grouped according to their income levels. The target groups of the research are people having low and medium incomes. Borrowers suitability criteria are availability of long term finance, affordability and adequate level of savings.

- Availability of Long Term Finance

The nature of housing finance is long-term credits, as the values of housing units are much greater than the households' income. Long-term credits may be rare in economies experiencing instabilities followed by volatile inflation rates, but this must not be excuse for not developing a channel of funds from the ones that have surpluses

and to the individuals that desire to satisfy their basic need, shelter[1].

Further from its necessity, any housing finance system has to be able to provide loans over a long period. It is a sign of a sophisticated system that long term credits are available. Long term loans are essential, simply because the size of a loan needed to purchase a house is very high in relation to the income of the borrower and a short repayment term imposes an intolerable burden in terms of repayments[9].

While short term finance for housing is usually available for high-income and middle-income households, there is a general need to widen and deepen the flow of long term finance at affordable levels to low-income households. There are inherent difficulties in improving housing finance systems for low and middle income groups especially in inflationary environments however, resulting from the problems of reconciling the need for guarantees of a reasonable real rate of return to lenders with the need for affordability for intending borrowers[10].

On the funding side, market based long term finance is almost missing and vehicles for voluntary mobilization do not exist. High and volatile inflation discourages long term savings, therefore, financial institutions do not have enough long term funding sources to finance a long term durable good such as housing.

In high and volatile inflationary environments banks concentrate on short term trade credits and foreign currency services which are profitable and have a short time horizon. If possible the banks prefer to invest excess liquidity in government securities which offer superior risk adjusted returns relative to housing loans.

In some countries, lenders cannot obtain possession of a unit from a defaulted borrower without provision of substitute housing and then only after a long and uncertain foreclosure process. Due to the inherited legal and institutional environment, owner occupied housing is not viewed as a very good collateral for

lending. Foreclosure when feasible is usually long and costly[3].

Also surveys show that, in most developing countries, only 10 to 20 per cent of annual investment is provided by mortgage finance, and housing finance institutions which are often constrained by political decisions limiting their ability to engage in mortgage lending. In addition, many low income householders do not qualify for loans because they are self-employed, cannot offer collateral, are women heads of households or for other reasons. Such householders turn to informal sources of credit, family assets, use available savings or more likely use a combination of all these sources[10].

- **Affordability**

According to the dictionary, a person can afford something if he or she can “bear [its] cost without serious harm or loss”. Therefore, a household can afford to buy a home if it can both make the downpayment and carry the monthly costs without serious harm or loss.

The definition of affordability stated above implies that a household can afford a home only if it can immediately purchase that home under the conditions set forth. That is, the household already has the downpayment in hand and is already receiving an income large enough to cover the monthly payments. No allowance is made for any initial period of saving during which the household accumulates the required downpayment.

Yet most homeowners first had to save for their downpayments, often for quite a few years. Therefore, if a short period of saving is the only obstacle to a household's buying a particular home, the household should be considered able to afford that home.

Three variables have critical effects on housing affordability once an appropriate housing share of income has been defined: home prices, household incomes and mortgage interest rates. Other factors also vary, but their influence is far less important[11].

The most important problem in countries facing with high levels of inflation is how to continue to provide affordable housing to their populations. The problem of affordability has two aspects. The first, "income affordability" relates to the absolute level of resources households can supply to purchase housing. This is not a difficulty of housing finance as much as a problem of income levels and housing costs[12].

The encouragement of home ownership through a more efficient housing finance system is not the most practical direct method of providing shelter for the very poor. Perhaps the central lesson of the shelter projects in developing countries is that, in a physical design sense, housing can be made affordable to most households.

Housing demand is a function of the level of household income, the availability of credit, the use of subsidies, security of tenure and other factors. Judging by Midterm Review (MTR) survey results, income probably has the single most influential impact on shelter adequacy. In turn, income levels are a function of a whole range of concerns including macro-economic growth, productivity and urban poverty. A critical indicator of successful strategies is the proportion of households able to afford a minimally acceptable living unit. The World Bank (1993) has found that, globally, there is consistency in the share of income going to shelter financing and changes in this share with increase in average household income[10].

Solutions for very poor households experiencing income affordability problems are likely to be found through improvements in households' earning capacity, more efficient housing delivery systems, and more affordable standards.

The second aspect of affordability is the financial affordability concerning the effect of inflation on the costs of borrowing. When contracts are written in nominal terms, inflation makes housing unaffordable to most families at market rates of interest. The focus here is on mortgage contracting procedures that can address this latter housing affordability problem. From this perspective, the objective for redesigning mortgage contracts is to eliminate financial constraints that impede the affordability of housing for greater numbers of lower and moderate income households. The objectives are not to produce more housing, although that outcome will often result. Rather, it is to provide a financing vehicle so that those who can afford to, and so desire, can purchase homes.

As a result the problem of maintaining affordability of the borrower could be solved by designing different types of contracts involving a new mortgage tool. This problem will be discussed in a more detailed way in the next chapter under the heading of “housing finance tools”.

- Savings

While attempting to buy a housing unit, the potential buyer should make a choice of whether affording it with his or her resources, it is mostly the case in developing countries where there exist no housing finance facilities, or applying for a credit opportunity from financial institutions that deal with the housing finance. In case of obtaining enough accumulation equal to the value of housing unit, potential buyer will not have need for credit, and will be a home owner by simple transferring his or her resource.

But low level of household saving causes a major problem for housing affordability by self financing, for the first 20 or so years of their lives most people have no saving of any significance and those financial accounts that are held, aim to

do no more than provide a simple mechanism by which funds can be transferred or they are designed to teach young people how to manage their money. As a young person begins to receive an income, he is likely to begin to accumulate very modest savings. By early 20s the thoughts of many people are turning to house purchase and setting up a house generally, and, again, there might be specific saving for this purpose. However, the amount of such saving is likely to be comparatively modest, simply because incomes are at a relatively low level and other expenditure is at a comparatively high level[2].

Therefore the lack of necessary accumulation to afford the purchase of housing unit pushes the potential buyer to look for housing credits if they exist, or to postpone the purchase transaction until he or she saves enough for buying a new housing unit. That is the simple reason for which the home ownership age is low in developing countries where efficient housing finance systems are absent and high in industrialized countries, where there are well functioning systems.

3.2. LENDERS

The word "Lender" describes a wide group including individual investors, financial institutions and sometimes governments. Lender is the party who wants to invest his surplus funds in financial markets. In case of governments being as lender using the word investment will be wrong. This case will be examined later in more details. The suitability criteria of the Lender are positive real rate of return, liquidity and insurance against defaults.

- Positive Real Rate of Return

Experience in economies undergoing high rates of inflation have highlighted the problems that fix term fix rate mortgage instruments can cause for both borrowers and lenders. Especially high and volatile inflation shifts the expectations causing financial institutions and other major lenders to change their behavior in a different way. First, they initially demand higher real yields on their investments. This provides usually a cushion against both possible future increases in inflation and volatility of interest rates. But no one can forecast future inflation rates reliably. Moreover, the higher the average inflation rate, the greater the uncertainty about what future rates will be. This is partly because higher inflation rates provide greater scope for both upward and downward price movements in the future[11].

Capital suppliers can protect themselves against such uncertainty only by adopting one of two investment forms that vary nominal payments with inflation as it occurs so as to keep real yields approximately constant. The first is making a loan with an interest rate renegotiated often enough to catch up to changing conditions, as in renegotiable rate mortgages or rollover mortgages. The second is making an indexed loan that varies in accordance with some other indicator sensitive to inflation (but not directly to CPI).

As a result the problem of maintaining real rate of return to the lender could be solved by designing different types of contracts involving a new mortgage tool. This problem will be discussed in a more detailed way in next chapter under the heading of “housing finance tools”.

- Liquidity

High liquidity reduces the risks of both being unable to convert assets from one form to another for convenience and being stuck with assets that are likely to

decline in value. Hence improving the liquidity of mortgages increases the willingness of investors to originate, purchase, and hold them. This increased willingness helps accomplish several of the essential functions listed above in particular, raising the size of capital flows into housing markets.

Increasing liquidity is especially important for mortgages compared with most other investments. Every mortgage is a highly particular financial instrument. In case of default, its underlying security depends on the potential market value of a specific real property. Hence determining the mortgage's true value requires knowledge of the real estate market where that property is located. But real estate markets are extremely place specific, so evaluating them demands detailed knowledge of a locality that is unavailable to most investors.

This situation makes most investors unwilling to purchase mortgages without some guarantee that the value of the mortgages can be more easily assessed than the value of the underlying properties themselves. Specific government mortgage insurance agencies may provide such a guarantee. Investors will have confidence that they will get their money back in case of default, regardless of the value of the underlying properties because of the guarantee that is given by government agencies[11].

- Insurance

Many arrangements in business are designed to shift risks from those whose behavior incurs them to someone else. The latter is usually compensated by the initial risk bearer in proportion to the severity of the risk shifted. Such risk shifting is the basis of all insurance activities.

By shifting risk away from itself, an investing institution decreases its expected losses from undertaking some activity. Because the expected rewards of that activity

presumably remain unchanged, it has achieved a larger net expected gain from undertaking that activity. But it has also incurred the added costs of paying the party to whom it has shifted these risks. If those additional costs are much smaller than the expected losses it has avoided, the institution has a greater net incentive to undertake that activity than it did before. Almost all insurance schemes seek to increase the rewards from undertaking risky activity by shifting expected losses to someone else at a cost lower than the decline in those losses to the initial actor.

Without such insurance the initial actor would often be unwilling to undertake the activity at all. The expected losses from the activity might be larger than the expected rewards. Even if that were not true, the actor's underlying equity position might be so small, compared with those expected losses, that the organization's survival would be placed in too much jeopardy if it undertook the activity and failed.

In housing finance systems, insurance is one of the most important subject in order to attract the investors and lenders to the system. We could talk about three different types of insurance. These are deposit insurance, property insurance and repayment insurance.

Deposit insurance may be necessary if there are doubts as to the viability of financial institutions. Experience shows that, even in industrial countries, this can be a very effective way of encouraging the development of housing finance system.

Mortgages require property insurance coverage for the lender's protection. This is also termed hazard insurance. Principally, it includes fire and extended coverage and is required by the lender where any buildings are involved in an amount at least equal to that of the loan.

Equally, on the mortgage side, repayment (default) insurance might be a useful weapon, partly to help standardize lending procedures, but also to encourage lenders

who perhaps otherwise might be unduly cautious. Repayment of mortgage loans made in primary markets may be insured or guaranteed by third parties. The need for such coverage depends primarily on the size of loan relative to the market value of the property and the financial status of the borrower[13].

3.3. GOVERNMENTS

Governments ,through laws, regulations, administrative practices, investments, taxes, subsidies, and a variety of other policies, shape housing markets in the most fundamental ways. Housing markets, influenced as they are by economic and social factors as well as government policies, can go part of the way toward satisfying the normative goals of a well functioning housing sector but they do not always do so effectively. Governments should be encouraged to adopt policies which enable housing markets to work. There are two important instruments that governments must use to develop a better housing finance system. The first policy is developing mortgage finance and property rights in order to maintain sustainability of the system. The second one is rationalizing subsidies ensuring that the subsidy programs are of an appropriate and affordable scale, well targeted, measurable and transparent.

- Rationalizing Subsidies

Traditional forms of subsidies to housing (e.g., lower than market interest rates, provision of land at low or no cost, capital grants, etc.) should be used as a transitional measure or as a last resort, after other methods for improving access by the poor to housing have been tried. When subsidies are necessary they should be well

targeted, measurable and transparent, and should avoid distorting housing markets. Moreover, in many developing countries the provision of infrastructure includes explicit and hidden subsidies benefiting well-off consumers. These subsidies distort demand and supply, most often at the expense of the low-income groups. These subsidies need to be removed or/and redirected toward households which consume less land, infrastructure and services.

Until the early 1980s, the mortgage repayment tilt problem was treated in one of two ways: first, as an affordability problem that could be solved by redesigning the mortgage instrument. The second approach attempts to deal with the concern of lenders by ensuring that the real value of repayments is not affected by inflation. It is discussed more fully later. But, first consider the first approach - credit subsidies- as a means to address the inflation-caused affordability problem[14].

Most countries in the world have at one time or another used interest rate subsidies to reduce mortgage borrowing costs. Through this approach the cash-flow problems of households are solved by “retilting” the early payments back to what they would have been without inflation. Credit subsidies are used to “buy down” the cost of housing finance with below-market interest rates. While this practice is widespread, there are at least four problems with this approach.

First, if the objective of the subsidy is to increase housing consumption, then, because credit is at least partially fungible, subsidizing credit is less efficient than is subsidizing the housing expenditure itself. It is inefficient because, over the long term such a subsidy permits households to substitute credit for their own savings and, thereby, frees their savings to be used for other purchases. Hence, it allows the subsidies to be spent on activities other than those it was intended to encourage.

Consequently, the efficiency of the subsidy in inducing the intended behavior is diminished.

Second, below-market credit provides a subsidy to solve what in most cases is a contracting problem. At rates of inflation lower than 25-30% a year, carefully designed mortgage indexation schemes can eliminate the cash-flow costs imposed by high nominal payments, and can do so without subsidy. While it is difficult to measure precisely how much a credit subsidy really is because of the difficulties in projecting inflation and the appropriate real interest rate, the per unit subsidy level necessary to eliminate the inflation-related tilting of repayment is certainly very large. For instance, with an inflation rate of 30% and a real interest rate of 8%, the subsidy necessary to eliminate the tilt problem for a middle income borrower is on the order of 58% (see Table 3-1).

The relation between interest rate charged, expected inflation rate, real interest rate and subsidy rate needed to eliminate tilt are given in Table 3.1. In this table the implied subsidy rate is given for a 15-year standard fixed rate mortgage with various assumptions about the real interest rates, the expected inflation, and the nominal interest rate charged. The last column shows the subsidy rate required to get mortgage payments back to the same proportion of family income put towards payments when there is no inflation. The subsidy rate is calculated by discounting the nominal fixed payments implied by the interest rate charged by the nominal interest rate implied by the assumed real interest rate and expected inflation rate (see appendix 1).

Table 3.1. Credit subsidies implied by different interest rate terms

<i>Interest Rate Charged</i>	<i>Expected inflation rate</i>	<i>Real interest rate</i>	<i>Subsidy rate needed to eliminate tilt</i>
15%	15%	8%	32%
15%	30%	8%	58%
20%	40%	8%	56%
20%	40%	6%	63%
25%	30%	10%	33%

Third, interest rate subsidies do not really solve the repayment tilt problem by reducing the higher costs in the early years of a loan. Rather, they reduce real repayments throughout the loan's life. As a result, with a subsidy, interest payments in the later years of the loan can become trivial rather than just small. For example, instead of being required to allocate as much as 60% of income to repayments as could be the case with a fixed rate loan, a subsidy sufficient to reduce early payments to affordable levels would call for repayments in later years that account for 1% or 2% of income. Clearly this kind of subsidy mechanism gives beneficiaries larger than necessary subsidies.

The final problem with credit subsidies is that the aggregate level of subsidy needed to eliminate the effects of inflation on housing affordability is simply too large.

- Sustainability of the System

The high costs of housing require a financial assistance for home ownership.

In the less developed economies, this assistance is made by the funds of parents,

relatives, neighbors in the form of zero cost loans[2]. On the other hand, in the developed economies, the assistance to home ownership is made within the financial markets by the commercial banks, saving associations or specialized housing finance institutions. The developing countries handle it with the assistance of government[16]. Additional out of government funds should be generated through the use of financial instruments within the rules of financial markets and these funds should be channeled fairly to the population looking for them as it is done in the most of the industrialized countries.

Therefore, the primary purpose of a housing finance system is to provide the funds which home buyers need to purchase their homes by the minimum use of the government funds. This is a simple objective, and the number of ways in which it can be achieved is limited. Not with understanding this basic simplicity, in a number of countries, largely as a result of government action, very complicated housing systems have been developed. However, the essential feature of any system, that is, the ability to channel the funds of investors to those purchasing their homes, must remain[2]. By offering the funds of lenders that have surpluses to the borrowers that they need, the trade off between the profitability of the lenders and the affordability of the borrowers should be optimized. The optimum solution will let the successful continuity of the housing finance system as it will attract the resources with its profitability and will ensure regular repayments with its affordability[1].

The suitability criteria for participants are given in Table 3.2. Defining these criteria for participants is not a big dilemma, the main problem comes out when we try to meet the participants suitability criteria at the same time. Here are the two contradictory case: a) borrowers' affordability & lenders' real rate of return, b) borrowers' demand for long term finance & lenders' liquidity.

Table 3.2. Participants' Suitability Criteria

Borrowers	Lenders	Governments
<ul style="list-style-type: none"> • Affordable payments • Long term finance • Adequate Savings 	<ul style="list-style-type: none"> • Real rate of return • Liquidity • Guarantee against defaults 	<ul style="list-style-type: none"> • Rationalizing subsidies • Sustainability of the system

In a high and volatile inflationary environment it is hard to solve these two problems with in classical housing finance systems. It is clear that governments could not provide the sustainability of the system as well as rationalize subsidies with traditional mortgage tools. Findings of the country case studies show that using alternative financing tools and correct set of supporting actions and policies of governments are helpful in solving the contradictions.

The research results of defining suitability criteria and country case studies show that half of the problems could be solved by alternative financing tools, so we should examine housing finance tools and the characteristics of the loan products in order to prove the research results.

In chapter four, different financing tools for housing will be examined including the traditional tools and alternative ones. The remaining part of the problems must be solved by correct set of supporting and policies of governments. Mexico, Colombia, Chile and Israel cases confirmed that the alternative financing tools could not secure the usefulness and sustainability of housing finance system when annual inflation rates consistently exceed 50 percent. Key policy decisions must

be determined for the success of housing finance systems. These key policy decisions will also be discussed in chapter four.

4. INSTRUMENTS OF HOUSING FINANCE SYSTEMS

4.1. MORTGAGE TOOLS

There are certain basic instruments used in real estate loans that have essentially the same purposes throughout the world. The collateral pledge that has given its name to the entire field of real estate finance is the mortgage. A mortgage is simply a pledge of property to secure a loan. It is not a promise to pay anything. In fact, without a debt to secure the mortgage itself becomes null and void by its own terms[17].

In the earlier stages of development of the law of mortgages, the actual possession of property, as well as the title to it, passed to the lender during the period of the loan. If the debt was not paid full and in accordance with all of the requirements on the day it became due, all of the rights of the borrower were forfeited. As mortgage transactions developed, experience indicated that the possession of the property was not necessary in order to secure the lender against loss.

Today it is considered more in the nature of a lien upon the estate to secure the performance, normally a money payment, specified in the instrument. The term mortgage is commonly used to denote the instrument by which such interest in property is transferred. Any instrument or legal form which conveys an interest in property for the purpose of giving security is in effect a mortgage, regardless of its form[18].

The form that a mortgage loan takes could technically be anything the borrower and lender agree upon. Before 1970's the only possibility of getting a mortgage loan was long term fixed payment mortgage. However, today, because of rapid changes in the financial environment with high and volatile inflation taking place in many countries, especially developing ones, lenders, borrowers and governments confront with the distribution of risk problem.

In any given mortgage agreement, the parties involved in the transaction face certain risks, especially in an inflationary economic environment[19].

The borrower risks: (a) not being able to afford to take out a mortgage at all unless his repayments are indexed to the cost of living (which evens out the real repayment burden over the life of the mortgage); and (b) facing constraints on his cash flow (such as a drop in the real value of wages) that could prevent him from repaying the mortgage in full and could cause him to lose his home in order to settle the debt.

The lender, in turn, is exposed to: (a) liquidity risk due to mismatched maturities in his investment portfolio, particularly between short-term financial liabilities and long-term loan mortgage assets; (b) the risk that interest rates will fluctuate over the lifetime of the loan; and (c) the risk that the borrower will default on his mortgage.

Governments also bear risks on mortgages in macroeconomic terms, particularly in unstable times when real wages might fall and interest rates rise. Governments can not afford to mount the large scale salvage operations that would be necessary in the event of either wholesale mortgage foreclosures or widespread insolvency among lenders.

All existing mortgage systems consist of the following components: a loan amount, a nominal interest rate, periodic payments and a maturity date. When there is no inflation, the nominal interest rate equals the real interest rate but an upward inflation trend will erode the value of the loan and the repayments.

So the borrower's payments may have to be increased to compensate for this. If he cannot afford this increase, he will default, risking losing his home and reducing the lender's chances of making positive returns on his investment. These problems are likely to have a destabilizing effect on the economy as a whole, forcing the government to intervene..

The real rate of interest is the net increase in wealth that people expect to achieve when they save and invest their current income. Alternatively, it can be viewed as the added future consumption promised by a corporate borrower to a lender in return for the latter's deferring current consumption. From the company's standpoint, this exchange is worthwhile as long as it can find suitably productive investments. However, because virtually all financial contracts are stated in nominal terms, the real interest rate must be adjusted to reflect expected inflation. The Fisher Effect states that the nominal interest rate "i" is made up of two components: (1) a real required rate of return "i*" and (2) an inflation premium equal to the expected amount of inflation "f". The relation between these rates is expressed as:

$$(1 + i) = (1 + f) \times (1 + i^*)$$

where,

i : yearly nominal interest rate

f : yearly inflation rate

i^* : yearly interest rate

This is called the Fischer Equation. The equation will help us to eliminate the inflation in our comprehensive mortgage interest rate discussions. If the data we are using belongs to past years, we could use Fisher equation by taking the realized inflation rate. By this way we could actually talk about the real value of repayments and real mortgage balances.

In this chapter traditional fixed rate mortgage and alternative mortgage instruments are explained in details in order to present their strength and weaknesses against inflation. For the sake of consistency the examples are given for a principal loan of 100 unit.

4.1.1. Standard Fixed Rate Mortgages

Fixed rate fix term mortgages has been the primary real estate financing instruments since 1930's in United States. This was the way of financing provided by the savings and loans industry to the home building industry for the home buyer[20].

Fixed rate fix term mortgages is the basic and easiest mortgage instrument that can be used. The loan uses a constant loan repayment pattern, regular payments calculated from the original loan amount at a fixed rate of interest for a given term.

This structure allows the original loan amount to be completely repaid at the end of the term, with the lender having earned a fixed rate of nominal interest on the outstanding loan balance through out the loan term.

We can easily formulate the monthly payments of the fixed rate fix term mortgages. As mentioned before, the loan amount will be the net present value of the monthly payments. Discounting the fixed monthly repayments with a fixed interest rate to present value we can come out with a basic equation.

$$A = P_0 \times \left[\frac{i \times (1 + i)^n}{(1 + i)^n - 1} \right]$$

$$A = E_t + I_t$$

$$I_t = P_{t-1} \times i$$

$$P_t = P_0 - \sum_{k=1}^t E_k$$

where,

A : monthly repayment

P_t : remaining mortgage balance at period t

I_t : interest payment at period t,

i : nominal interest rate

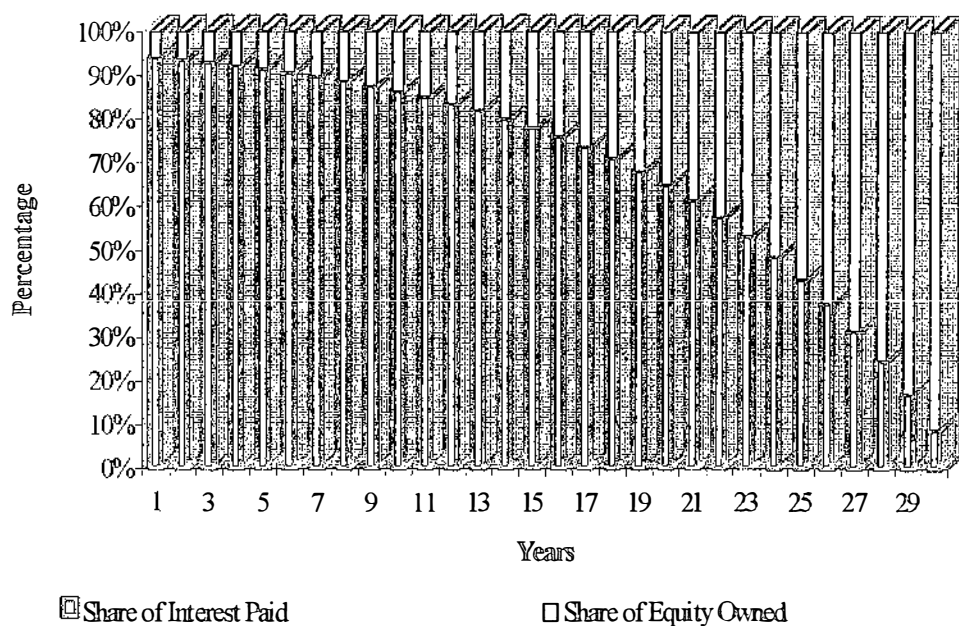
n : number of periods to maturity

The figure below illustrates the shares of interest paid and equity owned in monthly payments on a 30 years, 10 per cent fixed rate fixed term mortgage loan.

Data used are given in Appendix 2.

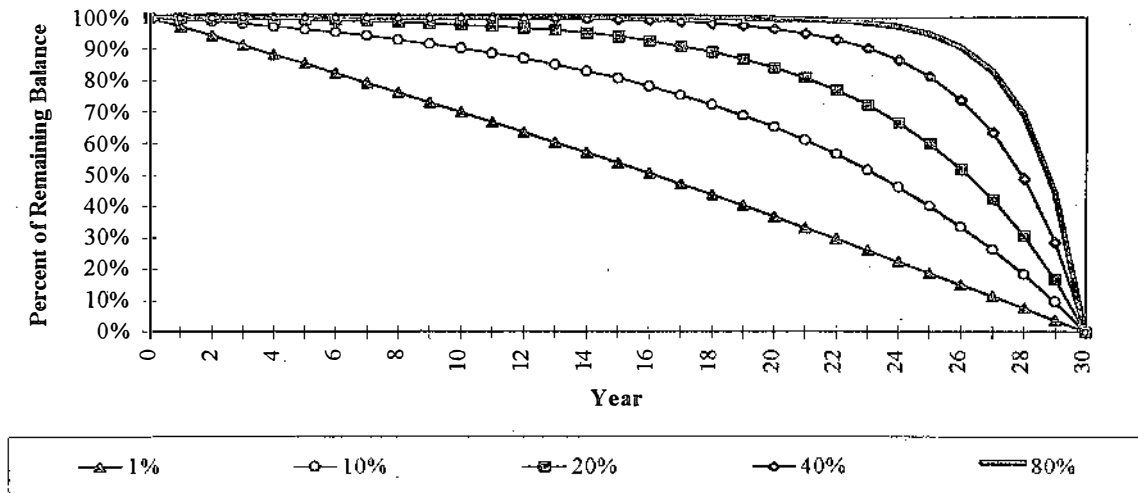
Figure 4.1. Monthly Mortgage Repayments: Interests/Principle

(30 year, 10 per cent SFRM Loan)



The principal portion of each monthly repayment is used to reduce the amount of loan outstanding. In mortgage terms, the loan is amortized over n years and the principal payments each month are known as amortization payments. The amount of the loan that is outstanding at any time is known as the mortgage balance. Traditional fixed rate mortgages are always fully amortized whatever the interest rate is. Figure 4.2 shows the amortization of traditional fixed rate mortgages by illustrating the remaining mortgage balance at any times, in different interest rates applied to the same amount of loan for the same period of time. (see Appendix 3)

Figure 4.2. Remaining Balance of Traditional Fixed Rate Mortgages



Often the mortgage balance is expressed as a ratio or percentage of the original loan amount, in which case the mortgage balance runs from 100 per cent initially, to 0 at maturity. From the figure we can see the portion of remaining balance changing with different interest rates. As the agreed interest rate increases, the portion of remaining balance increases.

4.1.1.1 Inflation and Standard Fixed Rate Mortgages

In countries where inflation rates tend to be high, fixed rate mortgages cease to be a viable option for both lenders and borrowers. With high inflation, lenders are forced to charge a high nominal interest rate on the loan in order to maintain a positive real rate of return on their investment. The high nominal interest rate leads to high initial payments under a fixed-rate fixed term loan. However, as time passes the

real value of the loan payment (which is constant in nominal terms) is eroded by continuing inflation. This decline in the real value of the payment over the term of the loan is known as the “tilt” or “front loading” problem: the real repayment of the loan is “tilted” towards the early part of the loan term[12].

This tilting of repayments has a modest positive effect for the lender (in that he receives higher real repayments in the early years of the loan term). The effects of the tilt on the borrower are much more substantial. The higher nominal interest rate required to overcome the expected effects of inflation raises the payment; this increase in payment level must be met out of the household’s current real income. Over time, of course, as nominal household income rises with inflation, the required payment becomes more and more easily affordable.

The simple examination of the tilt problem above was based on perfect knowledge about future inflation. In practice, lenders must make imperfect estimates of future inflation. Wrong forecasts by lenders of future inflation can significantly shift costs between lenders and borrowers; higher costs onto borrowers if inflation is less than expected, onto lenders if inflation is higher than expected. However, to the extent that the lender attempts to compensate for the real rate of return risk by making high estimates of future inflation, the less affordable the loan becomes for the borrower.

In addition to the problem of forecasting future inflation, lenders must also make predictions about the future real cost of funds to finance their mortgages. If it is possible to perfectly match the terms of liabilities that fund the loans, then this is not a problem; the real cost of these funds is fixed and known. However, it is more often the case that the terms of the lenders’ liabilities do not match exactly with the terms of the lenders’ outstanding loans. Just as with forecasts of inflation, if the lender

overestimates the future real cost of funds, a windfall gain results. But if the lender underestimates the future real cost of funds, significant losses can quickly mount.

If mandatory mortgage lending programs exist, the finance authorities who control loan interest rates find it politically difficult to keep pace with the costs of funds to the banking system. Thus, they are forced to provide larger and uncontrolled subsidies to housing loan recipients and this, in turn, decapitalizes the banking system and/or raises interest rates for nonpreferential loans. But in the absence of mandatory lending programs, lenders tend to withdraw from the housing market, which causes the financing of new housing to dry up[21].

To overcome these problems, some governments provide direct subsidies from the budget or indirect subsidies by lending from social security systems at below market rates. In either case, the effective tax rate and/or the budget deficit increase with destabilizing effects on the macroeconomy.

The most common form of subsidy system has been that of subsidized interest rates whereby the cost of borrowing for housing is less than that of other forms of credit. Buckley *et. al.* (1989) identify four major problems with this approach[15]:

- Subsidized credit for housing allows households to use their own savings to finance other consumption, effectively reducing the efficiency of the subsidy directed towards housing.
- Below market rate credit in economic environments with annual inflation rates below 25 percent is aimed at affordability problems which can be solved through indexed mortgage instruments.
- Interest rate subsidies do not really deal with the repayment tilt problem which affects the borrower in the early years of the loan, but reduces the real value of repayments throughout the life of the loan.

- Aggregate levels of credit subsidies needed to overcome the effects of inflation in most countries experiencing inflation related affordability problems would be enormous and unstable.

The solution would seem to be to structure lending instruments in a manner which addresses the concerns raised above by allowing mortgage interest rates to vary. However, this would mean that borrowers might not be able to afford the resulting sharp increases in their payments which would cause default rates on current loans to climb. Payments for new loans would also grow beyond the reach of target borrowers.

4.1.2. Alternative Mortgage Instruments

This section looks at the various alternative loan products available and their features that address the repayment tilt and risk distribution problems. Alternative mortgage instruments are the loan products other than Standard Fixed Rate Mortgages (SFRMs). There are three generations of mortgage instruments. These are mortgages with fixed interest rates, variable interest rates and real interest rates.

First generation of the mortgage design after SFRM is the type which tries to eliminate the tilt problem again with fixed interest rates. The way that vary from SFRM is that the repayments vary all through the loan product life. These are Graduated Payment Mortgage (GPM), Growing Equity Mortgage (GEM) and Fully Graduated Payment Mortgage (FGPM).

These mortgage designs involve a fixed rate over the life of the loan. GPMs,

GEMs and FGPMs are not likely to succeed in assuring the debtor anything approaching a level real repayment stream, as the rate of inflation vary over the same period. Thus, They do not solve the tilt problem.

Second generation of alternative mortgage instruments are Variable Rate Mortgages (VRMs) or Adjustable Rate Mortgages (ARMs). These mortgages are same as a loan product, but different names are used for this type. ARMs are generally tied to an objective market interest rate, or to the cost of funds to the lending institution, but sometimes interest rate is set by the lender. The variation of interest rate decreases lenders' risk but as they are tied to nominal interest rates we could not talk about the real rate of return, as inflation is high and volatile. Finally, Adjustable Rate Mortgage is not a satisfactory answer to inflation swollen interest rates because it does not address the tilt problem as the payments are still based on a nominal rather than a real interest rate.

The only two basic mortgage designs that can provide inflation proof solution to the problems are the price level adjusted mortgages (PLAMs) and the dual index mortgages (DIMs). PLAMs and DIMs are the third generation mortgages that mention about real interest rate.

4.1.2.1. Growing Equity Mortgages (GEMs)

Merrill Lynch was the first to implement this type of mortgage in United States through its affiliated real estate brokers and lenders. The following are the characteristics of a GEM.

1. Below market (usually two to three points) fixed interest rate.
2. A 30-year maximum term.
3. The built-in ability to have the mortgage paid off earlier than FRM with same amount of loan.

The monthly repayments of growing equity mortgage are in the form of a growing pattern; in other words, monthly payments follow gradient series cash flow structure. The repayments graduate during the entire life, unlike the graduated payment mortgage. The first year's payment on a growing equity mortgage is the same as that on a traditional fixed rate mortgage, with a smaller maturity by which its balance extinguished very quickly. The model for growing equity mortgage is defined as follows:

$$A_1 = P_0 \times \left[\frac{i \times (1+i)^n}{(1+i)^n - 1} \right]$$

$$A_t = A_1 \times (1+j)^t$$

where,

A_t : monthly repayment at period t

P_0 : Principal loan amount

i : nominal interest rate

n : number of periods to maturity

The monthly mortgage payments are fixed for the first year of the mortgage. The interest rate should be at two to three points below the prevailing market rate of conventional fixed rate loan. At the end of the first year, the monthly payments would be revised with an index or with a graduation rate.

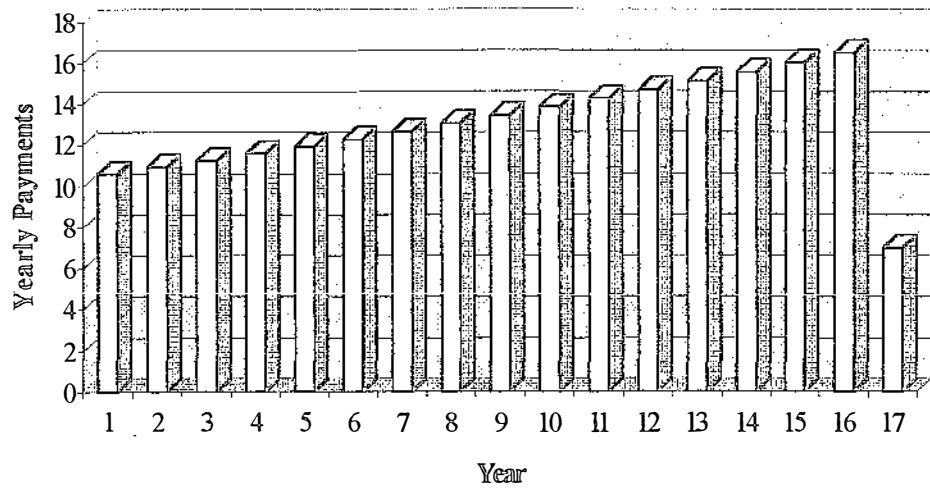
The variation in payment tied to some index gives the GEM the appearance of an adjustable rate mortgage (ARM). However, unlike the ARM, the increase in mortgage payment is not applied to the interest payment but is applied directly towards reducing the principal balance. Therefore, the faster the index goes up, the faster the monthly payments go up and the faster the principal is paid down.

The most advantage of the model from the lender's point of view is smaller maturities as the outstanding balance terminates before the traditional fixed rate mortgage with the similar parameters. Another advantage for the lender is the absence of the negative amortisation as the initial repayment is calculated based on the traditional fixed rate mortgage.

As it is illustrated at Figure 4.3, the implementation of growing equity mortgage let the lender to amortise the loan 13 years earlier than he or she should do with the traditional fixed rate mortgage. The smaller amount of last repayment at 17th year is because that is all which has remained out of the whole mortgage loan (see Appendix 4).

Figure 4.3. Yearly payments of GEM

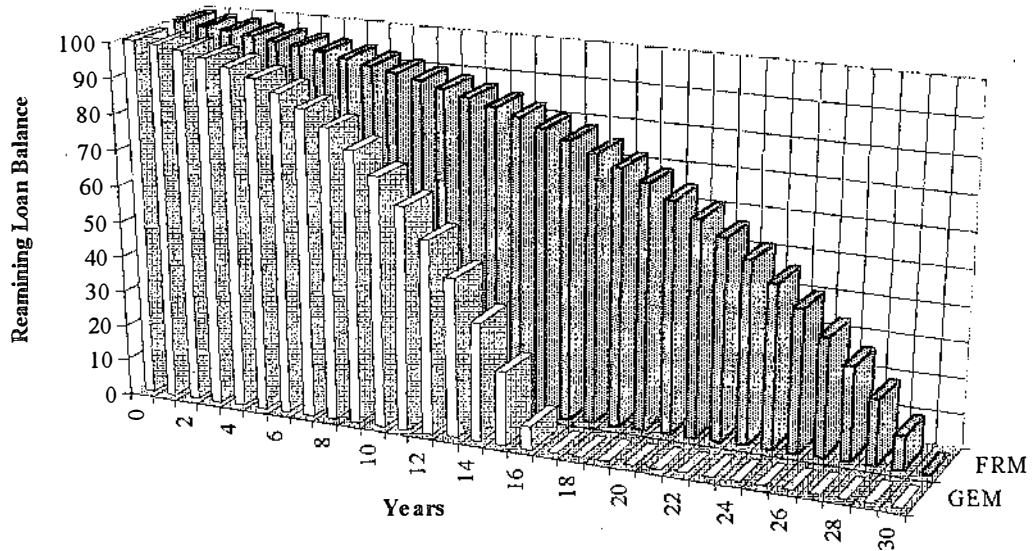
(30 years, 10 percent interest rate, 3 percent graduation)



The growing equity mortgage does not directly attempts to make qualification for a mortgage any easier on prospective borrowers. On the contrary, it demands the same ability to afford traditional fixed rate mortgage loan payment, plus the graduations in later years. It is mostly designed for borrowers which are already able to afford the initial repayment of traditional fixed rate mortgage and which expect that real value of repayments will decrease with the inflation while their income will increase.

The amortisation speed of growing equity mortgage is much more visible from Figure 4.4 that compare the amortisation of growing equity mortgage by traditional fixed rate mortgage with similar parameters such as principal and interest (see Appendix 5).

Figure 4.4. Comparison of Growing Equity and Fixed Rate Mortgages by Their Outstanding Loan Balance



GEM borrowers could take comfort in the knowledge that they would own the property free and clear in much less time than with a fixed rate fixed term loan. GEMs do address the qualification issue indirectly, however, through their shorter lives. Mortgage lenders will be willing to reduce their interest rate in return for the GEM's shorter payback period. This would serve to make the initial GEM payments lower than those on fixed rate fixed term 30-year loans, and could win over some borrowers.

4.1.2.2. Graduated Payment Mortgages (GPMs)

The graduated payment mortgage was one of the first "creative" variable financing vehicles. GPMs were designed primarily to combat the tilt problem. This

concept was first tested by the Federal Housing Administration of United States of America as a method of allowing home buyers to pay lower initial monthly payments in the earlier years of a mortgage term, with payments rising in later years to level sufficient to fully amortize the loan within a 30 year term. With a lower initial monthly payments, the buyer might qualify for a loan with a lower income, or conversely, be able to buy a larger house with the same income. An added requirement is that the buyer must show reasonable expectation of an increase in annual income so as to meet the annual increase in monthly payments.

The payment plan, which is negotiated between borrower and lender, starts with monthly payments lower than the payment required to amortize an equivalent FRM at market rate , and then increases over time in accordance with some negotiated escalation schedule. Increments on the payments are done with a rate defined as graduation rate negotiated before by the lender and the borrower. Through out the graduation period the payments reach a higher amount than would have been paid on an equivalent FRM .The monthly repayment drawn from the following formulation is a combined model of gradient series cash flow, present and future value determinants.

$$P = A_0 \times \left[\left[\frac{(1 - (1 + j)^m \times (1 + i)^{-m})}{(i - j)} \right] + (1 + j)^m \times \left[\frac{((1 + i)^{(n-m)} - 1)}{i \times (1 + i)^{(n-m)}} \right] \times (1 + i)^{-m} \right]$$

where,

A_0 : initial monthly repayments

P : principal loan amount

i : nominal interest rate

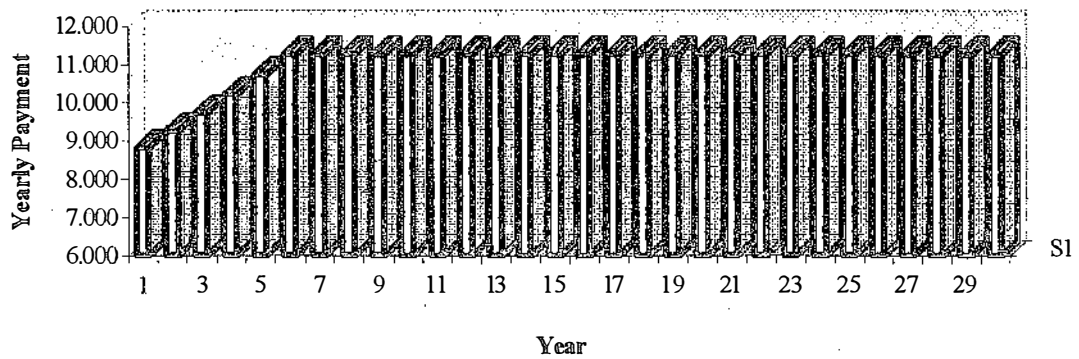
- j : graduation rate
- m : number of graduation periods
- n : number of periods to the maturity

$$A_{t+1} = A_0 \times (1 + j)^t \quad t = 0, 1, 2, 3, \dots, m$$

$$A_t = A_m \quad t = m+1, m+2, \dots, n$$

Figure 4.5 Yearly Payments of a GPM

(30 years, 10 percent interest, 0.03 graduation rate, 5 years graduation)



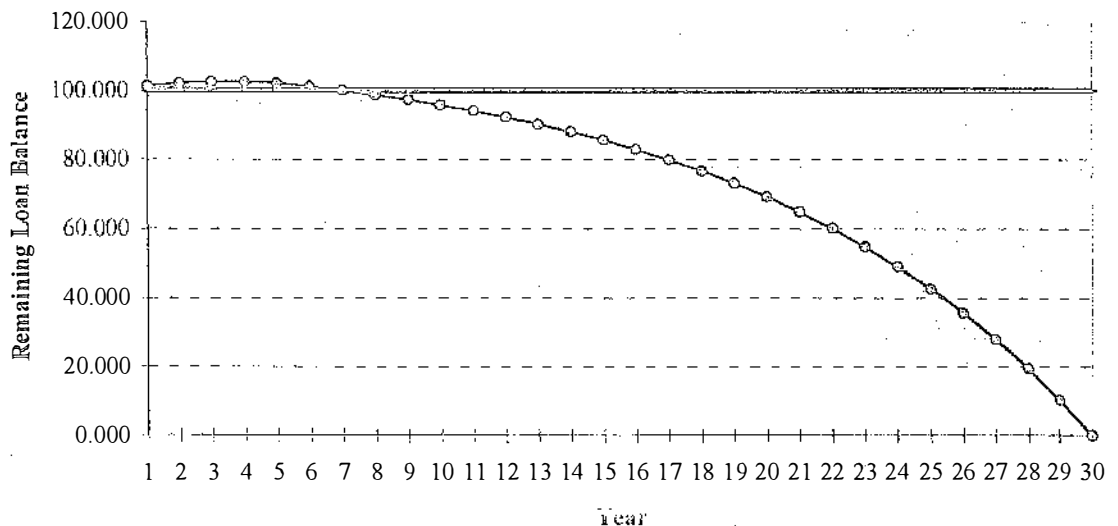
Payments that are smaller than traditional on a mortgage of given size during its first few years would ease affordability in two ways. If lenders compared only first

year payments with the borrowers' incomes in judging loan eligibility, borrowers with incomes of a given size could qualify for larger loans. This practice would reduce required downpayments and shorten the time it takes borrowers to save them. Because most borrowers' incomes will rise over time, future increases in mortgage payments would not necessarily raise the percentage of borrowers' incomes absorbed by such payments. So use of Graduate Payment Mortgages that have this feature is one way to manage the affordability problem(see Appendix 6).

The amount by which initial monthly payments can be reduced is limited by the need to provide lenders with competitive yields. If total monthly payments fall below payments of only interest on the outstanding balance, lenders are temporarily obtaining noncompetitive yields. This situation might be acceptable to them if it were later accompanied by payments that were higher than usual. Alternatively, lenders could add such interest deficiencies to principal, thereby extending loan duration's.

Figure 4 6. Remaining Balance for GPM

(30 years, 10 percent interest, 0.03 graduation rate, 5 years graduation)



Another problem related with GPM is negative amortization. Since monthly payments at the beginning of the loan are lower than the amount necessary to amortize the loan on a fixed rate basis, the unpaid accrued interest is added to the principal balance of the loan. Loan can rise above the market value of the home if much negative amortization has been necessary in the early years. Such a rise increases the risk of default. The main reason that most lenders do not like such loans and therefore have not use them much.

The principal advantage of the GPM for the borrower is that mortgage payments are designed to shift the burden of the mortgage to the later years. The initial payment to income ratio is, therefore, such that the household is able to borrow more than it would with FRM. Eventually, when the graduation period has ended, homeowners with graduated payment mortgage make up the difference by paying larger monthly amounts than the traditional fixed rate mortgage requires.

4.1.2.3 Fully Graduated Payment Mortgages (FGPMs)

Another application that can be taken as the combination of graduated payment mortgage and growing equity mortgage is fully graduated payment mortgage. The monthly repayments begin at a relatively lower level and increase by some prefixed rate every year until the maturity. The simple formulation of the monthly payments is given below.

$$A_1 = P_0 \times \left[\frac{(i-j)}{1 - (1+j)^n \times (1+i)^{-n}} \right]$$

$$A_1 = P_0 \times \frac{(1+i)}{n}$$

$$A_t = A_1 \times (1+j)^t$$

where,

P_0 : principal loan amount

A_t : initial monthly repayment

i : nominal interest rate

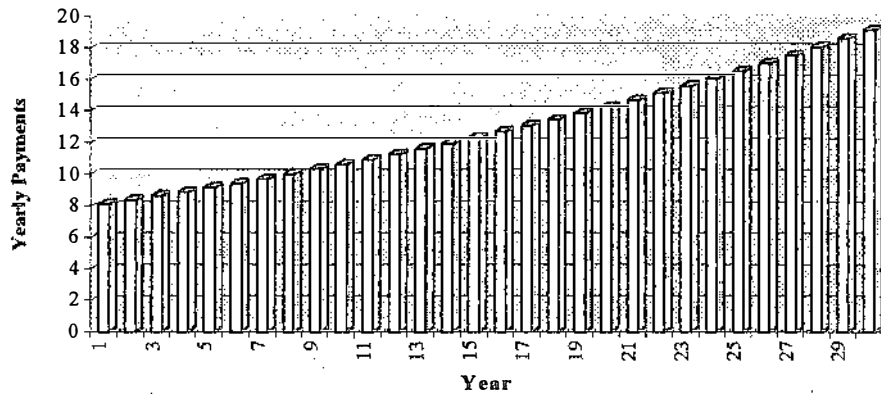
j : graduation rate

n : number of periods to maturity

Fully graduated payment mortgage differs from the graduated payment mortgage in the duration of the graduation period. Graduated mortgage payment mortgage has a graduation period for only a prefixed period of the whole mortgage maturity while this one permits the graduation to continue during the whole life of the loan (see Appendix 7).

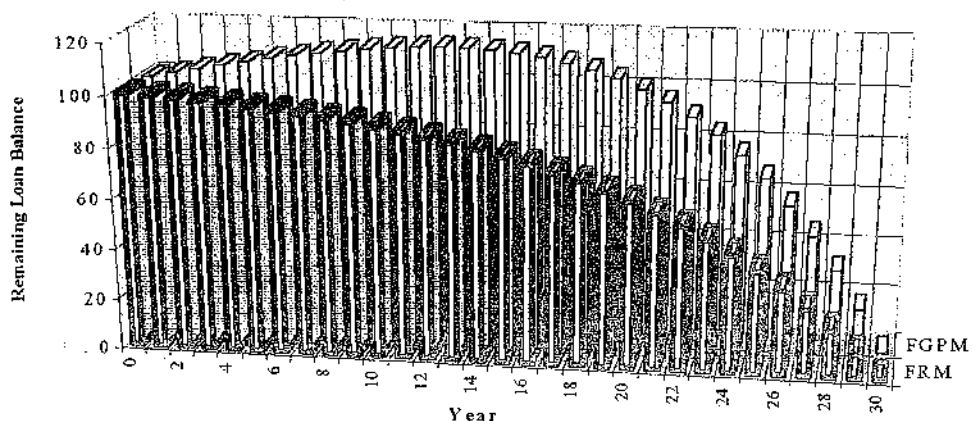
Figure 4.7. Yearly payments of FGPM

(30 years, 10 percent interest rate)



The main difference of the fully graduated payment mortgage from growing equity mortgage is that it does not attempt to shorten the life of the loan but postpone the earlier payments to the later periods of the loan's life. The high graduation rate also generates the negative amortisation of the loan, causing lower early repayments that do not cover the interest payments of the loan. The amortisation of this application is also compared with the traditional fixed rate mortgage with similar parameters (see Appendix 8).

Figure 4.8. Comparison of FGPM and SFRM by their outstanding balance



4.1.2.5. Price Level Adjusted Mortgages (PLAMs)

As the third generation of the alternative mortgage instruments, price level adjusted mortgages differs from traditional mortgages in that it provides for variable interest rates and payment schedules that vary with changing economic conditions. This variability allows lenders and borrowers to share the risk associated with changing inflation and interest rates, allowing a better matching of loan structures with lenders' resources costs, thus lowering the financing cost of borrowers[8].

The price level adjusted mortgage is the first alternative mortgage instrument to address the concept of real rate of return. It is an approach to incorporate changes in the price level into the design of the mortgage. It utilizes an interest rate that reflects only the real cost of funds and repayment risk associated with the mortgage loan. Initial payments are calculated based on this interest rate. The outstanding balance of the loan is then periodically revalued (in nominal terms) according to a price index.

In a typical price level adjusted mortgage, the payments for the first year of the loan are based on an amortization schedule for the full term of the loan at the contracted interest rate. At the end of the first year, the outstanding balance is adjusted by the change in specified price index (e.g., consumer price index). A new payment is calculated based on amortization of the revalued nominal balance over the remaining term of the loan at the contracted interest rate. This process is repeated at the end of each year of the loan until the loan is fully amortized[1].

$$A_t = P_0 \times \left[\frac{i \times (1+i)^n}{(1+i^*)^n - 1} \right] \times \prod_{k=1}^t (1+f_k) \quad \text{for } t = 1, \dots, n$$

where,

A_t : monthly repayment at period t

P_0 : amount of loan taken at time 0

i^* : real interest rate

f_k : yearly inflation rate at year k

The price level adjusted mortgage attempts to place a constant burden on home owner in terms of purchasing power while providing the lender with a fixed return over inflation. Three main problems can arise if the index is used for determining the payment schedule rises faster than housing prices or personal income.

- If the home owner's income does not keep pace with the index, he will have trouble meeting the rising monthly payments and could default on the loan.

- If the property value does not keep pace with the index, the LTV ratio could increase, potentially above 100 per cent. This would mean that if the property were sold, There might not be sufficient money to pay off mortgage.

- If the real interest rate is low, PLAMs can work very well but if the real interest rate is high and borrowers become locked into permanently high real payment rates. This can result in mass delinquencies leading to bank failures, especially if real wages fall at the same time.

A detailed payment plan of price level adjusted mortgage are given in

Appendix 9.

4.1.2.5. Dual Indexed Mortgages

Designing a mortgage system which protects lenders' interests in an inflationary environment and at the same time provides continued accessibility to credit for borrowers has been a challenge during the past decade. Officials of lending institutions and agencies involved with mortgage lending have invariably developed approaches which addressed either the concerns of lenders (through indexation to inflation), or those of some borrowers (through various direct and indirect subsidies). Not much success has resulted from these approaches since they either excluded a majority of borrowers (through high initial and debt-servicing costs), or provided disincentives to lenders (with low or negative profit margins)[14].

ARMs and PLAMs protect the investment of lenders through the indexation of repayments whereas GPMs and PLAMs directly address the problem of front loading (tilt problem) and thus make mortgages more affordable[15]. However, during the 1980s real wages have fallen drastically in many countries, and none of these instruments provide any protection to borrowers against the risk of the associated payment shock or to lenders against the risk of mass defaults. A new type of mortgage has been devised by the Central Bank of Mexico that provides a solution to these problems. This instrument, known as the dual-indexed mortgage (DIM), had the following characteristics[22]:

- Indexing to cover inflation; in the standard design of a DIM, a real interest rate is applied to the indexed balance, yielding a positive rate of return.
- Indexing to maintain affordability; payments are typically established as a

maximum percentage of household income.

- Adjustable repayment period; if the required monthly payment exceeds the maximum percentage of household income, the difference can be capitalized and the term of the mortgage extended beyond its original 15 years. To put an upper limit on the term, the central bank agrees to cover all balances not paid at the end of a twenty year term.

The main implementation for the dual indexation is that the borrower does not encounter with any surprise during the repayment period as he knows, before taking the credit, that he will always give some fixed proportion of his income to housing debt repayment, whatever the economic conditions would be in the future.

The analysis of dual indexed mortgages is made on the basis of remaining balances the binding constraint is the termination of outstanding balance at the maturity. The remaining balance calculations are made by the following formulations. A detailed payment plan is given in Appendix 10.

$$RB_t^* = RB_{t-1}^* + I_t^* - A_t^*$$

$$A_t^* = NI_t^* \times r$$

$$t = 1, \dots$$

$$I_t^* = RB_{t-1}^* \times i^*$$

$$E_t^* = A_t^* - I_t^*$$

where,

RB_t^* : remaining balance of loan at time t_0 by constant prices

I_t^* : share of the interest in the real repayment at time t

- A_t^* : yearly real repayment at time t
- NI_t^* : yearly net real income at time t
- E_t^* : real value of equity purchased at time t
- r : prefixed repayment income ratio
- i^* : yearly real interest rate

If other developing countries wish to consider adapting the Mexican example to their own circumstances, the following points should be in mind:

- There must be an existing indicator of the cost of lending funds, such as the AFC (an index of the average cost of funds for lending institutions).
- Safeguards, such as ceilings on the interest capitalization rate may be needed initially to establish definite limits of liability for borrowers (these are sometimes important, for example, in gaining public acceptance).
- The administration of a system of variable rate mortgages requires high management standard and solid political support.
- This kind of mortgage is effective primarily for middle- and upper income-housing.

A dual indexed contract in principle provides the kind of cushioning against the shocks that can make housing finance both affordable and in most circumstances sustainable by financial means rather than with government transfers. Moreover, simple models can be used to determine whether this type of instrument can be effectively implemented in a particular economic environment.

Nevertheless, the difficulties in implementing this kind of instrument should not be understated. How reliable, for example, are the wages indexes to be used? Are these indexes are produced on a timely basis? How will the funding for the risk of continual real payments declines be structured? Finally, who will insure that prudential

concerns are emphasized in the development of loan terms? For this kind of instrument to work and be sustainable these kinds of technical questions require equally technical rather than political answers. Otherwise, dual indexed instruments can easily become an even more circuitous way of providing credit subsidies[14].

In circumstances where real wages are falling, households would not be required to make the full payment of principle and interest due; the unpaid portions capitalized into the outstanding balance. Because the real rate of repayment can change, the loan term must also be variable to accommodate shortfalls in real repayments when real wages are falling and accelerated real repayments when real wages are rising. Thus, the key question in designing the DIM is establishing the initial loan maturity schedule so that sufficient maturity extension can be accommodated to deal with possible shortfalls in repayments. For example, the mortgage could be structured so that in the absence of any real wage changes the loan would fully amortize in 15 years, but the contracted term of the mortgage would allow for an additional 5 years of repayments to cover any losses stemming from shortfalls in real repayments[12].

DIMs can be structured so that they are open-ended (i.e. they have no fixed term), but these will not be attractive to borrowers since they face the prospects of extremely long payment schedules. In practice, the lender or some third party must assume the risk from outstanding balances at the end of the loan term.

An important feature of the loan term setting is that a payment factor is selected such that the loan would fully amortize in a period less than the extended maturity period if there are no real wage reductions and the amount of term extension to cushion the possible real wage reductions is such that the extended loan fully amortizes after accounting for the anticipated possible real wage shocks. If these

conditions are not fulfilled the loan can introduce moral hazard into the contract. That is, borrowers could be induced to take “too big” a loan because the risk of repayment at the end is not theirs[14].

DIMs will not function well in countries with hyperinflation and a long term precipitous decline in wages. However, their initial use in Mexico, Turkey and Ecuador has shown that they can add stability to the housing finance system by neutralizing significantly the negative effects of moderate inflation on mortgage lending[19].

Early experience with dual index loans suggests that because the dual indexed mechanism is so different from traditional ones that in some countries a shift to such an instrument will require a comprehensive reorganization of the repayment collection system. The use of a new software package, and reorientation of the staff may be needed so that underwriting requirements protect both lenders and borrowers. For example, borrowers whose real payments have been accelerated need to be told that their debt is terminated earlier. Even more important, loan terms need to be set so that the rescheduling period does not simply become a means of providing implicit subsidies. While there is no doubt that this system is more administratively complex, there is also no doubt that these higher administrative costs are but a fraction of the costs involved with providing either “affordable” fixed interest rate loans or partially indexed loans, and it can often be considerably less risky to use this approach than relying upon only a wage or price index instrument. In addition, if wage indices are politically rather than economically determined, as is the case in many countries, or these indices are not credible as may be the case in reforming socialist economies, different ways of payment smoothing may be appropriate.

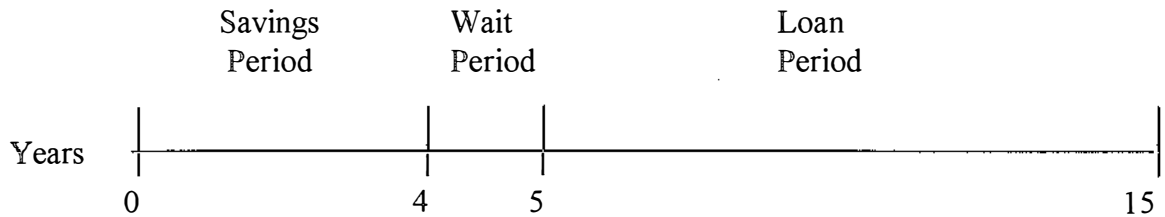
4.2. CONTRACTUAL SAVINGS FOR HOUSING

Contractual Savings for Housing (CSH) is a dedicated loan-linked form of saving. It links a phase of contractual savings remunerated below market to the promise of a housing loan at a rate also fixed below market at the time of contract signature. The contract can contain a variety of incentives and options. CSH are advocated on the basis of their positive historical record in continental Europe. They were originally designed decades ago to generate long-term funds to be specifically channeled into the housing sector at a time when long-term finance was not available and reconstruction was a national priority. In environments where savings were very low, CSH encouraged household savings with the help of government incentives. They have also been implemented in developing countries as well, often with very mixed results because financial conditions for their success were either not fully.[2]

In its simplest form, a CSH involves an agreement between a household and financial institution regarding the granting of a loan at a future date dependent on successful fulfillment of a savings contract. The household agrees to save either a prespecified total or a certain minimum amount each year. At the end of the savings period, the household becomes eligible for a loan the amount of which is dependent on the amount saved.

There are typically three distinct phases in the contract life as seen in the figure, the savings period leading up to qualification, the wait period after qualification until a loan is granted and the loan period. The actual time frames vary depending on the system and/or contract chosen.

Figure 4.9. Actual time frame for CSH



The loan maturity of 15 years for the CSH loan presented in figure is a maximum. Typical CSH loans are usually second loans of shorter maturity than typical market based main mortgage loans. In case of loans for renovation of existing housing units, loans are even shorter. The average maturity is closer to 10 years.

Although there are many possible CSH designs, two dominant models exist; the French Epargne-Logement and the German Bauspar. These two models differ substantially in their basic structure and options as shown in Appendix 11. This table provides general descriptions. In Germany, individual institutions may offer variants on the basic plans.

4.2.1. The Household Perspective

Why would a house hold enter into a savings contract for housing? What factors affect the potential demand for this type of financial contract? To be attractive, a CSH should provide credit that is cheaper on an all-in basis than alternative sources and/or provides features that are absent from competing alternatives. The cost of a

CSH to a household depends on the value of a complex set of loan, savings and subsidy characteristics, as well as non-housing options if available. The analysis must take into account the following factors:

The value of the below market loan which depends on the difference between the fixed rate on contract loan versus the expected future rate depending on the contract (i.e., whether there is a waiting period) and the dynamics of the scheme (i.e., the evaluation of deposits). The value to the household of this advantage can be expressed as the present value of the interest savings between the contract loan and expected market mortgage rate over the term of the loan. The loan maturity affects this calculation. CSH loans frequently have more rapid amortization than conventional mortgages in order to increase reflows of funds to meet new lender commitments.

The value of the interim loan (if offered). Borrowers who qualify for a contract saving loan may have to wait some period to obtain funds (if funds are dependent on the inflow of new savings and a waiting period is used to ration credit). An interim loan, made at or near market short term rates may be offered to bridge the period between completion and receipt of funds. This loan allows the household to purchase or renovate a house earlier and reduces the opportunity cost of below market rate savings. The alternative may be important to households in an inflationary environment.

The opportunity cost of below market rate savings reduces the value of the CSH to the household. The magnitude of this cost depends on the rate on the contract versus market rates for comparable maturity savings accounts. This cost can be expressed as the present value of the lost interest savings over the savings period.

The final financial element of value is the subsidy. The subsidy may be in the form of tax preferences for savings (e.g., tax free interest or tax credits) and/or

matching payments made by the government for individual accounts (bonuses). Subsidies increase the attractiveness of CSH by offsetting part of the opportunity cost of below market savings.

In deciding whether to participate in a CSH, the household is assumed to select the alternative that minimizes the cost of capital for home ownership. The borrower chooses a CSH contract in which he/she saves part of the contract amount and receives a loan for the balance, the annualized borrowing rate on a CSH loan can be expressed as in the following equation :

$$r_L = L \times r_C + I \times r_I + S \times [r_S - r_D]$$

where,

r_L : CSH effective loan rate

r_C : CSH contract loan rate

r_I : Intermediate loan rate where applicable

r_S : Market rate of savings (expected after tax yield to maturity)

r_D : CSH deposit rate (after tax) plus government bonus (if applicable)

L : Contract loan amount

I : Interim loan amount

S : Contract savings amount

In order to put everything on a comparable basis, r_I is calculated as the internal rate of return over the entire savings and loan period. Abstracting from the

value of the guaranteed loan option, the household would select the CSH if the all-in borrowing rate (r_L) is lower than the cost of alternative sources of finance.

Factors other than relative cost may affect household decisions to enter into CSH. The guarantee of a loan with favorable terms for the purchase or renovation of a house upon completion of the savings contract is one of the principal features of a CSH. The guarantee is an option as the household is not obligated to take the loan. This option is particularly valuable to those households with some doubt about their ability to qualify for a market rate loan in the future (e.g., lower income or self-employed households). Also, the CSH allows borrowers to demonstrate their credit worthiness through consistent savings behaviour, an important future if they lack a credit history. A savings contract may be appealing to some households because of its "forced" or targeted nature. Also, the earmarking of funds for housing through specialized institutions may be appealing to households with limited experience with or mistrust of existing financial institutions.

The CSH system developed at a time in which many households had limited mortgage borrowing alternatives. The guarantee of loan availability is attractive in and of itself but the availability of CSH funds were often required by first mortgage lenders. However the development of savings and loan alternatives through the private market, and the increased competition in the supply of mortgage funds fades the uniqueness of the CSH contracts. The government subsidy for savings is arguably the only remaining unique characteristic. As a result, the future growth of these systems may be determined more by their relative price (incorporating subsidies) than their specific features.

4.2.2. The Institution's Perspective

Lenders are attracted to CSH as a way to mobilize long term funds primarily to meet the mortgage loan demand of their clients. Ultimately lending institutions will provide CSH programs if they generate sufficiently high risk-adjusted returns on equity. The returns from CSH as well as the risks they present depend on the characteristics of the program, the lending institution and the macroeconomic environment. As financial institutions, CSH providers must manage financial risks of their portfolios. The three major financial risks are liquidity, interest rate and credit risk.

The principal risk for a specialized CSH lender is cash flow or liquidity risk. The possibility of a cash shortfall arises when the cash from new deposits and existing loan payoffs is insufficient to fund loan commitments (i.e., loans to savers who have satisfied their savings contracts).

The magnitude of liquidity risk is determined by three factors. The first factor is the duration of the loans and the savings deposits. To be affordable, housing loans (particularly for purchase) must have relatively long maturities (e.g., 15 years or more). The longer the amortization period the smaller the periodic cash flow and the greater the loan duration. A lending institution may attempt to match the loan duration by attracting non-borrowing savings and/or lengthening the minimum savings period. The second factor is the loan to savings multiple. The larger the multiple, the greater the liquidity risk. The third factor is the nature of the loan commitment. If the commitment is an option exercised by a qualified saver, the risk is greater than if the lender determines when the commitment is funded.

The greatest attraction of CSH instruments lies in their ability to lower credit risk. CSH provides a valuable signaling function. A successful contract saver has demonstrated the ability to budget and set aside a portion of income for savings for an extend period (many systems reward regular savings as well as larger portions of income saved). The saver has "signaled" that he is a reliable borrower by revealing the self discipline and motivation necessary to successfully complete a savings contract. Thus, lending to CSH savers may be less risky than lending to a random segment of the population. In addition, the existence of a substantial downpayment obtained through contract savings reduces the likelihood of default in the event of unforeseen circumstances impacting family income.

The attractiveness of CSH to financial institutions ultimately depends on the characteristics of the program (in particular the rate spread) and their ability to manage liquidity, interest rate and credit risk.

4.2.3. The Government Perspective

From the viewpoint of governments, the problem of CSH has been one of balancing the benefits of 1) housing output expansion, 2) expected higher savings rates, 3) the cost of budget subsidies and/or contingent liabilities, 4) the structural stability of the CSH system, 5) the potential distributive benefits of the system in light of the public resources involved. A final consideration is 6) the consistency of CSH systems with the development of market-based long-term finance and the liberalization of financial markets in increasingly open economies.

4.2.4. Inflation and CSH

The attractiveness of CSH to households will depend on the features, the cost of the savings and loan contracts. From a cost perspective, the attractiveness of a CSH loan depends critically on the inflation and interest rate environment. With a fixed rate structure the real value of accumulated savings and the affordability of housing (for a given loan size) is eroded by inflation. Thus the portion of the purchase price that can be funded with a CSH loan falls sharply. In order to purchase the house, the portion funded by a market rate loan rises accordingly. As a result, the payment-to-income ratio rises sharply. Conversely, as the inflation falls, the portion of the house price funded by a given CSH loan increases improving affordability. As expected, the longer the wait period the less attractive the contract.

CSH will not be attractive from a relative cost or affordability perspective to households living in countries with high inflation. However, the guarantee of a loan for which the household does not have to qualify at time of contract completion may have significant value. A CSH allows borrowers to demonstrate their credit worthiness through consistent savings behaviour which may substitute for the lack of credit history. Furthermore, if long-term fixed rate market alternatives do not exist, the CSH loan may appear to be attractive to the household relative to short-term fixed rate loan which would have to be refinanced at an uncertain future rate, or a variable rate loan. However, the problem remains that in an inflationary environment, the household would have to use these sources of credit as well to purchase a house (reflecting the fall in the CSH loan to value ratio with inflation).

An alternative to a fixed rate instrument in an inflationary environment is an

indexed contract. An indexed savings contract would significantly reduce the impact of inflation on the affordability of CSH loans by reducing the need for alternative credit. However, the potential negative amortization on the loans would greatly exacerbate the liquidity risk to providers.

CSH are appealing to lending institutions in developing countries as a vehicle to mobilize long term funds for housing. But can lenders earn acceptable returns offering such products? As in developed countries, the answer depends on the ability to manage risks inherent in CSH.

Interest rate risk can be a significant problem for institutions using fixed rate instruments in an inflationary environment. Some countries are considering the use of indexed contracts to deal with the problem of inflation. Several directions are possible. The easiest and most obvious one is to index both deposit and lending rates to short-term treasury rate of reference, with a negative margin from that reference rate for the deposit rate and a small positive margin for the lending rate. In Poland, more complex contracts patterned after the dual-indexed mortgage (DIM) instrument are apparently under consideration. The administrative complexity and commercial attractiveness of such indexed CSH products remains as yet entirely untested but DIM solution probably could exacerbate the liquidity risk of a CSH.

4.3. SECURITIZATION AND MORTGAGE-BACKED SECURITIES

4.3.1. Securitization

Securitization involves the pooling and repackaging of loans into securities that are then sold to investors. Like whole loan sales and participations, securitization provides an additional funding source and may eliminate assets from a loan originator's balance sheet. Unlike whole loan sales and participations, securitization is often used to market small loans that would be difficult to sell on a stand-alone basis[23].

It is not easy to securitize all kind of assets. Loan terms, borrower characteristics, and structures vary significantly. Also, the benefits to any individual firm from securitization depend upon each firm's particular situation and upon the type of asset securitized. The costs of securitizing are not same for different types of assets.

The riskiness of an asset backed security is the main determinant of its price. The riskier the security, the lower the price, and therefore the higher the yield. If the yield on the security is greater than the average yield on the underlying pool of loans, the benefits from securitizing may be eliminated. In addition, if securities are related below investment grade by the credit rating agencies, then regulated financial institutions usually will not invest in them because they have to justify such investments to their regulators.

Several options to decrease the riskiness of an issue are available to a

securities issuer. For asset backed bonds a high degree of overcollateralization will increase the safety of the bonds and decrease the required return. Another way to increase the safety of an issue is to insure the securities themselves.

When an issuer of asset backed securities uses a private firm to insure the loans or the portfolio underlying the securities, the issuer passes the default risk on to the insurer. The premium that the insurer charges is compensation for the default risk and the cost of evaluating the portfolio. The cost of evaluating complicated portfolios may eliminate the benefits of securitization. Therefore, the easier a portfolio is to evaluate, the more likely that it will be securitized.

A pool of loans will, of course, be securitized only if the benefits from doing so exceed the costs, and if the net benefits are greater than those from holding the assets on the balance sheet. Below Table 4.1. shows the costs and benefits of securitization.

Table 4.1. Costs and benefits of securitization

<i>Costs</i>	<i>Benefits</i>
• Private Insurance	• New Funding Source
• Information Costs	• Increased Liquidity
• Administrative Costs	• Increased Diversification
	• Protection from Interest Rate Fluctuation

The benefits from securitization include protection from interest rate risk (and sometimes prepayment risk), increased liquidity and diversification for original lenders

and for investors, A more efficient flow of capital from investors to borrowers, and creation of a new and less expensive funding source for original lenders. Securitization may enable institutions to attract long term funds more profitably than would be possible with conventional tools, and it can also provide the originator with a new source of fee income from originating and servicing the securitized assets.

The ability to evaluate the pool of loans that underlines a security issue, and therefore the securities themselves, seems to be the key to securitization (Table 4.2.). The credit characteristics of the underlying portfolio must be understandable to the credit rating agencies and to investors. Loans that are very large or that have complex credit characteristics are better suited for whole loan sales or loan participations. Other important credit characteristics for securitization include a well defined payment pattern and a sufficiently long maturity.

Table 4.2. The factors of ideal asset characteristics for securitization

- Understandable credit characteristics
- Well-defined payments pattern / predictable cash flows
- Average maturity of at least one year
- Low delinquency and low default rates
- Total amortization
- Diverse obligors
- High liquidation value

Mortgage loans are illustrative of characteristics that make a loan a prime candidate for securitization. Fixed rate mortgage loans are relatively homogenous

products and easy to evaluate. Also, the structures and terms of mortgage loans, at least fixed rate mortgage loans are similar. But there must be a secondary market for whole mortgage loans, and a wealth of data should be collected on mortgage loans. Data on delinquencies, prepayments, and changes in the value of collateral broken down by various demographic characteristics should be available.

4.3.2. Mortgage-Backed Securities

There are three basic types of mortgage backed securities; pass-through, mortgage-backed bonds, and pay-throughs.

4.3.2.1. Pass-Throughs

A pass-through represents direct ownership in a portfolio of mortgage loans. The portfolio is placed in trust, and certificates of ownership are sold to investors. The originator usually services the loans and collects interest and principal, passing them on, less a servicing fee, to the investors.

4.3.2.2. Mortgage-Backed Bonds

The second type of mortgage-backed security is the mortgage-backed bond

(MBB). Like the pass-through, the MBB is collateralized by a portfolio of mortgages. Sometimes an MBB is backed by a portfolio of mortgage pass-through securities. Unlike the pass-through, the MBB is a debt obligation of the issuer, so the portfolio of mortgages used as collateral remain on the issuer's books as assets and the mortgage-backed bonds are reported as liabilities. Also, the cash flows from the collateral are not dedicated to the payment of principal and interest on mortgage-backed securities. Mortgage-backed bonds have a stated maturity. Interest is generally paid semiannually, and principal is paid at maturity.

One important characteristic of mortgage-backed bonds is that they are usually overcollateralized. The collateral is evaluated quarterly, and if its value falls below the amount stated in the bond indenture, more mortgage loans or securities must be added to collateral.

4.3.2.3. Pay-Throughs

The third type of mortgage-backed security is the pay-through bond. This bond combines some of the features of the pass-through with some of those of the mortgage-backed bond. The bond is collateralized by a pool of assets and appears on the issuer's financial statements as debt. The cash flows from the assets, however, are dedicated to servicing the bonds in a way similar to that of pass-throughs.

4.3.3. Risks

As with any type of security, there are risks associated with mortgage-backed securities. The relevant types of risk are credit risk, prepayment risk, and interest rate risk.

4.3.3.1. Credit Risk

Credit risk is the risk of default. With mortgage-backed securities it is also the risk that the cash flows from the underlying mortgage loans will not support the timely payment of principal and interest due on the securities. Credit risk is generally not a major concern for most mortgage-backed securities issued. That is, credit quality is not important for federal agency pass-throughs and for mortgage-backed bonds and pay-throughs collateralized by federal agency mortgage securities. Credit risk is, however, an issue for private mortgage-backed securities. In assessing the credit quality of a pool of mortgage loans, Standard & Poor's has identified some key factors that affect credit quality. Table 4.3. shows these key factors and Standard & Poor's recommendations about these key factors.

Table 4.3. Key determinants of a mortgage pool's credit risk

<i>Factor</i>	<i>Comments</i>
1. Loan to value ratio	Higher LTV ratios are associated with increased risk.
2. Type of secured property	Single-family, detached units are the least risky; high-rise condominiums are the most risky.
3. Purpose of loan	If refinancing, those that remove equity are riskier than pure rate/term refinancing.
4. Lien status	Second mortgages are riskier than first mortgages.
5. Payment characteristics	Level-payment mortgage loans are less risky than increasing payment loans.
6 Geographic concentration	Increase in geographic concentration increase risk.
7. Seasoning	Seasoning decreases risk.
8. Pool size	Pools with fewer than 300 loans are considered riskier than pools with 300 or more.
9. Loan size	Loans greater than \$300,000 are considered riskier than smaller loans.
10. Loan maturity	Faster amortization makes 15-year loans less risky than 30-year loans.

4.3.3.2. Prepayment Risk

Prepayment risk is the risk that the obligors of the underlying mortgage loans prepay their loans at a greater than expected rate and therefore reduce the yield on the securities. Prepayment risk is a primary concern of investors in and issuers of mortgage-backed securities.

The value of a security is the discounted present value of its cash flows. When

the cash flows are certain, the value is fairly straightforward and easy to calculate, but when the cash flows are uncertain, determining the value is more difficult. Because mortgage loans include a call option (an option to prepay) the cash flows from mortgage loans are uncertain. This uncertainty leads to prepayment risk, which is of concern to investors and some issuers of mortgage-backed securities. Prepayment affects the yield and the actual life of mortgage pass-throughs. Also, prepayment may leave investors unexpectedly with funds to invest, at possibly lower rates. Similarly, faster than expected prepayment may expose issuers of mortgage-backed bonds to reinvestment risk. If underlying mortgage loans prepay faster than scheduled, issuers may have to reinvest the cash flows, possibly at rates lower than the coupons on the mortgage-backed debt.

4.3.3.3. Interest Rate Risk

Interest rate risk is the third type of risk that is important for mortgage-backed securities. Interest-rate risk is the price sensitivity of an asset to changes in market interest rates. Interest rate risk is usually measured by the duration of an asset. Duration is the average time to receipt of cash flows weighted by the present value of the cash flows. Duration is approximately equal to the percentage change in price for a given percentage change in market interest rates. In other words, it is the elasticity of price with respect to yield.

In this chapter we examined three types of instruments of the housing finance systems. These are mortgage tools, contractual savings and mortgage backed

securities. In chapter three we have mentioned about the problems occurring, when we try to meet the suitability criteria of all the participants at the same time. These three instruments will help us to eliminate most of the problems occurring.

Mortgage tools are the most important instruments that can establish the trade off between the borrowers' affordability and lenders' profitability. Especially third generation inflation proof mortgages give the best solution for affordability-real rate of return contradiction in a high and volatile inflationary environment. PLAMs could not solve the problem of affordability if the wages do not keep pace with inflation, but DIMs guarantee that the borrower always pays a predetermined portion of his wage until closure of the loan. The only problem with DIMs are that they are structured as open ended (they have no fix term). This open ended structure will not be attractive to borrowers since they face the prospects of extremely long payment schedules. In practice, the lender or some third party must assume the risk of unclosed outstanding balances at the end of the loan term.

Governments correct set of supporting actions and policies will absolutely eliminate the risk of unclosed outstanding balances. These actions and policies will be explained at the end of this chapter.

CSH will help borrowers to answer their need for saving the downpayment. Another important feature of CSH is that the contract loan amount will provide self discipline and motivation to the borrower which is necessary to complete the savings contract successfully.

The last instrument mortgage backed securities will help lenders to answer the need of liquidity and the problem of mismatching maturities.

The country cases studies show that the usefulness and sustainability of housing finance systems based on alternative instruments depend not only on the

characteristics of the loan products used, but also on the correct set of supporting actions and policies by government and financial institutions. Even indexed instruments are of little help when annual inflation rates consistently exceed 50 percent. This section outlines the key policy decisions that are required to provide the best opportunity for success with alternative mortgage instruments:

- The public sector plays a strong role in mobilizing funds for housing finance.
- Government carries a large share of the repayment risk associated with unforeseen changes in economic conditions.
- Economic policy must be consistent and credible to attract private participants.
- The system of indexation cannot be constantly adjusted to provide relief without eventually destabilizing the system.

There is a necessary role for government to play as a “guaranteeing” source of finance - mainly to provide financing for capitalized balances under the PLAM or DIM systems if private sources of liquidity dry up. In all of the cases examined, the government either act as a primary source of financing or was required to step in to provide liquidity to the system (It should be noted, however, that this intervention was often required because of other policy decisions that destabilized the system. In Mexico, the national housing trust fund is used to cover refinancing costs of interest capitalization (with consequent reduction in new originations). The success of this funding arrangements and the stability given to the housing finance system by this commitment has encouraged commercial banks to develop their own methods for financing their interest capitalization costs.

With all of the housing finance systems where the future path of repayments is not known with certainty there is the possibility that economic conditions will be such that large losses could be inflicted on lenders or borrowers. The lack of limitation on

such risk can severely reduce the attractiveness of housing finance. In Mexico, end-of-term assumption of outstanding balance appeared to be a key factor for both banks and their depositors (who want the confidence of knowing when their commitments ends) and borrowers (who do not want to be carrying debt which could be passed on for generations at least in theory). Similarly, in no case (except Colombia) private investors (either banks as lenders or depositors as sources of financing) will bear all risk associated with long term lending for housing.

In using an alternative mortgage instrument such as a PLAM or a DIM, the government trades a contingent liability in the future (over which it has influence in terms of the effects of monetary and fiscal policy) for current certain subsidies being paid for housing. These current subsidies can be very large when implicit subsidies are measured and very inefficient. This is especially true where subsidized interest loans which tend to have very high rates of subsidization but are limited to a few households are still being made. Thus, although the potential cost of assuming future risks may be high, it can be balanced by the reduction of current inefficient subsidies.

Explicit assumption of refinancing and end of term liabilities by government implies the need to face questions about how these liabilities will be financed: out of government current revenues (which could be hit by budget crunch at the time of greatest need) or through "housing trust fund" (which might be like the U.S. Social Security Trust Fund where the surplus exists only on paper). Most countries have relied on current funds or Central Bank intervention.

In all of the cases, the perception of government pursuing a credible stabilization and restructuring program was key to the success of the use of the alternative instrument. The Colombia and Mexico systems have worked so far because government appears committed to keeping inflation under control. The Brazil

and Chile systems failed when inflation levels rose and depositors no longer believed that the real value of their funds would be maintained.

The Mexican case has attractive features which show how the government acknowledged the link between economic policy and housing finance policy:

- Use of the minimum wage index for payments means government must recognize effects of letting real wages drop (increased capitalization of interest) or rise (faster payoff of loans but also the possibility of increased inflation).
- Use of present value formula for the outstanding balance implies the variation in the real cost of funds can be built into the repayment schedule. Thus, tighter monetary policy (which can raise real interest rates) implies greater end of term liability for the government as real repayments are slowed.

The cases show that the details of indexation are crucial to the successful use of alternative mortgage instruments, especially in high inflation environments where even indexation has difficulty in protecting the real value of assets. Small inconsistencies in the selection of indices or the timing of index adjustments used for assets and liabilities will be magnified as inflation rate increase and soon undermine the stability of the system.

These problems are often created by governments which seek to provide relief to borrowers who are being hard pressed by falling real wages. This was exactly the case in Israel in the 1960s, where inflation adjustments were moved from the price index to the cost of living index (a wage adjustment index) to a fixed inflation premium in response to political pressure from households. The acceleration of inflation in the 1970s caused the subsidy required from government to grow enormously, severely limiting the ability of housing finance and forcing a return to full indexation in 1979.

5. PARTICIPANTS OF THE HOUSING FINANCE SYSTEM IN TURKEY

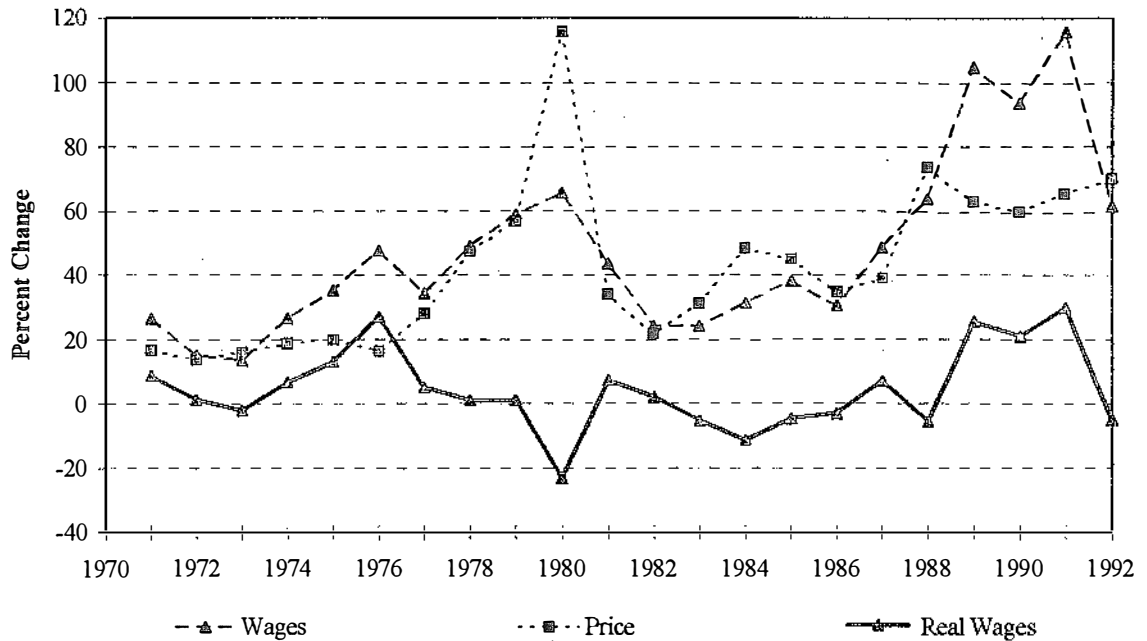
5.1. BORROWERS

The borrowers' demand for purchasing house could be affected by four factors from a financial point of view as explained before in chapter three. These are income level of the borrower, the portion of the monthly payments done from his income, amount of money he has saved, and the cost of borrowing. These factors should be viewed properly in order to understand the behavior of the borrower in Turkey.

Wages are the basic parameters representing the income levels. The relations between the change in yearly inflation and the change in wages are shown in Figure 5.1.

With in this period, inflation accelerated through 1970s starting from 7.3 percent, reaching its peak of 111.3 percent in 1980. Wages for the most part, raised even faster during the first decade. The inflation has been cut back in early 1980s to 30 percent, but during the second decade it still has not been brought under tight control and rose to 70 per cent in 1992. Despite the slowing of inflation, especially in the early 1980s, wages have grown even more slowly, pushing down real wages (see Appendix 12).

Figure 5.1. Relationship Among the Consumer Price and Wage Index



When it has been focused on the income levels, it is easy to follow the trends of this two decade period in Figure 5.1. The real gross income that was on the level of 14,601 TL at 1970 followed an upward trend all the way to 1979 (except at 1973) Where it reached its maximum of 25,883 TL with constant 1970 prices. This means, the ten years real increase in the gross wages was equal to 77.26 per cent with a yearly average of 6.57 per cent.

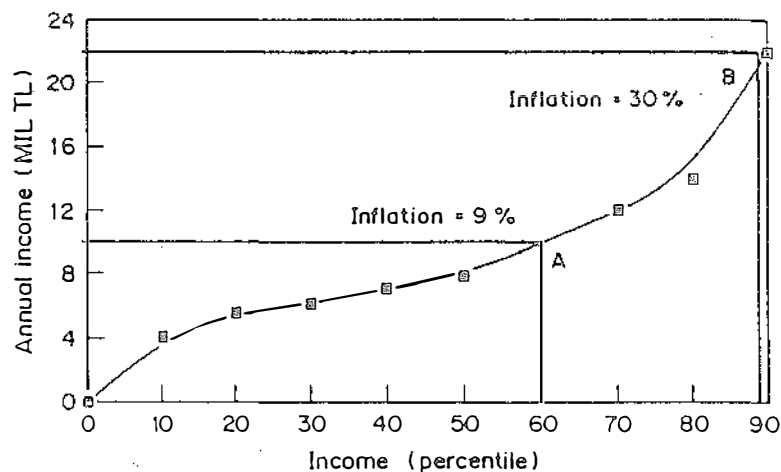
The second decade of the 1970-1992 period began with a sharp decrease in the real income level as the wage augmentation was far from the extremely high inflation rate of 1980. The erosion of the real income continued till 1988 with two exceptions in 1981 and 1987. Last two years of the decade was the recovery period for real wages and with more than 30 per cent increase in two years, they reached

21,780 TL in 1991 at 1970 constant prices. The history of the real wage during the study period is seen in Figure 5.1.

The analysis of the long term trends of the wages gives an overall real increase of 117.75 percent indicating a yearly average of 3.6 per cent over the inflation. It is important to note that this real increase in wages is crucial for the survival of any mortgage instruments, as the affordability of the borrower is measured by its level of real income.

Figure 5.2. shows the income group for which the fixed nominal payment mortgage instruments become unaffordable due to an increase in the rate of inflation[15]

Figure 5.2. Share of Turkish urban households able to afford mortgage repayments with different rates of inflation



The income distribution figures are for urban family income in Turkey for 1985. Point A represents the income level needed for buying a house that costs 2.5 times the median urban family income, if the household was able to make a 30% downpayment and could finance a 20 year fixed interest rate loan with 25% of their income. Interest rate of 15% on the loan, reflects a 6% real interest rate, and the slightly less than 9% inflation rate that characterized 1950-74 in Turkey. The income needed to qualify is slightly more than the median income level, the 60th percentile.

Point B, the 90th percentile, reflects the income level needed to finance a fixed interest rate loan that incorporates the higher inflation rates of more recent years. Instead of a 15% nominal interest rate, the appropriate nominal interest rate is 38%. The increase in inflation from nine to approximately 30% has, in the absence of contracts that adjust for the change in the distribution of real payments, priced home ownership beyond the ability to pay for most families. Hence, the absence of indexed mortgage contracts had priced all those between the 60th and 90th percentiles out of the housing market.

5.2. INSTITUTIONS AND THEIR APPLICATIONS

Housing finance has been provided predominantly by the state owned institutions in Turkey. In addition to a state owned bank which was established in 1926, social security institutions and pension funds have been engaged in housing finance since 1950. A radical change was introduced in 1984 which required much greater involvement of the state with the establishment of Mass Housing

Administration (TKİ). Substantial amounts of resources have been drawn into the housing sector during the last decade by the help of these institutions and the government. These institutions will be evaluated in terms of its sources, the financial instruments used and the ways in which credits have been allocated.

5.2.1. Banks and EKB as a Specialized Bank

The government aimed to create a specialized institution in housing finance by establishing a bank with the status of a state economic enterprise during the early years of the republic. It was reorganized in 1946 in order to increase its effectiveness and renamed as the Real Estate and Credit Bank (EKB). EKB has been functioning as a national bank, taking deposits and providing commercial credits as well as housing credits. It has developed many sites in large cities and built about 40,000 dwelling units as speculative ventures. Some of the housing credits of EKB were issued under a kind of contractual savings system until 1988[24].

EKB introduced this "Building Savings Program" to the citizens in 1963. Under this program individuals not currently owning a home may open a savings account to accumulate funds for home purchase. When they have accumulated 25 percent of the amount to be borrowed and the account has been open for at least two years, participants in the program become eligible for a fixed interest loan up to TL 37,500 at an average of 6 percent interest rate for 20 years. The bank continued this program until 1984 by changing the variables of the loan. After 1984 till 1988 the

bank served as a branch to TKİ for this type of loans (fixed interest rate fixed term loans).

The EKB has also served as a channel for government resources for various specialized housing programs. Until 1988, nine different housing credit programs were available, all of which offered concessionaire fixed interest rates. Typically, the EKB would originate such loans for a fee and service the loan portfolio. The flow of governmental resources has been the main reason why EKB was able to remain in mortgage finance business.

EKB has raised most of its resources through deposits. During the early 1980's it began to pay positive real interest rates, and deposits increased from TL 51 billion in 1981 to TL 235 billion in 1984. However, with the increasing nominal cost of funds, EKB was not able to provide affordable fixed payment mortgages or sustain positive real lending rates. This led to a sharp decline in housing loans and a sharp increase in commercial lending by EKB. By 1984 only 22 percent of EKB's outstanding loans were mortgage loans financed from its own resources, and all of these loans were at highly subsidized fixed lending rates.

Commercial banks, other than EKB, did not provide any finance for housing until 1987. Shortage of capital resources with respect to demand and high levels of inflation made it impossible to use short term savings for long term mortgages. The social security institutions which could provide wholesale finance for this purpose were encouraged by government to use their funds for housing finance under their own initiatives. The net credit advance for real estate by the banking sector, and cumulative real estate credits in total bank credits and cumulative bank credits, respectively, were about 1% before finance from tax revenues began in 1982. The effects of transfers from the national budget in 1982 and 1983, and the impact of the

TKF from 1984 onwards, have been substantial as the share of net real estate credits in net bank credits increased by about eight times between 1981 and 1984. Similarly, the contribution of the bank credits to housing investments increased from 1.9% in 1980 to 31.5% in 1985. In the 1985-87 period the TKF's contribution to real estate credits was more than 60%. However, as the financial problems of the TKF developed after 1987, net credit advance for real estate began to decrease. Once again the banking sector did not fill the gap created by the reduced contribution of tax revenues to housing finance.

The EKB which was renamed as the Property Bank (EB) after a merger with another state-owned bank, found a cheap financial source after 1987. It was the contribution of a fixed amount, on behalf of employees, by employers in both the public and the private sectors. The contribution was called the 'assistance for ownership of employees', and had many similarities with the income found in Brazil [6]. However, assistance for each employee has been too small with respect to the construction cost or the purchasing price of a dwelling unit (the construction cost of 1 square meter of housing can only be financed by 18 months of contributions on behalf of an employee. EB is supposed to invest the money in order to get returns compatible with inflation, and the TKI has to decide how the money will be used for housing purposes. There has not been much demand for this money from employers, not only because the amount that each employee can draw is too small, but also due to the fact that it cannot be used for the purchase or construction of housing with greater than 75 square meters of floor area. Employer contributions continue to accumulate in the EB, and the total amount in 1992 was as much as half of the deposits.

EB initiated a new type of housing mortgage in 1989 to finance either the purchase of newly built housing or to finance construction by owner builders. The duration of the mortgage was 5 years initially at a fixed monthly interest rate between 4.75% and 5.5%. The credit limits were low during the first three years which could finance only 20% to 30% of the purchasing price of a house. However, in the last quarter 1992 the EB lifted the limits to the amount that can be borrowed, set the fixed monthly interest rate at 5.5% (since it is not compounded, annual rate is 66% and the real interest rate in 1992 is 5%) and the duration was extended to a maximum period of 20 years. After the announcement of these conditions demand for this type of mortgage increased rapidly; the total number of mortgage increased rapidly; the total number of mortgages rose from 9,500 to 36,000 in 1992. In addition to these mortgages in Turkish Lira 9,000 people borrowed money which is indexed either to US dollars or German marks with 1% and 1.2% monthly interest rates, respectively.

The source of the new mortgage has been revealed to be the housing assistance money for employees which is deposited in the EB. In order to reduce the cost of this source, EB deposits this money in a six-monthly deposit account paying 48% annual interest when other banks offer between 68% and 76% interest rate for all six-monthly deposits. In other words, a big sum of money which is collected for a particular purpose but not used as intended, is first devalued and then used for financing mortgages, not necessarily of wage earners employed in the public and private sectors. The TKİ has opposed this practice but the EB, which is under the responsibility of the minister who is an influential member of the larger of the two parties that formed the present government, is determined to bring some relief to speculative builders who have been operating in a market with little credit support for

purchasers. However this would be a temporary relief since the accumulated money could hardly finance one-third of the annual housing output.

Commercial banks began to advance credits to house buyers in 1990 in the form of consumer credits. This is a rather expensive type of finance since the monthly compounded interest rate is 5.5% for a one year payment period, and it goes up to 6% for the maximum three year repayment period.

5.2.2. The Workers' Social Security Fund (SSK)

SSK was the second major source for housing credits between 1950 and 1984. Since 1960 it has financed 250,000 dwelling units through about 5000 cooperatives. SSK could advance credits to the building cooperatives established by people who were covered by its health insurance and pension schemes. Although SSK was not allowed to provide new credits after 1984 its financial commitments to the cooperatives have continued until 1990, which were promised finance before that time.

In the past a SSK loan covered most of the cost of the house. SSK offered two types of credits. For houses up to 85 square meters, the repayment period was 18 years, from 85-100 square meters (the maximum) it was only 14 years. The maximum loan was 900,000 TL. For the first 600,000 TL, the interest rate was 8%, for the next 300,000 TL, the rate was 15%. At one time SSK developed some of its own projects, but no longer. However, of the total 227,000 units financed to date by SSK, only 10,000 were developed by SSK. All loans were made for cooperative projects[15].

The stated reason for SSK's limit of 900,000 TL per loan was to spread around available funds. There were inconsistency here however. It lent at low rates of interest (up until it was only 4%), because housing was a social need. However, the proportion of SSK's resources going to its housing lending program was limited, because there was such a low rate of return. Because 900,000 TL covered such a small percentage of that years' housing cost (an average house cost of 3.5 million TL was cited), fewer and fewer people could afford the down payment.

To get a housing loan from SSK , the following conditions applied: 1) A person must be a contributor to the SSK to be eligible for a loan, 2) The individual must have paid into the fund for 5 years, 3) he should not already own a house and he must belong to a cooperative, 4) the cooperative must have at least 30 member families, 5) it must have land and plot sizes and 6) it must be at maximum utilization. It must also have the approval of the municipality.

5.2.3. Mutual Help Organization of Army Officers (OYAK)

Another source similar to SSK is the mutual Help Organization of Army Officers (OYAK). The organization has been giving credits since 1963 to officers who are either members of building cooperatives or about to purchase houses built by private producers as well as by the construction firm of the OYAK. Between 1963 and 1992 OYAK financed 55,000 dwelling units with fixed interest loans at 5% to 7% interest rate until 1984. Interest rates were gradually raised to 20% by 1990. The repayment period was reduced from 15 years to 10 years in 1983. The share of

OYAK credits in total private housing investment in the 1963-1980 period was about 1%.

5.2.4. Mass Housing Administration

A new housing finance system has been created under the direct control of government in order to take the housing sector out of crisis. Two successive mass housing laws were enacted, the first one by the military regime in 1981 and the second one in 1984 by the newly elected parliament. The first act required that at least 5% of the income of the national budget had to be transferred to a fund each year in order to finance construction and marketing of large scale housing projects to be produced on lands developed by the Ministry of Reconstruction and Resettlement (İİB). In other words, İİB would act both as the developer of publicly owned land and as a finance institution, providing credits to builders and purchasers of housing. However İİB did not carry out any project as defined in the law. The Ministry of Finance could transfer only 1.1% of the income of the budget in 1982 to the fund, and in the following year the transferred amount decreased to 0.7%. The money was used to provide finance for cooperatives which had already begun to build housing.

The second act replaced the first one, and required the creation of the Mass Housing Fund (TKF) as the principal source for housing credits. Financial responsibilities of the fund that was created in accordance with the first act were taken over by Mass Housing Administration (TKİ). Its income would come out of taxes like

charges on certain goods and services. The shares of major items in TKF's income in first four years were given in Table 5.1.

Table 5.1. Sources of Mass Housing Fund Revenues Percentages of Taxes Transferred (1984-1987)

<i>Sources</i>	<i>Percentage of Taxes Transferred</i>
Domestic Tobacco & Alcohol etc.	28.1
Fuel Oil Tax	26.7
Surcharge on Imports	18.4
Imported Alcohol, Tobacco etc.	9.9
Fees for Travel Abroad	6.0
Credit Repayments	5.4
Transfers for Interest Free Credit	3.0

The TKI has been a very centralized institution, in terms of both being a department of the Prime Ministry, and having been located in Ankara without any branch offices in other cities. The EB, together with two other commercial banks, have been dealing with credit payments and repayments under the instructions of the TKI. The banks have had to inspect construction sites as well, since most of the credits from the TKI have been to finance construction of housing by cooperatives, and payments are related to the progress of construction. Credits were for 15 years at

15% to 25% fixed interest rate. The interest rate variation was related to the size of the dwelling units, favoring small-sized ones.

The central position of the TKI makes it vulnerable to political pressures in making decisions on credit allocations. As substantial amounts of money accumulated in TKI, the number of dwelling units for which credits were allocated (or promised) rapidly increased in number. After taking over financial commitments to cooperatives in 1984 for which finance began from the replaced fund, TKI accepted credit applications for over 40% of housing that was given construction permits in 1985 and 1986. In the following year this ratio was about 30%, but nearly twice as many construction permits were issued in 1987 with 497 000 dwelling units was also twice the previous peaks 1979. Such a rapid revival of the housing sector was mainly due to the impression created by the government that credits would be available for every applicant. However the TKI was unable to meet its financial obligations by 1988. Consequently in 1989 only 28 000 new applicants were accepted which was equal to 6.7% of dwelling units that were given construction permits in that year [25].

In addition to over-commitments, four other causes of the bottleneck can be mentioned. First, is the decision of the parliament to divert 30% of the income of the TKI to the national budget in 1988 and in 1989. In the following two years, the budget's share was increased to 50%, and in 1993 the TKI administration will be able to use only credit repayments and the revenue from the sale of the housing that it has built. Second, the Government aims to reduce the public sector borrowing requirement from 12% to under 10% of the GNP in 1993. However, this also proves that tax revenue is not a reliable source for housing finance in developing countries [2]. Building housing estates on lands owned by the TKI was the third cause of the bottleneck. It began in 1987 and provided well paid contract resources of the TKI

quickly. The fourth cause was the rapid decrease in the values of outstanding credits and credit repayments since the real interest rates of credits, which were always negative, exceeded -50% in 1988 and 1989.

Under the pressure of financial difficulties, the TKI administration began to search for new terms for its credits during the middle of 1988. By June 1989 new terms, which were prepared in consultation with Federal National Mortgage Association were put into practice. A dual-indexed mortgage system replaced the fixed rate mortgage system, and the eligibility for credits would be determined in a contractual arrangement.

About 350 000 cooperative members were on the waiting list in June, 1989, and new credits had been given to them without being required to deposit money in a dealer bank. In fact members and managers of cooperatives fiercely opposed the contractual system when it was announced, on the grounds that a cooperative member has to save money in an account while financing the construction of his house (that is, making investment simultaneously) since credit payments would only begin after the construction reached a certain stage.

The dual-indexed mortgage was designed to operate in an inflationary environment in order to make credits accessible not only to high income but also to moderate and middle income people. The nominal balance of TKI credits is indexed to inflation, interest rate is also equated to the rate of inflation (the real interest rate is expected to be zero). The amount to be repaid monthly is accepted to be as much as 30% of the average wage in the public sector. The starting amount changes with the size of the dwelling unit. It is 0.75% of the borrowed amount if the size of the floor area is up to 60 square meters, and 1.50% if it is larger than 100 square meters. Indexation is carried out every six months, following wage increases in the public

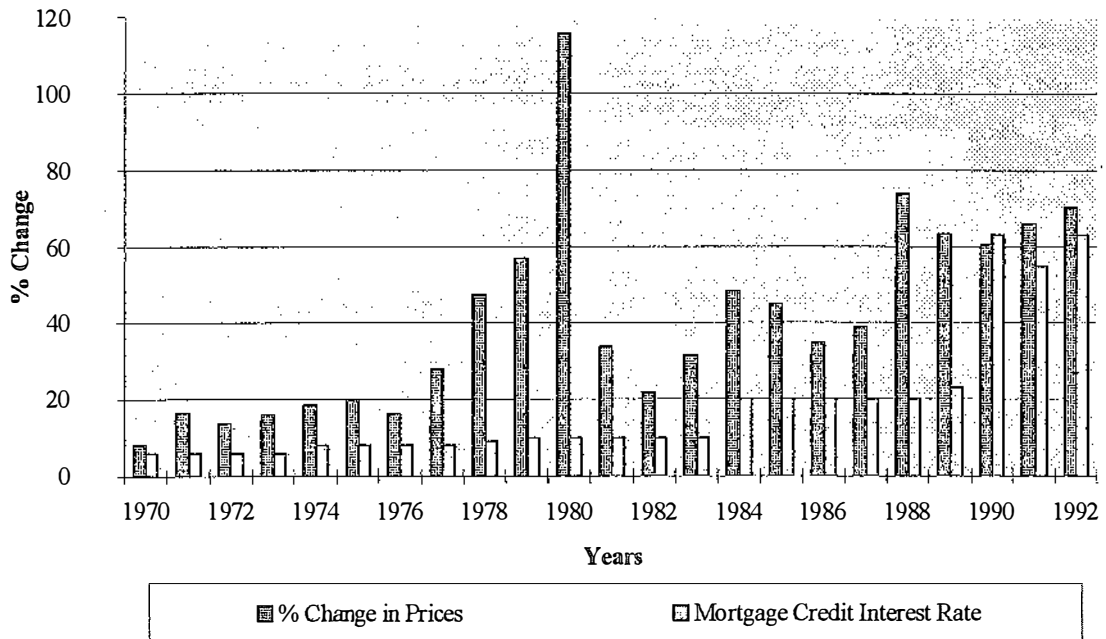
sector. The TKİ administration has determined the nominal interest rate as equal to the rise in repayments. It aims to avoid facing the problems which may arise if incomes (and repaid amounts) increase less than the rate of inflation [5]. The TKİ administration calculates that because of the six-monthly indexation, between 10% and 20% subsidy would be involved at the end of the repayment period. For this reason, between 10% and 35% discount is granted if the outstanding amount is paid at once. The cooperatives that were on the waiting list in June 1989 received dual-indexed credits.

Differences in their repayment conditions compared to credits given before that date caused many complaints by the people who began to repay under the new terms.

In addition to clearing the waiting list, some finance was provided in 1992 to cooperatives which needed assistance to finish the construction of houses which they were building. As mentioned above, no credit has been advanced from the TKİ since 1989 for the purchase of houses which are produced by speculative builders.

Until 1989 standard fixed rate mortgages were the only loan product in Turkey. The interest rates on SFRMs have not been tracking the inflation rates because of the governments mandatory implications. Governments tried to keep the interest rates low on SFRM credits in means of borrowers affordability. Interest rates were 4% in 1970 and raised up to 10% in 1984 providing borrowers affordability, also allowing households to use their own savings to finance their other consumption's.

Figure 5.3. Average Mortgage Credit Rates and Percent Change in Prices



In 1984 the interest rates on SFRM Credits raised to 20% which increased the cost of borrowing. Interest rate of 20% on SFRM Credits continued until 1990. We could conclude that SFRM Credits were affordable up to 1990 as banks saving deposit rates were always higher than the mortgage credit interest rates. Banks other than EKB has begun providing housing credits after 1987. By this way SFRM Credit rates were settled free. Implications of PLAMs and DIMs had also raised the mortgage credit rates after 1988. Commercial banks began to advance credits to house buyers in 1990 in the form of consumer credits. These consumer credits have been an expensive type of finance since the monthly compounded rates were 5.5%. Except DIM Credits, borrowers' affordability has declined after 1990. Investors stayed out of the housing finance sector as SFRM Credits has never offered a real rate of return.

Up to now we have pointed out the absence of indexed mortgage contracts in Turkey between years 1970 and 1989. What would have happened if indexed mortgage contracts were used in Turkey between these years? The answer of this question will be different for the type of index used.

ARMs that use indexes based on interest rate rather than the price level, allow lenders to shift the risk associated with changes in real interest rates onto borrowers. In Turkey between years 1970 to 1982 the real interest rates were negative. If ARMs as a loan product had been used in Turkey payments would have been affordable to households. However, the negative real interest rate provided negative internal rate of return to the lenders.

Table 5.2. Comparison of FRM, PLAM and DIM Credits

	Fixed Rate Mortgage	Price Level Adjusted Mortgage	Dual Index Mortgage
Interest Rate	6%	6%	6%
Loan Term	15 Years	15 Years	16 Years
Max. Payment to Income Ratio	0.28	0.33	0.25
Min. Payment to Income Ratio	0.00	0.20	0.25
Lender's Real IRR	- 6.804	6.000	6.000

The use of third generation mortgages in Turkey would have been preferable for both borrowers and lenders in 1970s. A comparison for DIM, PALM and FRM Credits is given below for a loan amount of 50,000 TL with a contract valid through 1970. A house of 100 m² that costs 35,000 TL was available for house buyers and the annual income of an government official was 14,601 TL in 1970.

The comparison shows that access to DIM Credits would have been more rational for the participants of housing finance in Turkey in 1970s. Table 5.2. shows that governments provided unnecessary relief to house buyers causing negative returns to investors with the use of FRM Credits. Fixed payment to income ratio makes DIM Credits more suitable than PLAMs protecting borrowers against any unexpected shocks. In light of these results a new model will be proposed in Chapter 6 for Turkey as a country facing high and uncertain inflation.

6. A PROPOSAL FOR HOUSING FINANCE SYSTEM IN TURKEY

6.1. OBJECTIVES

The objective of the proposed housing finance model is to solve the housing finance problems in financial markets. In high and volatile inflationary environments it is important to mobilize funds to housing finance by developing new finance tools that can eliminate the inflation related problems. Volunteer savings will be easily attracted to housing finance sector by the help of these developed finance tools. In particular, these developed finance tools will help protecting the real value of lenders' resources outstanding and providing an adequate return, while ensuring continued access to credit for borrowers on terms that make housing finance affordable.

6.2. PROPOSED MODEL

The model is based on the simultaneous use of two financial tools together. These are Dual Index Mortgage Credits and Mortgage Backed Securities. DIM Credits solve the affordability problem of the house buyers on payments while ensuring a real rate of return to the lenders. The house buyer pays a predetermined portion of his income every month and his payments will be indexed to the

government officials' salaries. This way the model makes payments affordable to the borrowers. At the same time the outstanding loan balance will be revalued every six month with an inflation index (with CPI) in order to provide a real rate of return to the lenders and investors. A Dual Index system safeguards the interests of both groups while providing for continued lending activities.

The Mortgage Backed Securities are the second tool of our model that help to find sources from out of government budgets for housing finance. The securities originated will be based up on the DIM credits. These securities will provide a continued access to credit for borrowers and will also solve the liquidity problem of the lenders. If required these securities will be sold to a third party in order to increase the liquidity. A secondary mortgage market will be formed increasing the mobilization of funds to the housing finance sector. Below the use of these tools will be explained for house buyers, intermediary financial institutions and for investors.

6.2.1. House Buyers (Borrowers)

House buyers will promise to pay a predetermined portion of government officials' salary every month for a predetermined period in order to own the house. The predetermined period will be 20 years in our suitable model for Turkey. In this case, the house buyer will settle in his house and will pay back the loan every month with a predetermined portion of his salary for 20 years. In other words, the house buyer will rent his house in order to own the house.

The house buyer should not have to be a government official to be able to use this kind of credit but his monthly income must be equal or higher than an official's

salary and must guarantee his ability to pay back the loan for 20 years. In our model, the base salary will be 75,000,000 TL. This amount can be earned by an official with a status of (6/1). This status will be the base for revaluating the payments.

The financial instruments are indexed promissory notes or indexed leasing contracts. These indexed promissory notes must be mortgaged contracts. The intermediary financial institutions must have the right to sell the house in case of defaults. In both types of contracts, life insurance must be one of the requirements. In case of death of the borrower, his life insurance will have to continue to do the payments.

Most of the inflation risks will be eliminated as these instruments are indexed. Payments will be indexed to government officials' salaries and it is obvious that salaries will be protected against inflation. The elimination of inflation risk will pull down the interest rates to international interest rate levels.

6.2.2. Intermediary Financial Institutions

The institution will securitize the indexed promissory notes or indexed leasing contracts. In other words, institution will originate mortgage backed securities and will sell these securities to the investors. The mortgage backed securities will be securities that are indexed to government officials' salaries. These securities will be sold as *Salary Income Certificates*.

Intermediary Financial Institutions may face with problems while securitizing the indexed leasing contracts. Total amortization is one of the important factors of ideal mortgage credit characteristics for securitization. Total amortization of these

contracts may cause to extend the maturity period, specially if increase in government officials' salaries does not keep pace with increase in inflation. In order to prevent the losses of institutions against this kind of maturity extensions, governments should guarantee the exceeding maturity payments after 20 years.

In return of the services, the intermediary financial institutions will get a 0.01 real interest rate earning over the outstanding balances of the contracts. The discounted earnings of intermediary financial institutions for a 20 year contract will be 0.11 of the house price. In other words, the Npv of IFI earnings is 1,369,170,000 TL for every 10 salary income certificate sold.

6.2.3. Governments

In high and volatile inflationary environments, governments always act as primary source of financing. The model not only creates new sources that are out of government budgets, but also diminishes the aggregate levels of interest rate subsidies needed to eliminate the effects of inflation on housing affordability. The only necessary role for governments is to play as a guaranteeing source of finance mainly to provide financing for capitalized balances if the maturity exceeds 20 years.

As it is mentioned above, these kind of extensions in maturity occur only if the increase in government's official' salaries do not keep pace with increase in inflation. Governments must deal with balancing the increase in salaries and inflation as this problem can cause rebellions among socioeconomic groups. Of course, Intermediary Financial Institutions will ensure to keep maturity before 20 years by adding this unbalancing risk factor into account in their calculations and it is known that in

Turkey, governments provided 3% yearly real salary increase on the average in the past 22 years. In the worst case, governments will guarantee to make the exceeding maturity payments in which the amount paid by the government, would be lower than the amount of interest rate subsidies.

6.2.4. Investors

Each of these salary income certificates will provide a 10% portion of government officials' salary to the investor as a monthly income for 20 years. For example, if the investor buys 10 certificates, he will get base salary of an official' s (with a certain status) for 20 years. In every six months, the investors will get real returns and yearly rate of return will be 3%

The salary income certificates are providing attractive features to the investors in a country where there is lack of instruments providing real returns.

Legally, there is no problem in originating these kind of certificates as capital market regulations involve origination of asset-backed securities.

In order to gain a real rate of return, the investors must not sell the certificates for six months. The investors can sell the certificates in secondary markets and prices can be determined in capital markets. This is another important feature of the model.

6.2.5. A Sample for the Proposed Model

The basic model is based on some parameters. By means of assumptions, these parameters are fixed. From Appendix 15, the reader can learn more about the relations between the changing parameters and the loan terms of the basic model. The only assumption made in Appendix 15 is that increase of real salaries are favourable for the model. The case of uncertainty of real salaries must be investigated in a future research. Also, the case of considering inflation as a new parameter should be discussed if changes in real salaries are assumed to be different than zero percent. In our model, it is assumed that the governments will provide real increases in salaries and this assumption is actually a rational rate.

6.2.5.1. Assumptions

The salary standard in the presented example is the salary earned by a government official with a status of first step of the sixth level (6-1) in Turkey. It is not required from the borrower to earn the salary himself. It is accepted to be sufficient if the borrower guarantees to do the payments for 20 years.

Governments must deal with balancing the increases in salaries and prices. Here, it is assumed that salaries and prices will be increased with the same amount. Also, revaluation of the outstanding loan balances will be done in every six months with salary increases and revaluation index will be the consumer price index.

The last assumption of our model is that governments will be a guaranteeing source of finance mainly to provide financing for capitalized balances of the maturities exceed 20 years.

6.3. CONCLUSION

The house buyer can buy a house which costs 4,350,000,000 TL as he promises to pay 35% of his salary each month. It is important here to point out that the borrower will settle in his house and will pay back the loan every month instead of paying rent. The payment will be 26,250,000 TL in order to buy a house that costs 4,350,000,000 TL. As the house price increases the borrower should have to pay more from his salary (see Appendix 18). Recently married pairs can buy a house that costs up to 10,580,000,000 TL if two them are working. 85% of the payments will be affordable for them as they will be living in their own house.

The investor who bought an income salary certificate will gain an income of one tenth of the base salary fore 20 years every month. These income salary certificates will be sold at 1,244,700,00 TL and will return 3% real interest to the investors. In order to gain the real rate of return, the investor must hold the certificate at least six months. The investors can also sell the certificates in secondary mortgage markets if they need money.

Under these assumptions net present value of the earnings of intermediary financial institutions will be 1,368,000,000 TL for a whole salary income certificate. This amount will be enough for their operational costs and profit.

Table 6.1. An example for the proposed model

HOUSE BUYER	
BASE SALARY (6/1)	75,000,000 TL
MONTHLY PAYMENT / SALARY	0.35
MONTHLY PAYMENT	26,250,000 TL
HOUSE PRICE	4,350,000,000 TL
INVESTORS	
INVESTMENT FOR WHOLE SALARY INCOME	12,447,000,000 TL
WHOLE SALARY INCOME	75,000,000 TL
INVESTMENT FOR 10% SALARY INCOME	1,244,700,000 TL
INTERMEDIARY FINANCIAL INSTITUTION	
NPV OF IFI EARNINGS PER WHOLE SALARY INCOME CERTIFICATE	1,368,000,000 TL
NPV OF IFI EARNINGS / HOUSE PRICE	0.11

In Table 6.1. the results are given for a house that costs 4,350,000,000 TL. Results for different house prices are given in Appendix 18. Also, detailed monthly payment plans are shown in Appendix 17.

The model provides the suitability criteria of participants in every way. The model is protecting the real value of lenders outstanding resources and providing an adequate return, while ensuring continued access to credit for borrowers on terms that make housing finance affordable.

It is observed that the model works perfectly in high and volatile inflationary environments. In Appendix 16, payment plans of two same contracts under two different price and salary levels are given. These two payment plans show that the model works perfectly in high and volatile inflationary environments.

The indexation is an important factor for improving the model. The indexes must be unbiasedly selected and calculated. Also, timing of index adjustments is very important. Officials salaries are increased by governments in every six months but continuous devaluation creates a little inflation sensitivity. For future researches, uncertainty of real salaries and indexation timing should be discussed.

Appendix 1

Credit Subsidies Implied by Different Interest Rate Terms

Interest Rate Charged	Expected inflation rate	Real interest rate	Subsidy rate needed to eliminate tilt
15%	15%	8%	32%
15%	30%	8%	58%
20%	40%	8%	56%
20%	40%	6%	63%
25%	30%	10%	33%
30%	30%	8%	25%
* 30%	40%	8%	40%

* Detailed example is given below

Loan Amount	100
Loan Term	15
Interest Rate	30%
Annuity	30.60
Inflation Rate Realized	15%
Expected Inflation Rate	40%
Real Interest Rate	8%
Discount Rate	51%
NPV	-40

Years	Yearly Nominal Payments	% Inflation	Discounted Nominal Payments
0	0	0	0
1	31	0.15	20.236625
2	31	0.15	13.384011
3	31	0.15	8.8518594
4	31	0.15	5.8544044
5	31	0.15	3.8719606
6	31	0.15	2.5608205
7	31	0.15	1.6936643
8	31	0.15	1.1201484
9	31	0.15	0.7408389
10	31	0.15	0.4899728
11	31	0.15	0.3240561
12	31	0.15	0.2143228
13	31	0.15	0.1417479
14	31	0.15	0.0937486
15	31	0.15	0.062003

Appendix 2

**Percentage of Interest and Principle Within The Payment
(30 Years, 10 Percent Interest Rate, SFRM Loan)**

Years	Yearly Payment	Interest	Principal	Share of Interest Paid	Share of Equity Owned
1	11	10	1	0.94	0.06
2	11	10	1	0.94	0.06
3	11	10	1	0.93	0.07
4	11	10	1	0.92	0.08
5	11	10	1	0.92	0.08
6	11	10	1	0.91	0.09
7	11	10	1	0.90	0.10
8	11	9	1	0.89	0.11
9	11	9	1	0.88	0.12
10	11	9	1	0.86	0.14
11	11	9	2	0.85	0.15
12	11	9	2	0.84	0.16
13	11	9	2	0.82	0.18
14	11	9	2	0.80	0.20
15	11	8	2	0.78	0.22
16	11	8	3	0.76	0.24
17	11	8	3	0.74	0.26
18	11	8	3	0.71	0.29
19	11	7	3	0.68	0.32
20	11	7	4	0.65	0.35
21	11	7	4	0.61	0.39
22	11	6	4	0.58	0.42
23	11	6	5	0.53	0.47
24	11	5	5	0.49	0.51
25	11	5	6	0.44	0.56
26	11	4	7	0.38	0.62
27	11	3	7	0.32	0.68
28	11	3	8	0.25	0.75
29	11	2	9	0.17	0.83
30	11	1	10	0.09	0.91

Appendix 3

Remaining Balance of Traditional Fixed Rate Mortgages
With Different Nominal Interest Rate
(30 Year SFRM Loan)

Year	With 1% Interest	With 10% Interest	With 20% Interest	With 40% Interest	With 80% Interest
0	100.00%	100.00%	100.00%	100.00%	100.00%
1	97.13%	99.39%	99.92%	100.00%	100.00%
2	94.22%	98.72%	99.81%	100.00%	100.00%
3	91.29%	97.99%	99.69%	99.99%	100.00%
4	88.33%	97.18%	99.55%	99.99%	100.00%
5	85.34%	96.29%	99.37%	99.98%	100.00%
6	82.31%	95.31%	99.16%	99.97%	100.00%
7	79.26%	94.23%	98.91%	99.96%	100.00%
8	76.18%	93.05%	98.60%	99.94%	100.00%
9	73.07%	91.74%	98.24%	99.92%	100.00%
10	69.92%	90.31%	97.80%	99.88%	100.00%
11	66.75%	88.73%	97.28%	99.84%	100.00%
12	63.54%	87.00%	96.65%	99.77%	100.00%
13	60.30%	85.09%	95.90%	99.68%	100.00%
14	57.03%	82.99%	94.99%	99.54%	99.99%
15	53.72%	80.68%	93.91%	99.36%	99.99%
16	50.39%	78.15%	92.60%	99.10%	99.97%
17	47.02%	75.35%	91.04%	98.74%	99.95%
18	43.61%	72.28%	89.16%	98.24%	99.91%
19	40.17%	68.90%	86.91%	97.53%	99.84%
20	36.70%	65.18%	84.20%	96.55%	99.72%
21	33.19%	61.09%	80.96%	95.16%	99.50%
22	29.65%	56.59%	77.07%	93.23%	99.09%
23	26.07%	51.64%	72.40%	90.52%	98.37%
24	22.46%	46.20%	66.79%	86.72%	97.06%
25	18.81%	40.21%	60.07%	81.41%	94.71%
26	15.12%	33.63%	51.99%	73.97%	90.47%
27	11.40%	26.38%	42.31%	63.56%	82.85%
28	7.63%	18.41%	30.68%	48.98%	69.14%
29	3.84%	9.64%	16.74%	28.57%	44.44%
30	0.00%	0.00%	0.00%	0.00%	0.00%

Appendix 4

Payment Plan for Growing Equity Mortgages
(30 Years, 10 Percent Interest Rate, 3 Percent Graduation Rate)

Graduation Rate	0.03
Interest rate (percent)	0.10
Loan Term (years)	30
Loan Amount	100

Years	Payment	Interest	Principal	Loan Balance
0	0.00	0.00	0.00	100.00
1	10.61	10.00	0.61	99.39
2	10.93	9.94	0.99	98.41
3	11.25	9.84	1.41	96.99
4	11.59	9.70	1.89	95.10
5	11.94	9.51	2.43	92.67
6	12.30	9.27	3.03	89.64
7	12.67	8.96	3.70	85.94
8	13.05	8.59	4.45	81.48
9	13.44	8.15	5.29	76.19
10	13.84	7.62	6.22	69.97
11	14.26	7.00	7.26	62.71
12	14.68	6.27	8.41	54.30
13	15.12	5.43	9.69	44.61
14	15.58	4.46	11.12	33.49
15	16.05	3.35	12.70	20.79
16	16.53	2.08	14.45	6.35
17	6.98	0.63	6.35	0.00

Appendix 5

Comparison of Growing Equity and Fixed Rate Mortgages (30 Year, 10 Percent Interest Rate)

Years	Growing Equity Mortgage (3 Percent Graduation Rate)				Fixed Rate Mortgage			
	Yearly Payment	Interest Payment	Principal Payment	Loan Balance	Yearly Payment	Interest Payment	Principal Payment	Loan Balance
0	0	0	0	100	0	0	0	100
1	10.61	10.00	0.61	99.39	10.61	10.00	0.61	99.39
2	10.93	9.94	0.99	98.41	10.61	9.94	0.67	98.72
3	11.25	9.84	1.41	96.99	10.61	9.87	0.74	97.99
4	11.59	9.70	1.89	95.10	10.61	9.80	0.81	97.18
5	11.94	9.51	2.43	92.67	10.61	9.72	0.89	96.29
6	12.30	9.27	3.03	89.64	10.61	9.63	0.98	95.31
7	12.67	8.96	3.70	85.94	10.61	9.53	1.08	94.23
8	13.05	8.59	4.45	81.48	10.61	9.42	1.18	93.05
9	13.44	8.15	5.29	76.19	10.61	9.30	1.30	91.74
10	13.84	7.62	6.22	69.97	10.61	9.17	1.43	90.31
11	14.26	7.00	7.26	62.71	10.61	9.03	1.58	88.73
12	14.68	6.27	8.41	54.30	10.61	8.87	1.73	87.00
13	15.12	5.43	9.69	44.61	10.61	8.70	1.91	85.09
14	15.58	4.46	11.12	33.49	10.61	8.51	2.10	82.99
15	16.05	3.35	12.70	20.79	10.61	8.30	2.31	80.68
16	16.53	2.08	14.45	6.35	10.61	8.07	2.54	78.15
17	6.98	0.63	6.35	0	10.61	7.81	2.79	75.35
18					10.61	7.54	3.07	72.28
19					10.61	7.23	3.38	68.90
20					10.61	6.89	3.72	65.18
21					10.61	6.52	4.09	61.09
22					10.61	6.11	4.50	56.59
23					10.61	5.66	4.95	51.64
24					10.61	5.16	5.44	46.20
25					10.61	4.62	5.99	40.21
26					10.61	4.02	6.59	33.63
27					10.61	3.36	7.25	26.38
28					10.61	2.64	7.97	18.41
29					10.61	1.84	8.77	9.64
30					10.61	0.96	9.64	0

Appendix 6

**Payment Plan for Graduated Payment Mortgages
(30 Years, 10 Percent Interest Rate)
(3 Percent Graduation Rate, 5 Years Graduation)**

Graduation Rate	0.03
Number of Graduation Periods	5
Interest rate (percent)	0.10
Loan Term (years)	30
Loan amount (TL)	100

Years	Yearly Payment	Interest Payment	Principal Payment	Loan Balance
0	0	0	0	100
1	9.49	10.00	-0.51	100.51
2	9.78	10.05	-0.28	100.78
3	10.07	10.08	-0.01	100.79
4	10.37	10.08	0.29	100.50
5	10.68	10.05	0.63	99.87
6	11.00	9.99	1.02	98.86
7	11.00	9.89	1.12	97.74
8	11.00	9.77	1.23	96.51
9	11.00	9.65	1.35	95.16
10	11.00	9.52	1.49	93.67
11	11.00	9.37	1.64	92.04
12	11.00	9.20	1.80	90.24
13	11.00	9.02	1.98	88.26
14	11.00	8.83	2.18	86.08
15	11.00	8.61	2.39	83.69
16	11.00	8.37	2.63	81.05
17	11.00	8.11	2.90	78.16
18	11.00	7.82	3.19	74.97
19	11.00	7.50	3.51	71.46
20	11.00	7.15	3.86	67.61
21	11.00	6.76	4.24	63.36
22	11.00	6.34	4.67	58.70
23	11.00	5.87	5.13	53.57
24	11.00	5.36	5.65	47.92
25	11.00	4.79	6.21	41.71
26	11.00	4.17	6.83	34.88
27	11.00	3.49	7.51	27.36
28	11.00	2.74	8.27	19.10
29	11.00	1.91	9.09	10.00
30	11.00	1.00	10.00	0

Appendix 7

Payment Plan for Fully Graduated Payment Mortgages
 (30 Years, 10 Percent Interest Rate, 3 Percent Graduation Rate)

Graduation Rate	0.03
Interest Rate (percent)	0.10
Loan Term (years)	30
Loan Amount	100

Years	Yearly Payments	Interest Payment	Principal Payment	Loan Balance
0	0	0	0	100
1	8.13	10.00	-1.87	101.87
2	8.37	10.19	-1.81	103.68
3	8.63	10.37	-1.74	105.42
4	8.89	10.54	-1.66	107.08
5	9.15	10.71	-1.56	108.64
6	9.43	10.86	-1.44	110.07
7	9.71	11.01	-1.30	111.37
8	10.00	11.14	-1.14	112.51
9	10.30	11.25	-0.95	113.46
10	10.61	11.35	-0.74	114.20
11	10.93	11.42	-0.49	114.69
12	11.26	11.47	-0.21	114.90
13	11.59	11.49	0.10	114.80
14	11.94	11.48	0.46	114.34
15	12.30	11.43	0.86	113.47
16	12.67	11.35	1.32	112.15
17	13.05	11.22	1.83	110.32
18	13.44	11.03	2.41	107.91
19	13.84	10.79	3.05	104.86
20	14.26	10.49	3.77	101.09
21	14.69	10.11	4.58	96.52
22	15.13	9.65	5.47	91.04
23	15.58	9.10	6.48	84.56
24	16.05	8.46	7.59	76.97
25	16.53	7.70	8.83	68.14
26	17.02	6.81	10.21	57.93
27	17.54	5.79	11.74	46.19
28	18.06	4.62	13.44	32.75
29	18.60	3.27	15.33	17.42
30	19.16	1.74	17.42	0

Appendix 8

Comparison of Fully Graduated Payment and Fixed Rate Mortgages
(30 Year, 10 Percent Interest Rate)

Years	Fully Graduated Payment Mortgage (3 Percent Graduation Rate)				Fixed Rate Mortgage			
	Yearly Payment	Interest Payment	Principal Payment	Loan Balance	Yearly Payment	Interest Payment	Principal Payment	Loan Balance
0	0	0	0	100	0	0	0	100
1	8.13	10.00	-1.87	101.87	10.61	10.00	0.61	99.39
2	8.37	10.19	-1.81	103.68	10.61	9.94	0.67	98.72
3	8.63	10.37	-1.74	105.42	10.61	9.87	0.74	97.99
4	8.89	10.54	-1.66	107.08	10.61	9.80	0.81	97.18
5	9.15	10.71	-1.56	108.64	10.61	9.72	0.89	96.29
6	9.43	10.86	-1.44	110.07	10.61	9.63	0.98	95.31
7	9.71	11.01	-1.30	111.37	10.61	9.53	1.08	94.23
8	10.00	11.14	-1.14	112.51	10.61	9.42	1.18	93.05
9	10.30	11.25	-0.95	113.46	10.61	9.30	1.30	91.74
10	10.61	11.35	-0.74	114.20	10.61	9.17	1.43	90.31
11	10.93	11.42	-0.49	114.69	10.61	9.03	1.58	88.73
12	11.26	11.47	-0.21	114.90	10.61	8.87	1.73	87.00
13	11.59	11.49	0.10	114.80	10.61	8.70	1.91	85.09
14	11.94	11.48	0.46	114.34	10.61	8.51	2.10	82.99
15	12.30	11.43	0.86	113.47	10.61	8.30	2.31	80.68
16	12.67	11.35	1.32	112.15	10.61	8.07	2.54	78.15
17	13.05	11.22	1.83	110.32	10.61	7.81	2.79	75.35
18	13.44	11.03	2.41	107.91	10.61	7.54	3.07	72.28
19	13.84	10.79	3.05	104.86	10.61	7.23	3.38	68.90
20	14.26	10.49	3.77	101.09	10.61	6.89	3.72	65.18
21	14.69	10.11	4.58	96.52	10.61	6.52	4.09	61.09
22	15.13	9.65	5.47	91.04	10.61	6.11	4.50	56.59
23	15.58	9.10	6.48	84.56	10.61	5.66	4.95	51.64
24	16.05	8.46	7.59	76.97	10.61	5.16	5.44	46.20
25	16.53	7.70	8.83	68.14	10.61	4.62	5.99	40.21
26	17.02	6.81	10.21	57.93	10.61	4.02	6.59	33.63
27	17.54	5.79	11.74	46.19	10.61	3.36	7.25	26.38
28	18.06	4.62	13.44	32.75	10.61	2.64	7.97	18.41
29	18.60	3.27	15.33	17.42	10.61	1.84	8.77	9.64
30	19.16	1.74	17.42	0	10.61	0.96	9.64	0

Appendix 9

**Payment Plan for Price Level Adjusted Mortgages
(15 Years, 6 Percent Interest Rate)**

LOAN TERMS (Base year: 1970)	
Average cost of house (TL)	33,201
Annual household income (TL)	14,601
Share of Income to housing (percent)	0.32
Interest rate (percent)	0.06
Loan Term (years)	15
Loan amount (TL)	50,000

Year	Nominal				Real		Payment/Income (percent)	
	Yearly Payments	Interest Payments	Principal Payments	Inflation Adjustment	Loan Balance	Yearly Payments		Loan Balance
	0	0	0	0	50,000	0	50,000	
1971	5,998	3,495	2,503	8,250	55,747	5,148	47,852	0.32
1972	6,818	3,802	3,016	7,626	60,358	5,148	45,575	0.32
1973	7,906	4,199	3,707	9,633	66,284	5,148	43,161	0.33
1974	9,379	4,718	4,661	12,349	73,972	5,148	40,603	0.31
1975	11,233	5,316	5,918	14,624	82,679	5,148	37,891	0.27
1976	13,075	5,774	7,301	13,551	88,929	5,148	35,016	0.21
1977	16,729	6,827	9,902	24,856	103,883	5,148	31,969	0.20
1978	24,627	9,176	15,451	49,043	137,475	5,148	28,739	0.20
1979	38,617	12,934	25,682	78,100	189,892	5,148	25,315	0.20
1980	83,258	24,564	58,694	219,515	350,714	5,148	21,686	0.26
1981	111,491	28,178	83,313	118,927	386,328	5,148	17,839	0.24
1982	135,919	28,258	107,660	84,644	363,312	5,148	13,761	0.24
1983	178,584	28,641	149,942	114,044	327,414	5,148	9,439	0.25
1984	265,018	29,153	235,865	158,468	250,017	5,148	4,857	0.28
1985	384,144	21,744	362,400	112,383	0	5,148	0	0.30

Total real payments (constant 1970 TL)	403,701
Lender's real IRR (percent)	6.000

Appendix 10

Payment Plan for Dual Index Mortgages (15 Years, 6 Percent Interest Rate)

LOAN TERMS (Base year: 1970)	
Average cost of house (TL)	33,201
Annual household income (TL)	14,601
Share of Income to housing (percent)	0.25
Interest rate (percent)	0.06
Loan Term (years)	15
Loan amount (TL)	50,000

Year	Nominal					Real		Payment/ Income (percent)
	Yearly Payments	Interest Payment	Principal Payment	Inflation Adjustment	Loan Balance	Yearly Payments	Loan Balance	
1971	0	0	0	0	50,000	0	50,000	
1972	4,618	3,494	1,124	8,227	57,102	3,000	49,035	0.25
1973	5,317	3,856	1,461	7,156	62,798	2,942	47,920	0.25
1974	6,032	4,367	1,665	9,987	71,120	2,875	46,824	0.25
1975	7,631	4,986	2,645	11,973	80,447	2,809	45,333	0.25
1976	10,330	5,778	4,552	15,848	91,743	2,720	43,190	0.25
1977	15,273	6,440	8,833	15,596	98,507	2,591	39,636	0.25
1978	20,533	7,548	12,985	27,286	112,808	2,378	35,544	0.25
1979	30,572	9,889	20,683	52,004	144,129	2,133	31,084	0.25
1980	48,538	13,689	34,848	84,027	193,308	1,865	26,336	0.25
1981	80,397	24,496	55,901	214,959	352,366	1,580	22,730	0.25
1982	115,439	28,943	86,495	130,023	395,894	1,364	18,654	0.25
1983	143,605	30,737	112,868	116,393	399,419	1,119	14,544	0.25
1984	178,467	30,867	147,600	115,033	366,851	873	10,372	0.25
1985	234,503	33,765	200,738	195,898	362,011	622	6,672	0.25
1986	323,693	30,713	292,979	149,873	218,905	400	2,853	0.25
1987	319,285	18,073	301,213	82,308	0	171	0	0.19

Total real payments (constant 1970 TL)	440,727
Lender's real IRR (percent)	6.000

Appendix 11

Comparison of French Epargne-Logement and German Bauspar

FEATURES	Epargne-Logement (PEL) (France)	Bauspar (Germany)
Provider	Commercial and Savings Banks	Specialized institution
1. SAVING PHASE		
Initial Savings Deposit	Small minimum	No minimum
Minimum Annual Savings	Yes. Early deposits are rewarded	No, but preference will be given to regular savers
Minimum Total Savings	Initial + annual + interest	Preset by saver in contract
Maximum Savings Amount	Yes	No
Savings Interest Rate	Competitive after-tax yield	Below market after-tax yield
Savings Liquidity	Yes. Moreover contract transferable to relative.	No. Therefore existence of "interim" loans.
Government Incentives: 1. Tax-free yield ? 2. Interest subsidy ?	1. Full interest tax free 2. State interest subsidy ("interest premium") based on interest paid by the bank. Ceiling of FF10,000.	1. Full interest tax-free 2. Income targeted interest subsidy, but only for housing loan.
2. WAITING PHASE		
Minimum Waiting Period	4 years (except 1981-1992 : 5 years) Some contract benefits extended on request. 10 year limit since 1992.	2 years
3. LOAN PHASE		
Date of Loan Availability	Right to loan immediately at the end of the savings phase, with option to call loan extensible up to 10 years.	After waiting period of uncertain duration.
Maximum Loan Amount	Loan such that interest paid on loan equals 2.5 times interest earned in savings. ceiling of FF400,000.	Multiple of contracted savings amount (1- 1.5 times)
Loan Term	2 to 15 years at borrower's option, but constrained by interest rules.	6 to 15 years at borrower's option: rules give preference to shorter term loans
Loan Rate	Contract deposit are paid by bank plus regulated servicing fee.	Minimum spread of 2% over saving rate.
Loan Payment	Level	Level
Loan Servicing Fee	1.70% of outstanding principal	2% spread

4. CONTRACT OPTIONS		
On state Interest Subsidy	State interest subsidy have ranged from 4/9 to 2/7 of bank interest on savings available after contract maturity <i>with or without</i> loan.	State subsidy is part of the contract.
On Transfer of Rights	Mature contract benefits can be transferred to relative to improve subsidy+ maturity of a loan.	Limited transfer.
On Uses of the Loan	Purchase of new unit, existing unit, new secondary residence, rehabilitation, energy retrofit, housing REIT(since 1993)	Purchase, construction, rehabilitation.
On Timing of Loan	Once contract matures, up to saver responding to market conditions. Right to a loan can be extended to 10 years.	Up to lender, but actually according to prespecified queuing rules.
On Tax Free Interest	Bank-paid contract interest remains tax free beyond the 10 year limit.	Not applicable.

Appendix 12

Economical Parameters Used in Simulation Analysis

Year	Cost of House Production (TL)	Annual Income (TL) (*)	Consumer Price Index (**)	Percent Change in Wages	Percent Change in Prices	Constant Gross Wages (***)	Constant Real Wages (****)	Percent Change in Real Wages
1970	33,120	14,601	100.00			14,601	9,491	
1971	36,673	18,471	116.50	26.51	16.50	15,855	10,306	8.59
1972	39,100	21,266	132.44	15.13	13.68	16,057	10,437	1.28
1973	46,872	24,129	153.57	13.46	15.96	15,712	10,213	(2.15)
1974	69,842	30,524	182.19	26.50	18.63	16,754	10,890	6.64
1975	97,536	41,318	218.20	35.36	19.77	18,936	12,308	13.02
1976	103,296	61,092	253.97	47.86	16.39	24,055	15,636	27.04
1977	127,104	82,131	324.95	34.44	27.95	25,275	16,429	5.07
1978	293,733	122,287	478.36	48.89	47.21	25,564	16,617	1.14
1979	517,700	194,151	750.11	58.77	56.81	25,883	16,824	1.25
1980	837,900	321,587	1,617.25	65.64	115.60	19,885	12,925	(23.17)
1981	1,107,006	461,754	2,165.66	43.59	33.91	21,322	13,859	7.23
1982	1,392,930	574,421	2,640.15	24.40	21.91	21,757	14,142	2.04
1983	2,015,928	713,869	3,468.90	24.28	31.39	20,579	13,376	(5.41)
1984	2,955,330	938,013	5,147.84	31.40	48.40	18,221	11,844	(11.46)
1985	4,587,030	1,294,770	7,461.80	38.03	44.95	17,352	11,279	(4.77)
1986	7,315,804	1,689,156	10,045.07	30.46	34.62	16,816	10,930	(3.09)
1987	10,042,780	2,513,136	13,947.58	48.78	38.85	18,018	11,712	7.15
1988	19,731,804	4,119,588	24,226.94	63.92	73.70	17,004	11,053	(5.63)
1989	30,054,420	8,437,332	39,555.33	104.81	63.27	21,330	13,865	25.44
1990	48,241,488	16,354,032	63,407.19	93.83	60.30	25,792	16,765	20.92
1991	95,097,856	35,268,960	105,255.94	115.66	66.00	33,508	21,780	29.92
1992	170,364,678	56,926,320	179,040.36	61.41	70.10	31,795	20,667	(5.11)

(*) Annual gross income and wage series are derived from SIS data on average wages for manufacturing in both state and private sectors.

(**) Price series are calculated as a weighted average based on population, of consumer prices of Ankara, İstanbul and İzmir.

(***) The base year for the calculation of constant wages is taken as the end of year 1970 in order to work with smooth and complete data.

(****) The net income is assumed to be 65 percent of the gross income during the period.

Appendix 13
Average Mortgage Credit Interest Rates
and
% Change in Prices

Years	(% Change in Prices)	Average Mortgage Credit Interest Rates
1970	(8.130)	6
1971	16.500	6
1972	13.680	6
1973	15.960	6
1974	18.630	8
1975	19.770	8
1976	16.390	8
1977	27.950	8
1978	47.210	9
1979	56.810	10
1980	115.600	10
1981	33.910	10
1982	21.910	10
1983	31.390	10
1984	48.400	20
1985	44.950	20
1986	34.620	20
1987	38.850	20
1988	73.700	20
1989	63.270	23
1990	60.300	63
1991	66.000	55
1992	70.100	63

Appendix 14

Payment Plan for Fixed Rate Mortgages
(15 Years, 6 Percent Interest Rate)

LOAN TERMS (Base year: 1970)	
Average cost of house (TL)	33,201
Annual household income (TL)	14,601
Share of Income to housing (percent)	0.28
Interest rate (percent)	0.06
Loan Term (years)	15
Loan amount (TL)	50,000

Years	Nominal				Real		
	Yearly Payments	Interest Payments	Principal Payments	Loan Balance	Yearly Payments	Loan Balance	Payment/ Income (percent)
1970	0	0	0	50,000	0	50,000	
1971	5,148	3,000	2,148	47,852	4,419	41,075	0.28
1972	5,148	2,871	2,277	45,575	3,887	34,412	0.24
1973	5,148	2,734	2,414	43,161	3,352	28,104	0.21
1974	5,148	2,590	2,558	40,603	2,826	22,287	0.17
1975	5,148	2,436	2,712	37,891	2,359	17,365	0.12
1976	5,148	2,273	2,875	35,016	2,027	13,788	0.08
1977	5,148	2,101	3,047	31,969	1,584	9,838	0.06
1978	5,148	1,918	3,230	28,739	1,076	6,008	0.04
1979	5,148	1,724	3,424	25,315	686	3,375	0.03
1980	5,148	1,519	3,629	21,686	318	1,341	0.02
1981	5,148	1,301	3,847	17,839	238	824	0.01
1982	5,148	1,070	4,078	13,761	195	521	0.01
1983	5,148	826	4,322	9,439	148	272	0.01
1984	5,148	566	4,582	4,857	100	94	0.01
1985	5,148	291	4,857	0	69	0	0.00

Total real payments (constant 1970 TL)	23,286
Lender's real IRR (percent)	(14.589)

Appendix 15

Relations Between Changing Parameters of the Basic Model and the Loan Terms

House Price/ Yearly Income	First Months Salary / House Price	Monthly Payments / Salary	Real Interest Rate Applied						
			0%	1%	2%	3%	4%	6%	10%
12	0.006944444	0.25	-	-	-	-	-	-	-
		0.30	-	-	-	-	-	-	-
		0.35	34.33	-	-	-	-	-	-
		0.40	30.00	35.67	-	-	-	-	-
		0.50	24.00	27.50	32.67	-	-	-	-
		0.60	20.00	22.33	25.50	30.33	39.33	-	-
		0.75	16.00	17.50	19.33	21.75	25.33	31.25	-
		1.00	12.00	12.83	13.75	14.92	16.33	18.17	-
11	0.007575758	0.25	-	-	-	-	-	-	-
		0.30	36.75	-	-	-	-	-	-
		0.35	31.50	37.75	-	-	-	-	-
		0.40	27.58	32.17	-	-	-	-	-
		0.50	22.08	24.92	29.00	35.67	-	-	-
		0.60	18.33	20.33	22.83	26.50	32.50	-	-
		0.75	14.67	15.92	17.42	19.33	21.92	25.92	-
		1.00	11.00	11.67	12.50	13.33	14.50	15.83	-
10	0.008333333	0.25	-	-	-	-	-	-	-
		0.30	33.33	-	-	-	-	-	-
		0.35	28.58	33.67	-	-	-	-	-
		0.40	25.08	28.83	34.58	-	-	-	-
		0.50	20.00	22.33	25.50	30.33	39.33	-	-
		0.60	16.67	18.25	20.25	23.00	27.17	34.58	-
		0.75	13.33	14.33	15.50	17.00	18.92	21.67	-
		1.00	10.00	10.58	11.17	11.92	12.75	13.83	33.00
9	0.009259259	0.25	36.00	-	-	-	-	-	-
		0.30	30.00	35.67	-	-	-	-	-
		0.35	25.75	29.75	36.00	-	-	-	-
		0.40	22.50	25.50	29.83	37.17	-	-	-
		0.50	18.00	19.92	22.33	25.75	31.33	-	-
		0.60	15.00	16.33	17.83	19.92	22.75	27.17	-
		0.75	12.00	12.83	13.75	14.92	16.33	18.17	-
		1.00	9.00	9.50	10.00	10.50	11.17	11.92	20.75
8	0.010416667	0.25	32.00	38.58	-	-	-	-	-
		0.30	26.67	31.08	38.00	-	-	-	-
		0.35	22.92	26.00	30.50	38.25	-	-	-
		0.40	20.00	22.33	25.50	30.33	39.33	-	-
		0.50	16.00	17.50	19.33	21.75	25.33	31.25	-
		0.60	13.33	14.33	15.50	17.00	18.92	21.67	-
		0.75	10.67	11.33	12.00	12.83	13.92	15.17	-
		1.00	8.00	8.42	8.75	9.17	9.67	10.25	15.25
7	0.011904762	0.25	28.00	32.92	-	-	-	-	-
		0.30	23.33	26.58	31.42	-	-	-	-
		0.35	20.00	22.33	25.50	30.33	39.33	-	-
		0.40	17.50	19.25	21.58	24.75	29.67	39.67	-
		0.50	14.00	15.08	16.42	18.17	20.42	23.67	-
		0.60	11.67	12.42	13.33	14.33	15.67	17.33	-
		0.75	9.33	9.83	10.33	11.00	11.67	12.50	23.50
		1.00	7.00	7.33	7.58	7.92	8.25	8.67	11.67

House Price/ Yearly Income	First Months Salary / House Price	Monthly Payments / Salary	Real Interest Rate Applied						
			0%	1%	2%	3%	4%	6%	10%
6	0.013888889	0.25	24.00	27.50	32.67	-	-	-	-
		0.30	20.00	22.33	25.50	30.33	39.33	-	-
		0.35	17.17	18.83	21.00	24.00	28.58	37.33	-
		0.40	15.00	16.33	17.83	19.92	22.75	27.17	-
		0.50	12.00	12.83	13.75	14.92	16.33	18.17	-
		0.60	10.00	10.58	11.17	11.92	12.75	13.83	33.00
		0.75	8.00	8.42	8.75	9.17	9.67	10.25	15.25
		1.00	6.00	6.25	6.42	6.67	6.92	7.17	9.00
5	0.016666667	0.25	20.00	22.33	25.50	30.33	39.33	-	-
		0.30	16.67	18.25	20.25	23.00	27.17	34.58	-
		0.35	14.33	15.42	16.83	18.67	21.08	24.58	-
		0.40	12.50	13.42	14.42	15.67	17.25	19.42	-
		0.50	10.00	10.58	11.17	11.92	12.75	13.83	33.00
		0.60	8.33	8.75	9.17	9.58	10.17	10.75	16.83
		0.75	6.67	6.92	7.17	7.50	7.75	8.17	10.67
		1.00	5.00	5.17	5.33	5.50	5.58	5.75	6.83
4	0.020833333	0.25	16.00	17.50	19.33	21.75	25.33	31.25	-
		0.30	13.33	14.33	15.50	17.00	18.92	21.67	-
		0.35	11.50	12.17	13.00	14.00	15.25	16.83	-
		0.40	10.00	10.58	11.17	11.92	12.75	13.83	33.00
		0.50	8.00	8.42	8.75	9.17	9.67	10.25	15.25
		0.60	6.67	6.92	7.17	7.50	7.75	8.17	10.67
		0.75	5.33	5.50	5.67	5.83	6.00	6.25	7.50
		1.00	4.00	4.17	4.25	4.33	4.42	4.50	5.08
3	0.027777778	0.25	12.00	12.83	13.75	14.92	16.33	18.17	-
		0.30	10.00	10.58	11.17	11.92	12.75	13.83	33.00
		0.35	8.58	9.00	9.42	9.92	10.50	11.17	18.08
		0.40	7.50	7.83	8.17	8.50	8.92	9.42	13.33
		0.50	6.00	6.25	6.42	6.67	6.92	7.17	9.00
		0.60	5.00	5.17	5.33	5.50	5.58	5.75	6.83
		0.75	4.00	4.17	4.25	4.33	4.42	4.50	5.08
		1.00	3.00	3.08	3.17	3.17	3.25	3.33	3.58
2	0.041666667	0.25	8.00	8.42	8.75	9.17	9.67	10.25	15.25
		0.30	6.67	6.92	7.17	7.50	7.75	8.17	10.67
		0.35	5.75	5.92	6.08	6.33	6.50	6.75	8.33
		0.40	5.00	5.17	5.33	5.50	5.58	5.75	6.83
		0.50	4.00	4.17	4.25	4.33	4.42	4.50	5.08
		0.60	3.33	3.42	3.50	3.58	3.58	3.67	4.08
		0.75	2.67	2.75	2.75	2.83	2.83	2.92	3.17
		1.00	2.00	2.08	2.08	2.08	2.17	2.17	2.25

* (-) indicates the loan terms which exceed 40 years

Appendix 16. Monthly Payment Plan of The Proposed Model Case 1

Principal Loan Amount (TL)	3,110,000,000
Yearly Real Interest Rate	4%
Monthly Real Interest Rate	0.33%
Salary (TL)	75,000,000
Prefixed Repayment Salary Ratio	0.25
Loan Term	20
First Months Salary / House Price	0.0241158
NPV of I.F.I. Revenues (TL)	345,590,138
NPV of I.F.I. Revenues / House Price	0.11

Months	NOMINAL								REAL			
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer Price	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	Discounted I.F.I. Revenues
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL
0	0	0	0	0	0	0.000	0	3,110,000	0		3,110,000	
1	0	75,000	18,750	10,181	8,569	0.000	0	3,101,431	18,750	10,181	3,101,431	2,545
2	0	75,000	18,750	10,153	8,597	0.000	0	3,092,835	18,750	10,153	3,092,835	2,538
3	0	75,000	18,750	10,125	8,625	0.000	0	3,084,210	18,750	10,125	3,084,210	2,531
4	0	75,000	18,750	10,097	8,653	0.000	0	3,075,557	18,750	10,097	3,075,557	2,524
5	0	75,000	18,750	10,069	8,681	0.000	0	3,066,875	18,750	10,069	3,066,875	2,517
6	0	75,000	18,750	10,040	8,710	0.000	0	3,058,165	18,750	10,040	3,058,165	2,510
7	0.225	91,856	22,964	12,262	10,702	0.225	687,307	3,734,770	18,750	10,012	3,049,427	2,503
8	0	91,856	22,964	12,227	10,737	0.000	0	3,724,033	18,750	9,983	3,040,660	2,496
9	0	91,856	22,964	12,192	10,772	0.000	0	3,713,260	18,750	9,954	3,031,864	2,489
10	0	91,856	22,964	12,156	10,808	0.000	0	3,702,453	18,750	9,926	3,023,040	2,481
11	0	91,856	22,964	12,121	10,843	0.000	0	3,691,610	18,750	9,897	3,014,187	2,474
12	0	91,856	22,964	12,085	10,879	0.000	0	3,680,731	18,750	9,868	3,005,304	2,467
13	0.225	112,500	28,125	14,758	13,367	0.225	827,225	4,494,589	18,750	9,839	2,996,393	2,460

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL	Real Loan Balance (000) TL	
	14	0	112,500	28,125	14,714	13,411	0.000	0	4,481,178	18,750	9,809	
15	0	112,500	28,125	14,670	13,455	0.000	0	4,467,724	18,750	9,780	2,978,482	2,445
16	0	112,500	28,125	14,626	13,499	0.000	0	4,454,225	18,750	9,751	2,969,483	2,438
17	0	112,500	28,125	14,582	13,543	0.000	0	4,440,682	18,750	9,721	2,960,454	2,430
18	0	112,500	28,125	14,538	13,587	0.000	0	4,427,094	18,750	9,692	2,951,396	2,423
19	0.304	146,682	36,671	18,897	17,774	0.304	1,345,130	5,754,451	18,750	9,662	2,942,308	2,416
20	0	146,682	36,671	18,839	17,832	0.000	0	5,736,619	18,750	9,632	2,933,191	2,408
21	0	146,682	36,671	18,780	17,890	0.000	0	5,718,729	18,750	9,603	2,924,043	2,401
22	0	146,682	36,671	18,722	17,949	0.000	0	5,700,780	18,750	9,573	2,914,866	2,393
23	0	146,682	36,671	18,663	18,008	0.000	0	5,682,772	18,750	9,543	2,905,658	2,386
24	0	146,682	36,671	18,604	18,067	0.000	0	5,664,706	18,750	9,512	2,896,421	2,378
25	0.304	191,250	47,813	24,179	23,633	0.304	1,721,167	7,362,239	18,750	9,482	2,887,153	2,371
26	0	191,250	47,813	24,102	23,710	0.000	0	7,338,529	18,750	9,452	2,877,855	2,363
27	0	191,250	47,813	24,024	23,788	0.000	0	7,314,741	18,750	9,421	2,868,526	2,355
28	0	191,250	47,813	23,947	23,866	0.000	0	7,290,875	18,750	9,391	2,859,167	2,348
29	0	191,250	47,813	23,868	23,944	0.000	0	7,266,931	18,750	9,360	2,849,777	2,340
30	0	191,250	47,813	23,790	24,022	0.000	0	7,242,908	18,750	9,329	2,840,356	2,332
31	0.378	263,620	65,905	32,684	33,221	0.378	2,740,752	9,950,439	18,750	9,299	2,830,905	2,325
32	0	263,620	65,905	32,575	33,330	0.000	0	9,917,109	18,750	9,268	2,821,422	2,317
33	0	263,620	65,905	32,466	33,439	0.000	0	9,883,670	18,750	9,237	2,811,909	2,309
34	0	263,620	65,905	32,357	33,548	0.000	0	9,850,122	18,750	9,205	2,802,365	2,301
35	0	263,620	65,905	32,247	33,658	0.000	0	9,816,464	18,750	9,174	2,792,789	2,294
36	0	263,620	65,905	32,137	33,768	0.000	0	9,782,695	18,750	9,143	2,783,182	2,286
37	0.378	363,375	90,844	44,145	46,699	0.378	3,701,820	13,437,816	18,750	9,111	2,773,543	2,278
38	0	363,375	90,844	43,992	46,852	0.000	0	13,390,964	18,750	9,080	2,763,873	2,270
39	0	363,375	90,844	43,839	47,005	0.000	0	13,343,959	18,750	9,048	2,754,171	2,262
40	0	363,375	90,844	43,685	47,159	0.000	0	13,296,800	18,750	9,016	2,744,438	2,254
41	0	363,375	90,844	43,530	47,313	0.000	0	13,249,486	18,750	8,985	2,734,672	2,246
42	0	363,375	90,844	43,375	47,468	0.000	0	13,202,018	18,750	8,953	2,724,875	2,238
43	0.449	526,580	131,645	62,632	69,013	0.449	5,929,524	19,062,528	18,750	8,921	2,715,045	2,230
44	0	526,580	131,645	62,406	69,239	0.000	0	18,993,289	18,750	8,888	2,705,184	2,222
45	0	526,580	131,645	62,179	69,466	0.000	0	18,923,823	18,750	8,856	2,695,290	2,214
46	0	526,580	131,645	61,952	69,693	0.000	0	18,854,129	18,750	8,824	2,685,363	2,206

Months	NOMINAL								REAL			
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	Discounted
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price	(000) TL	(000) TL	Payments	Interest	Balance	I.F.I. Revenues
47	0	526,580	131,645	61,724	69,922	0.000	0	18,784,208	18,750	8,791	2,675,405	2,198
48	0	526,580	131,645	61,495	70,150	0.000	0	18,714,057	18,750	8,759	2,665,413	2,190
49	0.449	763,088	190,772	88,781	101,991	0.449	8,405,188	27,017,255	18,750	8,726	2,655,389	2,181
50	0	763,088	190,772	88,447	102,324	0.000	0	26,914,931	18,750	8,693	2,645,332	2,173
51	0	763,088	190,772	88,112	102,659	0.000	0	26,812,271	18,750	8,660	2,635,242	2,165
52	0	763,088	190,772	87,776	102,995	0.000	0	26,709,276	18,750	8,627	2,625,119	2,157
53	0	763,088	190,772	87,439	103,333	0.000	0	26,605,943	18,750	8,594	2,614,963	2,148
54	0	763,088	190,772	87,101	103,671	0.000	0	26,502,272	18,750	8,561	2,604,774	2,140
55	0.517	1,157,279	289,320	131,580	157,739	0.517	13,690,414	40,034,946	18,750	8,527	2,594,551	2,132
56	0	1,157,279	289,320	131,064	158,256	0.000	0	39,876,690	18,750	8,494	2,584,295	2,123
57	0	1,157,279	289,320	130,546	158,774	0.000	0	39,717,916	18,750	8,460	2,574,005	2,115
58	0	1,157,279	289,320	130,026	159,294	0.000	0	39,558,623	18,750	8,427	2,563,682	2,107
59	0	1,157,279	289,320	129,505	159,815	0.000	0	39,398,807	18,750	8,393	2,553,325	2,098
60	0	1,157,279	289,320	128,981	160,338	0.000	0	39,238,469	18,750	8,359	2,542,934	2,090
61	0.517	1,755,101	438,775	194,814	243,961	0.517	20,269,616	59,264,123	18,750	8,325	2,532,509	2,081
62	0	1,755,101	438,775	194,015	244,760	0.000	0	59,019,363	18,750	8,291	2,522,050	2,073
63	0	1,755,101	438,775	193,214	245,561	0.000	0	58,773,802	18,750	8,257	2,511,556	2,064
64	0	1,755,101	438,775	192,410	246,365	0.000	0	58,527,437	18,750	8,222	2,501,028	2,056
65	0	1,755,101	438,775	191,604	247,172	0.000	0	58,280,265	18,750	8,188	2,490,466	2,047
66	0	1,755,101	438,775	190,794	247,981	0.000	0	58,032,284	18,750	8,153	2,479,869	2,038
67	0.581	2,775,059	693,765	300,389	393,376	0.581	33,724,814	91,363,722	18,750	8,118	2,469,238	2,030
68	0	2,775,059	693,765	299,101	394,664	0.000	0	90,969,059	18,750	8,084	2,458,571	2,021
69	0	2,775,059	693,765	297,809	395,956	0.000	0	90,573,103	18,750	8,049	2,447,870	2,012
70	0	2,775,059	693,765	296,513	397,252	0.000	0	90,175,851	18,750	8,014	2,437,134	2,003
71	0	2,775,059	693,765	295,212	398,552	0.000	0	89,777,299	18,750	7,979	2,426,362	1,995
72	0	2,775,059	693,765	293,908	399,857	0.000	0	89,377,441	18,750	7,943	2,415,555	1,986
73	0.581	4,387,753	1,096,938	462,639	634,299	0.581	51,940,702	140,683,844	18,750	7,908	2,404,713	1,977
74	0	4,387,753	1,096,938	460,562	636,376	0.000	0	140,047,468	18,750	7,872	2,393,836	1,968
75	0	4,387,753	1,096,938	458,479	638,459	0.000	0	139,409,008	18,750	7,837	2,382,922	1,959
76	0	4,387,753	1,096,938	456,389	640,549	0.000	0	138,768,459	18,750	7,801	2,371,974	1,950
77	0	4,387,753	1,096,938	454,292	642,646	0.000	0	138,125,813	18,750	7,765	2,360,989	1,941
78	0	4,387,753	1,096,938	452,188	644,750	0.000	0	137,481,062	18,750	7,729	2,349,968	1,932
79	0.643	7,209,814	1,802,454	739,552	1,062,901	0.643	88,423,375	224,841,536	18,750	7,693	2,338,911	1,923

Months	NOMINAL								REAL			
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	Discounted
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price	(000) TL	(000) TL	Payments	Interest	Balance	I.F.I. Revenues
						Index			(000) TL	(000) TL	(000) TL	(000) TL
80	0	7,209,814	1,802,454	736,073	1,066,381	0.000	0	223,775,155	18,750	7,657	2,327,818	1,914
81	0	7,209,814	1,802,454	732,582	1,069,872	0.000	0	222,705,283	18,750	7,621	2,316,689	1,905
82	0	7,209,814	1,802,454	729,079	1,073,374	0.000	0	221,631,909	18,750	7,584	2,305,523	1,896
83	0	7,209,814	1,802,454	725,565	1,076,888	0.000	0	220,555,020	18,750	7,548	2,294,321	1,887
84	0	7,209,814	1,802,454	722,040	1,080,414	0.000	0	219,474,607	18,750	7,511	2,283,082	1,878
85	0.643	11,846,933	2,961,733	1,180,620	1,781,113	0.643	141,158,972	358,852,466	18,750	7,474	2,271,806	1,869
86	0	11,846,933	2,961,733	1,174,790	1,786,944	0.000	0	357,065,522	18,750	7,437	2,260,493	1,859
87	0	11,846,933	2,961,733	1,168,940	1,792,794	0.000	0	355,272,728	18,750	7,400	2,249,144	1,850
88	0	11,846,933	2,961,733	1,163,070	1,798,663	0.000	0	353,474,065	18,750	7,363	2,237,757	1,841
89	0	11,846,933	2,961,733	1,157,182	1,804,551	0.000	0	351,669,514	18,750	7,326	2,226,333	1,831
90	0	11,846,933	2,961,733	1,151,274	1,810,459	0.000	0	349,859,055	18,750	7,288	2,214,871	1,822
91	0.732	20,519,491	5,129,873	1,983,800	3,146,073	0.732	256,114,604	602,827,587	18,750	7,251	2,203,372	1,813
92	0	20,519,491	5,129,873	1,973,501	3,156,372	0.000	0	599,671,215	18,750	7,213	2,191,835	1,803
93	0	20,519,491	5,129,873	1,963,168	3,166,705	0.000	0	596,504,509	18,750	7,175	2,180,261	1,794
94	0	20,519,491	5,129,873	1,952,801	3,177,072	0.000	0	593,327,437	18,750	7,138	2,168,648	1,784
95	0	20,519,491	5,129,873	1,942,400	3,187,473	0.000	0	590,139,964	18,750	7,100	2,156,998	1,775
96	0	20,519,491	5,129,873	1,931,965	3,197,908	0.000	0	586,942,056	18,750	7,061	2,145,309	1,765
97	0.732	35,540,800	8,885,200	3,328,128	5,557,072	0.732	429,671,406	1,011,056,390	18,750	7,023	2,133,582	1,756
98	0	35,540,800	8,885,200	3,309,936	5,575,265	0.000	0	1,005,481,126	18,750	6,985	2,121,817	1,746
99	0	35,540,800	8,885,200	3,291,684	5,593,517	0.000	0	999,887,609	18,750	6,946	2,110,014	1,737
100	0	35,540,800	8,885,200	3,273,372	5,611,828	0.000	0	994,275,781	18,750	6,908	2,098,171	1,727
101	0	35,540,800	8,885,200	3,255,000	5,630,200	0.000	0	988,645,581	18,750	6,869	2,086,290	1,717
102	0	35,540,800	8,885,200	3,236,568	5,648,632	0.000	0	982,996,950	18,750	6,830	2,074,370	1,707
103	0.732	61,558,472	15,389,618	5,573,872	9,815,746	0.732	719,603,711	1,692,784,914	18,750	6,791	2,062,411	1,698
104	0	61,558,472	15,389,618	5,541,737	9,847,881	0.000	0	1,682,937,033	18,750	6,752	2,050,413	1,688
105	0	61,558,472	15,389,618	5,509,498	9,880,120	0.000	0	1,673,056,913	18,750	6,713	2,038,375	1,678
106	0	61,558,472	15,389,618	5,477,153	9,912,465	0.000	0	1,663,144,448	18,750	6,673	2,026,298	1,668
107	0	61,558,472	15,389,618	5,444,702	9,944,916	0.000	0	1,653,199,532	18,750	6,634	2,014,182	1,658
108	0	61,558,472	15,389,618	5,412,145	9,977,473	0.000	0	1,643,222,059	18,750	6,594	2,002,026	1,648
109	0.732	106,622,401	26,655,600	9,317,535	17,338,065	0.732	1,202,922,036	2,828,806,030	18,750	6,554	1,989,830	1,639
110	0	106,622,401	26,655,600	9,260,775	17,394,825	0.000	0	2,811,411,204	18,750	6,514	1,977,594	1,629
111	0	106,622,401	26,655,600	9,203,829	17,451,772	0.000	0	2,793,959,433	18,750	6,474	1,965,318	1,619
112	0	106,622,401	26,655,600	9,146,696	17,508,904	0.000	0	2,776,450,529	18,750	6,434	1,953,002	1,608

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer Price	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
113	0	106,622,401	26,655,600	9,089,377	17,566,224	0.000	0	2,758,884,305	18,750	6,394	1,940,646	1,598
114	0	106,622,401	26,655,600	9,031,869	17,623,731	0.000	0	2,741,260,574	18,750	6,353	1,928,249	1,588
115	0.732	184,675,416	46,168,854	15,543,725	30,625,129	0.732	2,006,742,017	4,717,377,462	18,750	6,313	1,915,812	1,578
116	0	184,675,416	46,168,854	15,443,466	30,725,388	0.000	0	4,686,652,075	18,750	6,272	1,903,334	1,568
117	0	184,675,416	46,168,854	15,342,879	30,825,975	0.000	0	4,655,826,100	18,750	6,231	1,890,815	1,558
118	0	184,675,416	46,168,854	15,241,963	30,926,891	0.000	0	4,624,899,209	18,750	6,190	1,878,255	1,548
119	0	184,675,416	46,168,854	15,140,717	31,028,137	0.000	0	4,593,871,072	18,750	6,149	1,865,653	1,537
120	0	184,675,416	46,168,854	15,039,138	31,129,715	0.000	0	4,562,741,357	18,750	6,108	1,853,011	1,527
121	0.732	319,867,203	79,966,801	25,872,038	54,094,763	0.732	3,340,158,495	7,848,805,088	18,750	6,066	1,840,327	1,517
122	0	319,867,203	79,966,801	25,694,945	54,271,855	0.000	0	7,794,533,233	18,750	6,025	1,827,602	1,506
123	0	319,867,203	79,966,801	25,517,274	54,449,527	0.000	0	7,740,083,706	18,750	5,983	1,814,835	1,496
124	0	319,867,203	79,966,801	25,339,020	54,627,781	0.000	0	7,685,455,925	18,750	5,941	1,802,027	1,485
125	0	319,867,203	79,966,801	25,160,183	54,806,618	0.000	0	7,630,649,307	18,750	5,899	1,789,176	1,475
126	0	319,867,203	79,966,801	24,980,760	54,986,041	0.000	0	7,575,663,267	18,750	5,857	1,776,283	1,464
127	0.732	554,026,247	138,506,562	42,956,159	95,550,402	0.732	5,545,770,412	13,025,883,277	18,750	5,815	1,763,348	1,454
128	0	554,026,247	138,506,562	42,643,352	95,863,209	0.000	0	12,930,020,067	18,750	5,773	1,750,371	1,443
129	0	554,026,247	138,506,562	42,329,521	96,177,041	0.000	0	12,833,843,027	18,750	5,730	1,737,351	1,433
130	0	554,026,247	138,506,562	42,014,662	96,491,899	0.000	0	12,737,351,127	18,750	5,688	1,724,289	1,422
131	0	554,026,247	138,506,562	41,698,773	96,807,789	0.000	0	12,640,543,339	18,750	5,645	1,711,184	1,411
132	0	554,026,247	138,506,562	41,381,850	97,124,712	0.000	0	12,543,418,627	18,750	5,602	1,698,036	1,400
133	0.732	959,601,608	239,900,402	71,124,741	168,775,661	0.732	9,182,419,735	21,557,062,701	18,750	5,559	1,684,845	1,390
134	0	959,601,608	239,900,402	70,572,214	169,328,188	0.000	0	21,387,734,513	18,750	5,516	1,671,610	1,379
135	0	959,601,608	239,900,402	70,017,877	169,882,525	0.000	0	21,217,851,988	18,750	5,472	1,658,333	1,368
136	0	959,601,608	239,900,402	69,461,726	170,438,676	0.000	0	21,047,413,312	18,750	5,429	1,645,012	1,357
137	0	959,601,608	239,900,402	68,903,754	170,996,648	0.000	0	20,876,416,664	18,750	5,385	1,631,647	1,346
138	0	959,601,608	239,900,402	68,343,956	171,556,446	0.000	0	20,704,860,218	18,750	5,342	1,618,239	1,335
139	0.732	1,662,078,741	415,519,685	117,402,430	298,117,255	0.732	15,157,009,643	35,563,752,606	18,750	5,298	1,604,786	1,324
140	0	1,662,078,741	415,519,685	116,426,472	299,093,213	0.000	0	35,264,659,392	18,750	5,254	1,591,290	1,313
141	0	1,662,078,741	415,519,685	115,447,318	300,072,367	0.000	0	34,964,587,026	18,750	5,209	1,577,750	1,302
142	0	1,662,078,741	415,519,685	114,464,960	301,054,726	0.000	0	34,663,532,300	18,750	5,165	1,564,165	1,291
143	0	1,662,078,741	415,519,685	113,479,385	302,040,301	0.000	0	34,361,491,999	18,750	5,121	1,550,535	1,280
144	0	1,662,078,741	415,519,685	112,490,583	303,029,102	0.000	0	34,058,462,897	18,750	5,076	1,536,861	1,269
145	0.732	2,878,804,825	719,701,206	193,121,145	526,580,062	0.732	24,932,525,269	58,464,408,105	18,750	5,031	1,523,143	1,258

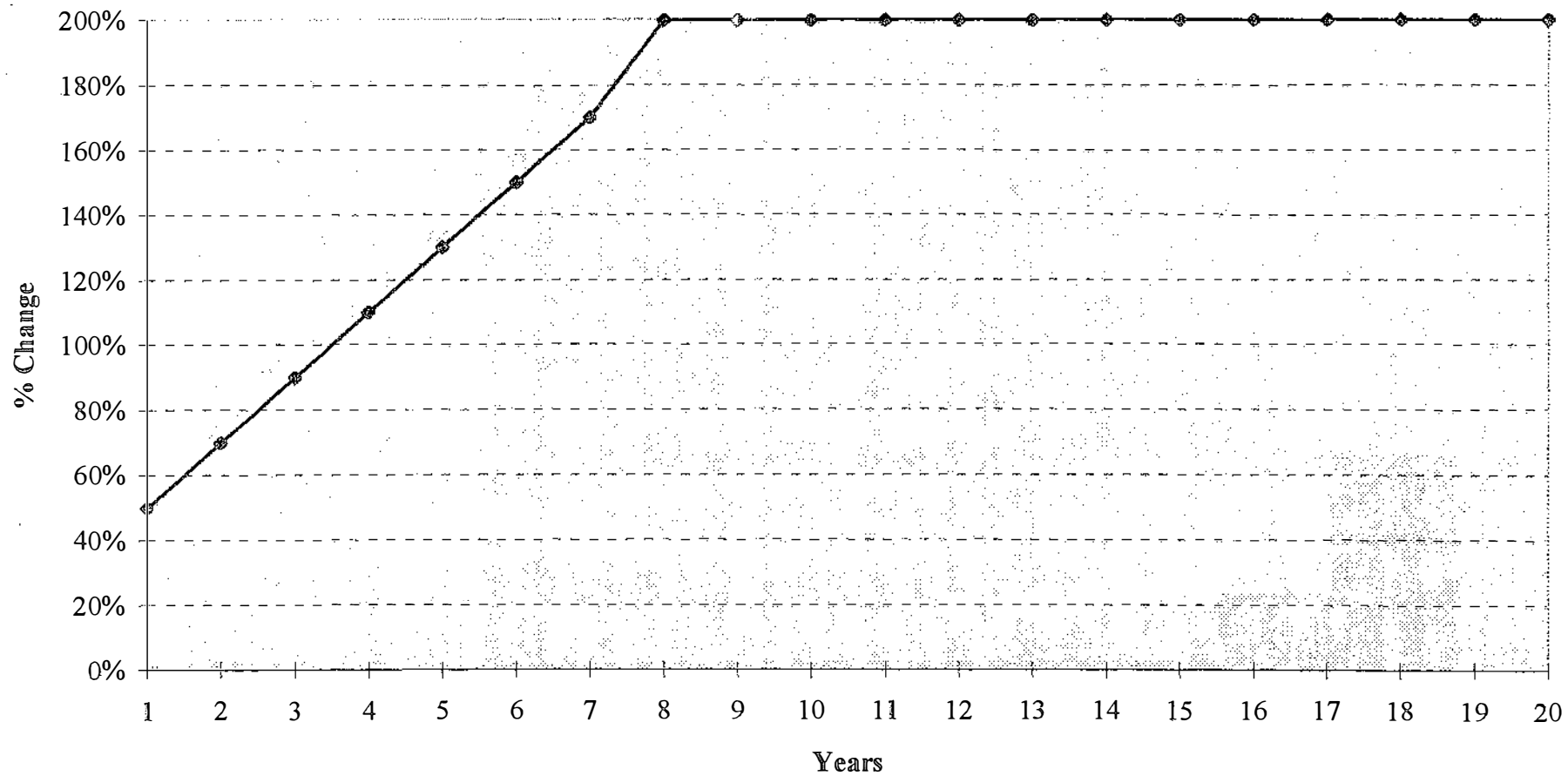
Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL	Real Loan Balance (000) TL	
	146	0	2,878,804,825	719,701,206	191,397,259	528,303,948	0.000	0	57,936,104,157	18,750	4,986	
147	0	2,878,804,825	719,701,206	189,667,729	530,033,477	0.000	0	57,406,070,680	18,750	4,941	1,495,570	1,235
148	0	2,878,804,825	719,701,206	187,932,537	531,768,669	0.000	0	56,874,302,011	18,750	4,896	1,481,717	1,224
149	0	2,878,804,825	719,701,206	186,191,665	533,509,541	0.000	0	56,340,792,469	18,750	4,851	1,467,817	1,213
150	0	2,878,804,825	719,701,206	184,445,094	535,256,113	0.000	0	55,805,536,357	18,750	4,805	1,453,873	1,201
151	0.732	4,986,236,223	1,246,559,056	316,433,219	930,125,836	0.732	40,852,487,957	95,727,898,477	18,750	4,760	1,439,882	1,190
152	0	4,986,236,223	1,246,559,056	313,388,230	933,170,826	0.000	0	94,794,727,651	18,750	4,714	1,425,846	1,178
153	0	4,986,236,223	1,246,559,056	310,333,271	936,225,785	0.000	0	93,858,501,866	18,750	4,668	1,411,764	1,167
154	0	4,986,236,223	1,246,559,056	307,268,311	939,290,744	0.000	0	92,919,211,122	18,750	4,622	1,397,636	1,155
155	0	4,986,236,223	1,246,559,056	304,193,318	942,365,738	0.000	0	91,976,845,385	18,750	4,575	1,383,461	1,144
156	0	4,986,236,223	1,246,559,056	301,108,258	945,450,798	0.000	0	91,031,394,587	18,750	4,529	1,369,240	1,132
157	0.732	8,636,414,476	2,159,103,619	516,173,827	1,642,929,792	0.732	66,639,605,921	156,028,070,716	18,750	4,483	1,354,973	1,121
158	0	8,636,414,476	2,159,103,619	510,795,302	1,648,308,317	0.000	0	154,379,762,399	18,750	4,436	1,340,658	1,109
159	0	8,636,414,476	2,159,103,619	505,399,170	1,653,704,449	0.000	0	152,726,057,950	18,750	4,389	1,326,297	1,097
160	0	8,636,414,476	2,159,103,619	499,985,372	1,659,118,247	0.000	0	151,066,939,703	18,750	4,342	1,311,889	1,085
161	0	8,636,414,476	2,159,103,619	494,553,850	1,664,549,769	0.000	0	149,402,389,934	18,750	4,295	1,297,434	1,074
162	0	8,636,414,476	2,159,103,619	489,104,547	1,669,999,072	0.000	0	147,732,390,863	18,750	4,247	1,282,932	1,062
163	0.732	14,958,708,668	3,739,677,167	837,684,558	2,901,992,609	0.732	108,147,616,035	252,978,014,289	18,750	4,200	1,268,382	1,050
164	0	14,958,708,668	3,739,677,167	828,184,189	2,911,492,977	0.000	0	250,066,521,311	18,750	4,152	1,253,784	1,038
165	0	14,958,708,668	3,739,677,167	818,652,719	2,921,024,448	0.000	0	247,145,496,863	18,750	4,105	1,239,139	1,026
166	0	14,958,708,668	3,739,677,167	809,090,045	2,930,587,122	0.000	0	244,214,909,741	18,750	4,057	1,224,445	1,014
167	0	14,958,708,668	3,739,677,167	799,496,065	2,940,181,101	0.000	0	241,274,728,640	18,750	4,009	1,209,704	1,002
168	0	14,958,708,668	3,739,677,167	789,870,678	2,949,806,489	0.000	0	238,324,922,151	18,750	3,960	1,194,914	990
169	0.732	25,909,243,428	6,477,310,857	1,351,369,906	5,125,940,951	0.732	174,465,951,724	407,664,932,924	18,750	3,912	1,180,076	978
170	0	25,909,243,428	6,477,310,857	1,334,588,909	5,142,721,948	0.000	0	402,522,210,975	18,750	3,863	1,165,189	966
171	0	25,909,243,428	6,477,310,857	1,317,752,975	5,159,557,882	0.000	0	397,362,653,094	18,750	3,815	1,150,254	954
172	0	25,909,243,428	6,477,310,857	1,300,861,925	5,176,448,932	0.000	0	392,186,204,162	18,750	3,766	1,135,269	941
173	0	25,909,243,428	6,477,310,857	1,283,915,579	5,193,395,278	0.000	0	386,992,808,884	18,750	3,717	1,120,236	929
174	0	25,909,243,428	6,477,310,857	1,266,913,754	5,210,397,103	0.000	0	381,782,411,781	18,750	3,667	1,105,153	917
175	0.732	44,876,126,003	11,219,031,501	2,164,814,561	9,054,216,940	0.732	279,484,122,860	652,212,317,701	18,750	3,618	1,090,021	904
176	0	44,876,126,003	11,219,031,501	2,135,173,411	9,083,858,090	0.000	0	643,128,459,611	18,750	3,568	1,074,840	892
177	0	44,876,126,003	11,219,031,501	2,105,435,223	9,113,596,277	0.000	0	634,014,863,333	18,750	3,519	1,059,608	880
178	0	44,876,126,003	11,219,031,501	2,075,599,681	9,143,431,820	0.000	0	624,871,431,513	18,750	3,469	1,044,327	867

Months	NOMINAL								REAL			
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	Discounted
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price	(000) TL	(000) TL	Payments	Interest	Balance	I.F.I. Revenues
179	0	44,876,126,003	11,219,031,501	2,045,666,464	9,173,365,037	0.000	0	615,698,066,477	18,750	3,419	1,028,996	0,855
180	0	44,876,126,003	11,219,031,501	2,015,635,254	9,203,396,247	0.000	0	606,494,670,230	18,750	3,369	1,013,615	0,842
181	0.732	77,727,730,283	19,431,932,571	3,438,996,802	15,992,935,768	0.732	443,984,913,128	1,034,486,647,590	18,750	3,318	998,183	0,830
182	0	77,727,730,283	19,431,932,571	3,386,640,092	16,045,292,478	0.000	0	1,018,441,355,112	18,750	3,268	982,701	0,817
183	0	77,727,730,283	19,431,932,571	3,334,111,980	16,097,820,591	0.000	0	1,002,343,534,521	18,750	3,217	967,168	0,804
184	0	77,727,730,283	19,431,932,571	3,281,411,904	16,150,520,666	0.000	0	986,193,013,854	18,750	3,166	951,584	0,792
185	0	77,727,730,283	19,431,932,571	3,228,539,302	16,203,393,268	0.000	0	969,989,620,586	18,750	3,115	935,949	0,779
186	0	77,727,730,283	19,431,932,571	3,175,493,609	16,256,438,962	0.000	0	953,733,181,624	18,750	3,064	920,263	0,766
187	0.732	134,628,378,008	33,657,094,502	5,407,937,651	28,249,156,851	0.732	698,181,145,813	1,623,665,170,586	18,750	3,013	904,526	0,753
188	0	134,628,378,008	33,657,094,502	5,315,457,262	28,341,637,240	0.000	0	1,595,323,533,346	18,750	2,961	888,737	0,740
189	0	134,628,378,008	33,657,094,502	5,222,674,117	28,434,420,385	0.000	0	1,566,889,112,961	18,750	2,909	872,897	0,727
190	0	134,628,378,008	33,657,094,502	5,129,587,223	28,527,507,279	0.000	0	1,538,361,605,682	18,750	2,858	857,004	0,714
191	0	134,628,378,008	33,657,094,502	5,036,195,588	28,620,898,914	0.000	0	1,509,740,706,768	18,750	2,806	841,060	0,701
192	0	134,628,378,008	33,657,094,502	4,942,498,213	28,714,596,289	0.000	0	1,481,026,110,479	18,750	2,753	825,063	0,688
193	0.732	233,183,190,850	58,295,797,713	8,397,838,115	49,897,959,598	0.732	1,084,186,360,206	2,515,314,511,087	18,750	2,701	809,015	0,675
194	0	233,183,190,850	58,295,797,713	8,234,485,180	50,061,312,533	0.000	0	2,465,253,198,555	18,750	2,649	792,913	0,662
195	0	233,183,190,850	58,295,797,713	8,070,597,469	50,225,200,243	0.000	0	2,415,027,998,311	18,750	2,596	776,759	0,649
196	0	233,183,190,850	58,295,797,713	7,906,173,233	50,389,624,479	0.000	0	2,364,638,373,832	18,750	2,543	760,552	0,636
197	0	233,183,190,850	58,295,797,713	7,741,210,715	50,554,586,998	0.000	0	2,314,083,786,834	18,750	2,490	744,292	0,622
198	0	233,183,190,850	58,295,797,713	7,575,708,152	50,720,089,560	0.000	0	2,263,363,697,274	18,750	2,437	727,978	0,609
199	0.732	403,885,134,024	100,971,283,506	12,833,914,129	88,137,369,377	0.732	1,656,897,222,412	3,832,123,550,309	18,750	2,383	711,611	0,596
200	0	403,885,134,024	100,971,283,506	12,545,375,317	88,425,908,189	0.000	0	3,743,697,642,120	18,750	2,330	695,191	0,582
201	0	403,885,134,024	100,971,283,506	12,255,891,904	88,715,391,602	0.000	0	3,654,982,250,518	18,750	2,276	678,717	0,569
202	0	403,885,134,024	100,971,283,506	11,965,460,797	89,005,822,709	0.000	0	3,565,976,427,808	18,750	2,222	662,189	0,555
203	0	403,885,134,024	100,971,283,506	11,674,078,894	89,297,204,612	0.000	0	3,476,679,223,197	18,750	2,168	645,607	0,542
204	0	403,885,134,024	100,971,283,506	11,381,743,083	89,589,540,423	0.000	0	3,387,089,682,773	18,750	2,114	628,970	0,528
205	0.732	699,549,572,551	174,887,393,138	19,205,759,194	155,681,633,944	0.732	2,479,521,737,583	5,710,929,786,412	18,750	2,059	612,279	0,515
206	0	699,549,572,551	174,887,393,138	18,696,098,035	156,191,295,103	0.000	0	5,554,738,491,309	18,750	2,004	595,534	0,501
207	0	699,549,572,551	174,887,393,138	18,184,768,379	156,702,624,759	0.000	0	5,398,035,866,550	18,750	1,950	578,733	0,487
208	0	699,549,572,551	174,887,393,138	17,671,764,762	157,215,628,376	0.000	0	5,240,820,238,175	18,750	1,895	561,878	0,474
209	0	699,549,572,551	174,887,393,138	17,157,081,705	157,730,311,433	0.000	0	5,083,089,926,742	18,750	1,839	544,967	0,460
210	0	699,549,572,551	174,887,393,138	16,640,713,710	158,246,679,428	0.000	0	4,924,843,247,314	18,750	1,784	528,002	0,446
211	0.732	1,211,655,402,071	302,913,850,518	27,925,258,063	274,988,592,455	0.732	3,605,235,476,346	8,255,090,131,205	18,750	1,729	510,980	0,432

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL	Real Loan Balance (000) TL	
	212	0	1,211,655,402,071	302,913,850,518	27,025,016,968	275,888,833,550	0.000	0	7,979,201,297,655	18,750	1,673	
213	0	1,211,655,402,071	302,913,850,518	26,121,828,718	276,792,021,800	0.000	0	7,702,409,275,856	18,750	1,617	476,770	0,404
214	0	1,211,655,402,071	302,913,850,518	25,215,683,665	277,698,166,853	0.000	0	7,424,711,109,003	18,750	1,561	459,581	0,390
215	0	1,211,655,402,071	302,913,850,518	24,306,572,129	278,607,278,389	0.000	0	7,146,103,830,614	18,750	1,505	442,335	0,376
216	0	1,211,655,402,071	302,913,850,518	23,394,484,398	279,519,366,120	0.000	0	6,866,584,464,494	18,750	1,448	425,033	0,362
217	0.732	2,098,648,717,653	524,662,179,413	38,935,481,507	485,726,697,906	0.732	5,026,688,702,473	11,407,546,469,062	18,750	1,391	407,675	0,348
218	0	2,098,648,717,653	524,662,179,413	37,345,338,693	487,316,840,720	0.000	0	10,920,229,628,341	18,750	1,335	390,259	0,334
219	0	2,098,648,717,653	524,662,179,413	35,749,990,165	488,912,189,248	0.000	0	10,431,317,439,093	18,750	1,278	372,787	0,319
220	0	2,098,648,717,653	524,662,179,413	34,149,418,881	490,512,760,532	0.000	0	9,940,804,678,561	18,750	1,220	355,257	0,305
221	0	2,098,648,717,653	524,662,179,413	32,543,607,743	492,118,571,670	0.000	0	9,448,686,106,891	18,750	1,163	337,670	0,291
222	0	2,098,648,717,653	524,662,179,413	30,932,539,598	493,729,639,816	0.000	0	8,954,956,467,076	18,750	1,105	320,026	0,276
223	0.732	3,634,966,206,214	908,741,551,553	50,777,143,094	857,964,408,459	0.732	6,555,483,113,467	14,652,475,172,083	18,750	1,048	302,323	0,262
224	0	3,634,966,206,214	908,741,551,553	47,968,390,879	860,773,160,675	0.000	0	13,791,702,011,408	18,750	990	284,563	0,247
225	0	3,634,966,206,214	908,741,551,553	45,150,443,539	863,591,108,015	0.000	0	12,928,110,903,394	18,750	932	266,745	0,233
226	0	3,634,966,206,214	908,741,551,553	42,323,270,973	866,418,280,580	0.000	0	12,061,692,622,813	18,750	873	248,868	0,218
227	0	3,634,966,206,214	908,741,551,553	39,486,842,980	869,254,708,574	0.000	0	11,192,437,914,240	18,750	815	230,933	0,204
228	0	3,634,966,206,214	908,741,551,553	36,641,129,260	872,100,422,294	0.000	0	10,320,337,491,946	18,750	756	212,939	0,189
229	0.732	6,295,946,152,958	1,573,986,538,240	58,519,240,773	1,515,467,297,467	0.732	7,555,011,395,362	16,359,881,589,842	18,750	697	194,886	0,174
230	0	6,295,946,152,958	1,573,986,538,240	53,557,995,193	1,520,428,543,047	0.000	0	14,839,453,046,795	18,750	638	176,774	0,160
231	0	6,295,946,152,958	1,573,986,538,240	48,580,507,785	1,525,406,030,454	0.000	0	13,314,047,016,341	18,750	579	158,603	0,145
232	0	6,295,946,152,958	1,573,986,538,240	43,586,725,379	1,530,399,812,860	0.000	0	11,783,647,203,481	18,750	519	140,372	0,130
233	0	6,295,946,152,958	1,573,986,538,240	38,576,594,629	1,535,409,943,610	0.000	0	10,248,237,259,871	18,750	460	122,081	0,115
234	0	6,295,946,152,958	1,573,986,538,240	33,550,062,015	1,540,436,476,225	0.000	0	8,707,800,783,646	18,750	400	103,731	0,100
235	0.732	10,904,898,618,642	2,726,224,654,660	49,375,700,268	2,676,848,954,393	0.732	6,374,552,595,817	12,405,504,425,070	18,750	340	85,321	0,085
236	0	10,904,898,618,642	2,726,224,654,660	40,612,393,355	2,685,612,261,306	0.000	0	9,719,892,163,764	18,750	279	66,850	0,070
237	0	10,904,898,618,642	2,726,224,654,660	31,820,397,655	2,694,404,257,005	0.000	0	7,025,487,906,759	18,750	219	48,319	0,055
238	0	10,904,898,618,642	2,726,224,654,660	22,999,619,250	2,703,225,035,411	0.000	0	4,322,262,871,348	18,750	158	29,727	0,040
239	0	10,904,898,618,642	2,726,224,654,660	14,149,963,911	2,712,074,690,749	0.000	0	1,610,188,180,599	18,750	97	11,074	0,024
240	0	10,904,898,618,642	1,615,459,517,702	5,271,337,104	1,610,188,180,599	0.000	0	0	11,111	36	0	0,009

Case1

Yearly % Change in Prices and Salaries



Appendix 16. Monthly Payment Plan of The Proposed Model Case 2

Principal Loan Amount (TL)	3,110,000,000
Yearly Real Interest Rate	4%
Monthly Real Interest Rate	0.33%
Salary (TL)	75,000,000
Prefixed Repayment Salary Ratio	0.25
Loan Term	20
First Months Salary / House Price	0.0241158
NPV of I.F.I. Revenues (TL)	348,590,138
NPV of I.F.I. Revenues / House Price	0.11

Months	NOMINAL							REAL				
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer Price	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	Discounted I.F.I. Revenues
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL
0	0.000	0	0	0	0	0.000	0	3,110,000	0		3,110,000	
1	0.000	75,000	18,750	10,181	8,569	0.000	0	3,101,431	18,750	10,181	3,101,431	2,545
2	0.000	75,000	18,750	10,153	8,597	0.000	0	3,092,835	18,750	10,153	3,092,835	2,538
3	0.000	75,000	18,750	10,125	8,625	0.000	0	3,084,210	18,750	10,125	3,084,210	2,531
4	0.000	75,000	18,750	10,097	8,653	0.000	0	3,075,557	18,750	10,097	3,075,557	2,524
5	0.000	75,000	18,750	10,069	8,681	0.000	0	3,066,875	18,750	10,069	3,066,875	2,517
6	0.000	75,000	18,750	10,040	8,710	0.000	0	3,058,165	18,750	10,040	3,058,165	2,510
7	0.304	97,788	24,447	13,054	11,393	0.304	929,194	3,975,966	18,750	10,012	3,049,427	2,503
8	0.000	97,788	24,447	13,016	11,431	0.000	0	3,964,536	18,750	9,983	3,040,660	2,496
9	0.000	97,788	24,447	12,979	11,468	0.000	0	3,953,067	18,750	9,954	3,031,864	2,489
10	0.000	97,788	24,447	12,941	11,506	0.000	0	3,941,562	18,750	9,926	3,023,040	2,481
11	0.000	97,788	24,447	12,904	11,543	0.000	0	3,930,018	18,750	9,897	3,014,187	2,474
12	0.000	97,788	24,447	12,866	11,581	0.000	0	3,918,437	18,750	9,868	3,005,304	2,467
13	0.304	127,500	31,875	16,726	15,149	0.304	1,190,580	5,093,868	18,750	9,839	2,996,393	2,460

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL	Real Loan Balance (000) TL	
	14	0.000	127,500	31,875	16,676	15,199	0.000	0	5,078,669	18,750	9,809	
15	0.000	127,500	31,875	16,626	15,249	0.000	0	5,063,420	18,750	9,780	2,978,482	2,445
16	0.000	127,500	31,875	16,576	15,299	0.000	0	5,048,121	18,750	9,751	2,969,483	2,438
17	0.000	127,500	31,875	16,526	15,349	0.000	0	5,032,773	18,750	9,721	2,960,454	2,430
18	0.000	127,500	31,875	16,476	15,399	0.000	0	5,017,374	18,750	9,692	2,951,396	2,423
19	0.342	171,059	42,765	22,037	20,728	0.342	1,714,139	6,710,785	18,750	9,662	2,942,308	2,416
20	0.000	171,059	42,765	21,969	20,795	0.000	0	6,689,990	18,750	9,632	2,933,191	2,408
21	0.000	171,059	42,765	21,901	20,864	0.000	0	6,669,126	18,750	9,603	2,924,043	2,401
22	0.000	171,059	42,765	21,833	20,932	0.000	0	6,648,195	18,750	9,573	2,914,866	2,393
23	0.000	171,059	42,765	21,764	21,000	0.000	0	6,627,194	18,750	9,543	2,905,658	2,386
24	0.000	171,059	42,765	21,696	21,069	0.000	0	6,606,125	18,750	9,512	2,896,421	2,378
25	0.342	229,500	57,375	29,015	28,360	0.342	2,256,922	8,834,687	18,750	9,482	2,887,153	2,371
26	0.000	229,500	57,375	28,922	28,453	0.000	0	8,806,235	18,750	9,452	2,877,855	2,363
27	0.000	229,500	57,375	28,829	28,546	0.000	0	8,777,689	18,750	9,421	2,868,526	2,355
28	0.000	229,500	57,375	28,736	28,639	0.000	0	8,749,050	18,750	9,391	2,859,167	2,348
29	0.000	229,500	57,375	28,642	28,733	0.000	0	8,720,317	18,750	9,360	2,849,777	2,340
30	0.000	229,500	57,375	28,548	28,827	0.000	0	8,691,490	18,750	9,329	2,840,356	2,332
31	0.378	316,344	79,086	39,221	39,865	0.378	3,288,902	11,940,527	18,750	9,299	2,830,905	2,325
32	0.000	316,344	79,086	39,090	39,996	0.000	0	11,900,531	18,750	9,268	2,821,422	2,317
33	0.000	316,344	79,086	38,959	40,127	0.000	0	11,860,405	18,750	9,237	2,811,909	2,309
34	0.000	316,344	79,086	38,828	40,258	0.000	0	11,820,146	18,750	9,205	2,802,365	2,301
35	0.000	316,344	79,086	38,696	40,390	0.000	0	11,779,757	18,750	9,174	2,792,789	2,294
36	0.000	316,344	79,086	38,564	40,522	0.000	0	11,739,234	18,750	9,143	2,783,182	2,286
37	0.378	436,050	109,013	52,974	56,039	0.378	4,442,184	16,125,379	18,750	9,111	2,773,543	2,278
38	0.000	436,050	109,013	52,790	56,222	0.000	0	16,069,157	18,750	9,080	2,763,873	2,270
39	0.000	436,050	109,013	52,606	56,406	0.000	0	16,012,751	18,750	9,048	2,754,171	2,262
40	0.000	436,050	109,013	52,422	56,591	0.000	0	15,956,160	18,750	9,016	2,744,438	2,254
41	0.000	436,050	109,013	52,236	56,776	0.000	0	15,899,384	18,750	8,985	2,734,672	2,246
42	0.000	436,050	109,013	52,050	56,962	0.000	0	15,842,422	18,750	8,953	2,724,875	2,238
43	0.342	585,022	146,256	69,583	76,673	0.342	5,412,417	21,178,166	18,750	8,921	2,715,045	2,230
44	0.000	585,022	146,256	69,332	76,924	0.000	0	21,101,242	18,750	8,888	2,705,184	2,222
45	0.000	585,022	146,256	69,080	77,176	0.000	0	21,024,067	18,750	8,856	2,695,290	2,214
46	0.000	585,022	146,256	68,827	77,428	0.000	0	20,946,638	18,750	8,824	2,685,363	2,206

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer Price	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
47	0.000	585,022	146,256	68,574	77,682	0.000	0	20,868,957	18,750	8,791	2,675,405	2,198
48	0.000	585,022	146,256	68,320	77,936	0.000	0	20,791,021	18,750	8,759	2,665,413	2,190
49	0.342	784,890	196,223	91,318	104,905	0.342	7,103,061	27,789,177	18,750	8,726	2,655,389	2,181
50	0.000	784,890	196,223	90,975	105,248	0.000	0	27,683,929	18,750	8,693	2,645,332	2,173
51	0.000	784,890	196,223	90,630	105,593	0.000	0	27,578,336	18,750	8,660	2,635,242	2,165
52	0.000	784,890	196,223	90,284	105,938	0.000	0	27,472,398	18,750	8,627	2,625,119	2,157
53	0.000	784,890	196,223	89,937	106,285	0.000	0	27,366,113	18,750	8,594	2,614,963	2,148
54	0.000	784,890	196,223	89,590	106,633	0.000	0	27,259,480	18,750	8,561	2,604,774	2,140
55	0.378	1,081,896	270,474	123,009	147,465	0.378	10,315,120	37,427,135	18,750	8,527	2,594,551	2,132
56	0.000	1,081,896	270,474	122,527	147,947	0.000	0	37,279,188	18,750	8,494	2,584,295	2,123
57	0.000	1,081,896	270,474	122,042	148,432	0.000	0	37,130,756	18,750	8,460	2,574,005	2,115
58	0.000	1,081,896	270,474	121,556	148,918	0.000	0	36,981,839	18,750	8,427	2,563,682	2,107
59	0.000	1,081,896	270,474	121,069	149,405	0.000	0	36,832,434	18,750	8,393	2,553,325	2,098
60	0.000	1,081,896	270,474	120,580	149,894	0.000	0	36,682,539	18,750	8,359	2,542,934	2,090
61	0.378	1,491,291	372,823	165,531	207,291	0.378	13,880,852	50,356,100	18,750	8,325	2,532,509	2,081
62	0.000	1,491,291	372,823	164,853	207,970	0.000	0	50,148,130	18,750	8,291	2,522,050	2,073
63	0.000	1,491,291	372,823	164,172	208,651	0.000	0	49,939,479	18,750	8,257	2,511,556	2,064
64	0.000	1,491,291	372,823	163,489	209,334	0.000	0	49,730,145	18,750	8,222	2,501,028	2,056
65	0.000	1,491,291	372,823	162,804	210,019	0.000	0	49,520,126	18,750	8,188	2,490,466	2,047
66	0.000	1,491,291	372,823	162,116	210,707	0.000	0	49,309,419	18,750	8,153	2,479,869	2,038
67	0.414	2,109,004	527,251	228,291	298,960	0.414	20,424,630	69,435,090	18,750	8,118	2,469,238	2,030
68	0.000	2,109,004	527,251	227,312	299,939	0.000	0	69,135,151	18,750	8,084	2,458,571	2,021
69	0.000	2,109,004	527,251	226,330	300,920	0.000	0	68,834,230	18,750	8,049	2,447,870	2,012
70	0.000	2,109,004	527,251	225,345	301,906	0.000	0	68,532,325	18,750	8,014	2,437,134	2,003
71	0.000	2,109,004	527,251	224,357	302,894	0.000	0	68,229,431	18,750	7,979	2,426,362	1,995
72	0.000	2,109,004	527,251	223,365	303,886	0.000	0	67,925,545	18,750	7,943	2,415,555	1,986
73	0.414	2,982,582	745,646	314,479	431,166	0.414	28,135,682	95,630,061	18,750	7,908	2,404,713	1,977
74	0.000	2,982,582	745,646	313,068	432,578	0.000	0	95,197,484	18,750	7,872	2,393,836	1,968
75	0.000	2,982,582	745,646	311,652	433,994	0.000	0	94,763,490	18,750	7,837	2,382,922	1,959
76	0.000	2,982,582	745,646	310,231	435,414	0.000	0	94,328,075	18,750	7,801	2,371,974	1,950
77	0.000	2,982,582	745,646	308,806	436,840	0.000	0	93,891,236	18,750	7,765	2,360,989	1,941
78	0.000	2,982,582	745,646	307,375	438,270	0.000	0	93,452,966	18,750	7,729	2,349,968	1,932
79	0.342	4,001,554	1,000,388	410,463	589,926	0.342	31,927,345	124,790,384	18,750	7,693	2,338,911	1,923

Months	NOMINAL								REAL			
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer Price	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	Discounted I.F.I. Revenues
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL
80	0.000	4,001,554	1,000,388	408,531	591,857	0.000	0	124,198,527	18,750	7,657	2,327,818	1,914
81	0.000	4,001,554	1,000,388	406,594	593,795	0.000	0	123,604,732	18,750	7,621	2,316,689	1,905
82	0.000	4,001,554	1,000,388	404,650	595,739	0.000	0	123,008,994	18,750	7,584	2,305,523	1,896
83	0.000	4,001,554	1,000,388	402,699	597,689	0.000	0	122,411,305	18,750	7,548	2,294,321	1,887
84	0.000	4,001,554	1,000,388	400,743	599,646	0.000	0	121,811,659	18,750	7,511	2,283,082	1,878
85	0.342	5,368,648	1,342,162	535,019	807,143	0.342	41,615,831	162,620,347	18,750	7,474	2,271,806	1,869
86	0.000	5,368,648	1,342,162	532,377	809,785	0.000	0	161,810,562	18,750	7,437	2,260,493	1,859
87	0.000	5,368,648	1,342,162	529,726	812,436	0.000	0	160,998,126	18,750	7,400	2,249,144	1,850
88	0.000	5,368,648	1,342,162	527,066	815,096	0.000	0	160,183,030	18,750	7,363	2,237,757	1,841
89	0.000	5,368,648	1,342,162	524,398	817,764	0.000	0	159,365,266	18,750	7,326	2,226,333	1,831
90	0.000	5,368,648	1,342,162	521,720	820,441	0.000	0	158,544,824	18,750	7,288	2,214,871	1,822
91	0.304	6,999,860	1,749,965	676,738	1,073,227	0.304	48,172,336	205,643,933	18,750	7,251	2,203,372	1,813
92	0.000	6,999,860	1,749,965	673,225	1,076,740	0.000	0	204,567,193	18,750	7,213	2,191,835	1,803
93	0.000	6,999,860	1,749,965	669,700	1,080,265	0.000	0	203,486,927	18,750	7,175	2,180,261	1,794
94	0.000	6,999,860	1,749,965	666,163	1,083,802	0.000	0	202,403,125	18,750	7,138	2,168,648	1,784
95	0.000	6,999,860	1,749,965	662,615	1,087,350	0.000	0	201,315,776	18,750	7,100	2,156,998	1,775
96	0.000	6,999,860	1,749,965	659,055	1,090,910	0.000	0	200,224,866	18,750	7,061	2,145,309	1,765
97	0.304	9,126,701	2,281,675	854,647	1,427,029	0.304	60,836,420	259,634,257	18,750	7,023	2,133,582	1,756
98	0.000	9,126,701	2,281,675	849,975	1,431,700	0.000	0	258,202,557	18,750	6,985	2,121,817	1,746
99	0.000	9,126,701	2,281,675	845,288	1,436,387	0.000	0	256,766,170	18,750	6,946	2,110,014	1,737
100	0.000	9,126,701	2,281,675	840,586	1,441,090	0.000	0	255,325,080	18,750	6,908	2,098,171	1,727
101	0.000	9,126,701	2,281,675	835,868	1,445,807	0.000	0	253,879,273	18,750	6,869	2,086,290	1,717
102	0.000	9,126,701	2,281,675	831,135	1,450,541	0.000	0	252,428,732	18,750	6,830	2,074,370	1,707
103	0.360	12,413,655	3,103,414	1,124,006	1,979,407	0.360	90,911,463	341,360,788	18,750	6,791	2,062,411	1,698
104	0.000	12,413,655	3,103,414	1,117,526	1,985,887	0.000	0	339,374,901	18,750	6,752	2,050,413	1,688
105	0.000	12,413,655	3,103,414	1,111,025	1,992,389	0.000	0	337,382,512	18,750	6,713	2,038,375	1,678
106	0.000	12,413,655	3,103,414	1,104,503	1,998,911	0.000	0	335,383,601	18,750	6,673	2,026,298	1,668
107	0.000	12,413,655	3,103,414	1,097,959	2,005,455	0.000	0	333,378,146	18,750	6,634	2,014,182	1,658
108	0.000	12,413,655	3,103,414	1,091,393	2,012,021	0.000	0	331,366,125	18,750	6,594	2,002,026	1,648
109	0.360	16,884,397	4,221,099	1,475,496	2,745,603	0.360	119,340,533	447,961,055	18,750	6,554	1,989,830	1,639
110	0.000	16,884,397	4,221,099	1,466,508	2,754,591	0.000	0	445,206,464	18,750	6,514	1,977,594	1,629
111	0.000	16,884,397	4,221,099	1,457,490	2,763,609	0.000	0	442,442,855	18,750	6,474	1,965,318	1,619
112	0.000	16,884,397	4,221,099	1,448,443	2,772,656	0.000	0	439,670,198	18,750	6,434	1,953,002	1,608

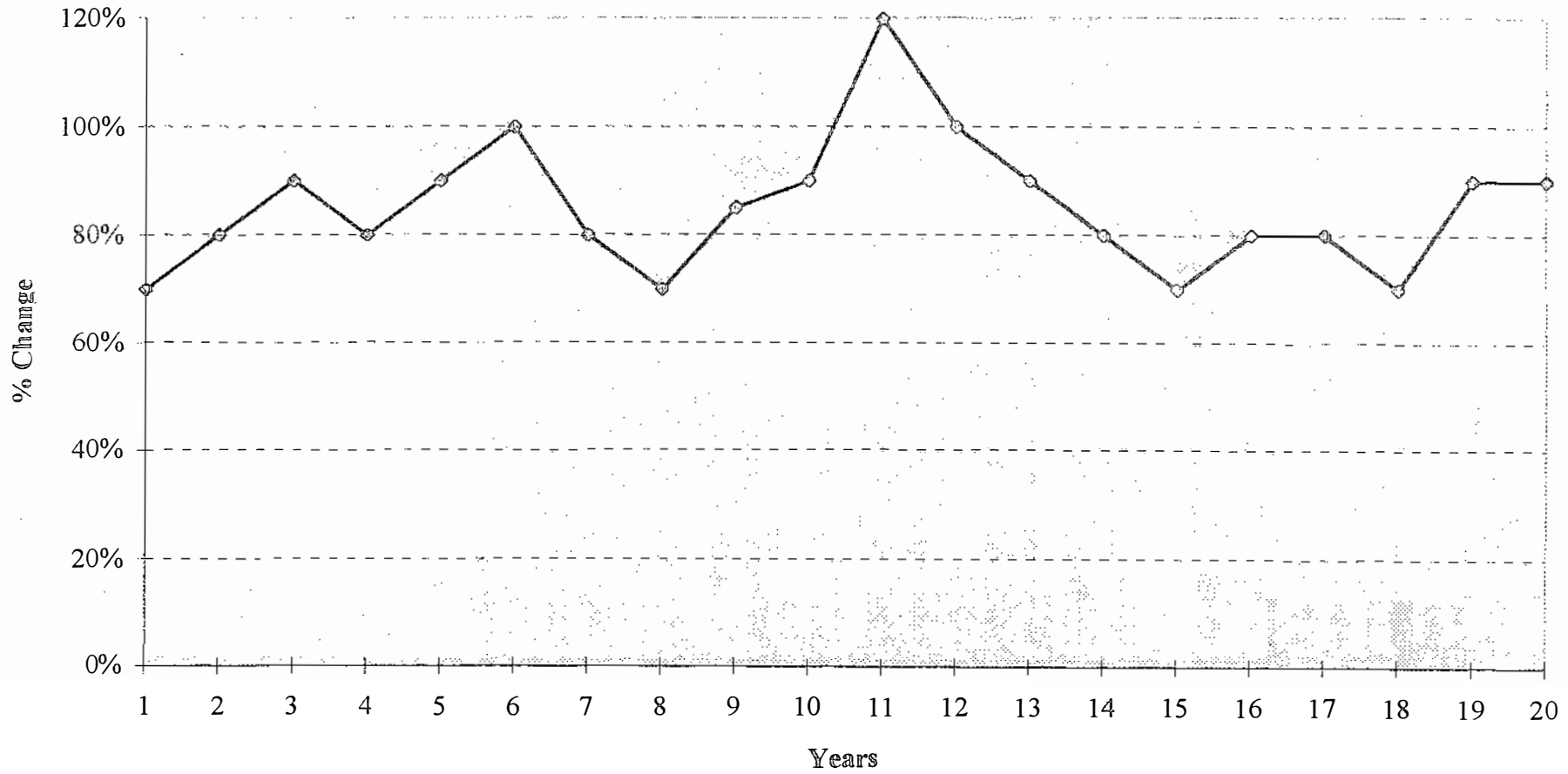
Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Prin cipal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
113	0.000	16,884,397	4,221,099	1,439,366	2,781,733	0.000	0	436,888,465	18,750	6,394	1,940,646	1,598
114	0.000	16,884,397	4,221,099	1,430,259	2,790,840	0.000	0	434,097,625	18,750	6,353	1,928,249	1,588
115	0.378	23,273,535	5,818,384	1,958,882	3,859,501	0.378	164,264,658	594,502,781	18,750	6,313	1,915,812	1,578
116	0.000	23,273,535	5,818,384	1,946,247	3,872,136	0.000	0	590,630,645	18,750	6,272	1,903,334	1,568
117	0.000	23,273,535	5,818,384	1,933,571	3,884,813	0.000	0	586,745,832	18,750	6,231	1,890,815	1,558
118	0.000	23,273,535	5,818,384	1,920,853	3,897,531	0.000	0	582,848,302	18,750	6,190	1,878,255	1,548
119	0.000	23,273,535	5,818,384	1,908,094	3,910,290	0.000	0	578,938,012	18,750	6,149	1,865,653	1,537
120	0.000	23,273,535	5,818,384	1,895,292	3,923,091	0.000	0	575,014,920	18,750	6,108	1,853,011	1,527
121	0.378	32,080,354	8,020,088	2,594,777	5,425,311	0.378	217,588,449	787,178,058	18,750	6,066	1,840,327	1,517
122	0.000	32,080,354	8,020,088	2,577,016	5,443,072	0.000	0	781,734,986	18,750	6,025	1,827,602	1,506
123	0.000	32,080,354	8,020,088	2,559,197	5,460,892	0.000	0	776,274,094	18,750	5,983	1,814,835	1,496
124	0.000	32,080,354	8,020,088	2,541,319	5,478,769	0.000	0	770,795,325	18,750	5,941	1,802,027	1,485
125	0.000	32,080,354	8,020,088	2,523,383	5,496,705	0.000	0	765,298,620	18,750	5,899	1,789,176	1,475
126	0.000	32,080,354	8,020,088	2,505,389	5,514,700	0.000	0	759,783,920	18,750	5,857	1,776,283	1,464
127	0.483	47,582,854	11,895,714	3,689,314	8,206,400	0.483	367,157,752	1,118,735,272	18,750	5,815	1,763,348	1,454
128	0.000	47,582,854	11,895,714	3,662,448	8,233,265	0.000	0	1,110,502,007	18,750	5,773	1,750,371	1,443
129	0.000	47,582,854	11,895,714	3,635,495	8,260,219	0.000	0	1,102,241,788	18,750	5,730	1,737,351	1,433
130	0.000	47,582,854	11,895,714	3,608,453	8,287,261	0.000	0	1,093,954,527	18,750	5,688	1,724,289	1,422
131	0.000	47,582,854	11,895,714	3,581,322	8,314,391	0.000	0	1,085,640,136	18,750	5,645	1,711,184	1,411
132	0.000	47,582,854	11,895,714	3,554,103	8,341,610	0.000	0	1,077,298,526	18,750	5,602	1,698,036	1,400
133	0.483	70,576,778	17,644,195	5,231,082	12,413,112	0.483	520,593,414	1,585,478,828	18,750	5,559	1,684,845	1,390
134	0.000	70,576,778	17,644,195	5,190,445	12,453,749	0.000	0	1,573,025,078	18,750	5,516	1,671,610	1,379
135	0.000	70,576,778	17,644,195	5,149,675	12,494,520	0.000	0	1,560,530,558	18,750	5,472	1,658,333	1,368
136	0.000	70,576,778	17,644,195	5,108,771	12,535,424	0.000	0	1,547,995,135	18,750	5,429	1,645,012	1,357
137	0.000	70,576,778	17,644,195	5,067,733	12,576,461	0.000	0	1,535,418,674	18,750	5,385	1,631,647	1,346
138	0.000	70,576,778	17,644,195	5,026,561	12,617,633	0.000	0	1,522,801,040	18,750	5,342	1,618,239	1,335
139	0.414	99,810,637	24,952,659	7,050,214	17,902,445	0.414	630,764,844	2,135,663,439	18,750	5,298	1,604,786	1,324
140	0.000	99,810,637	24,952,659	6,991,606	17,961,053	0.000	0	2,117,702,386	18,750	5,254	1,591,290	1,313
141	0.000	99,810,637	24,952,659	6,932,807	18,019,853	0.000	0	2,099,682,533	18,750	5,209	1,577,750	1,302
142	0.000	99,810,637	24,952,659	6,873,814	18,078,845	0.000	0	2,081,603,688	18,750	5,165	1,564,165	1,291
143	0.000	99,810,637	24,952,659	6,814,629	18,138,030	0.000	0	2,063,465,658	18,750	5,121	1,550,535	1,280
144	0.000	99,810,637	24,952,659	6,755,250	18,197,410	0.000	0	2,045,268,248	18,750	5,076	1,536,861	1,269
145	0.414	141,153,556	35,288,389	9,469,116	25,819,273	0.414	847,177,847	2,866,626,822	18,750	5,031	1,523,143	1,258

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer Price Index	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
146	0.000	141,153,556	35,288,389	9,384,590	25,903,799	0.000	0	2,840,723,023	18,750	4,986	1,509,379	1,247
147	0.000	141,153,556	35,288,389	9,299,788	25,988,601	0.000	0	2,814,734,422	18,750	4,941	1,495,570	1,235
148	0.000	141,153,556	35,288,389	9,214,708	26,073,681	0.000	0	2,788,660,741	18,750	4,896	1,481,717	1,224
149	0.000	141,153,556	35,288,389	9,129,350	26,159,039	0.000	0	2,762,501,702	18,750	4,851	1,467,817	1,213
150	0.000	141,153,556	35,288,389	9,043,712	26,244,677	0.000	0	2,736,257,024	18,750	4,805	1,453,873	1,201
151	0.378	194,566,750	48,641,688	12,347,466	36,294,221	0.378	1,035,412,998	3,735,375,801	18,750	4,760	1,439,882	1,190
152	0.000	194,566,750	48,641,688	12,228,648	36,413,039	0.000	0	3,698,962,762	18,750	4,714	1,425,846	1,178
153	0.000	194,566,750	48,641,688	12,109,442	36,532,246	0.000	0	3,662,430,516	18,750	4,668	1,411,764	1,167
154	0.000	194,566,750	48,641,688	11,989,844	36,651,843	0.000	0	3,625,778,673	18,750	4,622	1,397,636	1,155
155	0.000	194,566,750	48,641,688	11,869,856	36,771,832	0.000	0	3,589,006,841	18,750	4,575	1,383,461	1,144
156	0.000	194,566,750	48,641,688	11,749,474	36,892,213	0.000	0	3,552,114,628	18,750	4,529	1,369,240	1,132
157	0.378	268,191,757	67,047,939	16,029,055	51,018,884	0.378	1,344,137,492	4,845,233,236	18,750	4,483	1,354,973	1,121
158	0.000	268,191,757	67,047,939	15,862,033	51,185,907	0.000	0	4,794,047,330	18,750	4,436	1,340,658	1,109
159	0.000	268,191,757	67,047,939	15,694,463	51,353,476	0.000	0	4,742,693,854	18,750	4,389	1,326,297	1,097
160	0.000	268,191,757	67,047,939	15,526,346	51,521,594	0.000	0	4,691,172,260	18,750	4,342	1,311,889	1,085
161	0.000	268,191,757	67,047,939	15,357,677	51,690,262	0.000	0	4,639,481,998	18,750	4,295	1,297,434	1,074
162	0.000	268,191,757	67,047,939	15,188,457	51,859,483	0.000	0	4,587,622,515	18,750	4,247	1,282,932	1,062
163	0.342	359,817,000	89,954,250	20,149,677	69,804,573	0.342	1,567,318,964	6,085,136,907	18,750	4,200	1,268,382	1,050
164	0.000	359,817,000	89,954,250	19,921,155	70,033,095	0.000	0	6,015,103,811	18,750	4,152	1,253,784	1,038
165	0.000	359,817,000	89,954,250	19,691,885	70,262,365	0.000	0	5,944,841,446	18,750	4,105	1,239,139	1,026
166	0.000	359,817,000	89,954,250	19,461,864	70,492,386	0.000	0	5,874,349,060	18,750	4,057	1,224,445	1,014
167	0.000	359,817,000	89,954,250	19,231,090	70,723,160	0.000	0	5,803,625,900	18,750	4,009	1,209,704	1,002
168	0.000	359,817,000	89,954,250	18,999,561	70,954,689	0.000	0	5,732,671,211	18,750	3,960	1,194,914	990
169	0.342	482,745,163	120,686,291	25,178,940	95,507,351	0.342	1,958,514,301	7,595,678,162	18,750	3,912	1,180,076	978
170	0.000	482,745,163	120,686,291	24,866,274	95,820,017	0.000	0	7,499,858,145	18,750	3,863	1,165,189	966
171	0.000	482,745,163	120,686,291	24,552,584	96,133,707	0.000	0	7,403,724,438	18,750	3,815	1,150,254	954
172	0.000	482,745,163	120,686,291	24,237,867	96,448,424	0.000	0	7,307,276,014	18,750	3,766	1,135,269	941
173	0.000	482,745,163	120,686,291	23,922,120	96,764,171	0.000	0	7,210,511,844	18,750	3,717	1,120,236	929
174	0.000	482,745,163	120,686,291	23,605,339	97,080,951	0.000	0	7,113,430,892	18,750	3,667	1,105,153	917
175	0.304	629,422,686	157,355,671	30,363,213	126,992,458	0.304	2,161,348,264	9,147,786,699	18,750	3,618	1,090,021	904
176	0.000	629,422,686	157,355,671	29,947,473	127,408,198	0.000	0	9,020,378,501	18,750	3,568	1,074,840	892
177	0.000	629,422,686	157,355,671	29,530,372	127,825,299	0.000	0	8,892,553,201	18,750	3,519	1,059,608	880
178	0.000	629,422,686	157,355,671	29,111,905	128,243,766	0.000	0	8,764,309,435	18,750	3,469	1,044,327	867

Months	NOMINAL								REAL			
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer Price	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	Discounted I.F.I. Revenues
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL
179	0.000	629,422,686	157,355,671	28,692,068	128,663,603	0.000	0	8,635,645,832	18,750	3,419	1,028,996	855
180	0.000	629,422,686	157,355,671	28,270,857	129,084,814	0.000	0	8,506,561,018	18,750	3,369	1,013,615	842
181	0.304	820,666,777	205,166,694	36,309,698	168,856,996	0.304	2,584,637,592	10,922,341,614	18,750	3,318	998,183	830
182	0.000	820,666,777	205,166,694	35,756,904	169,409,790	0.000	0	10,752,931,824	18,750	3,268	982,701	817
183	0.000	820,666,777	205,166,694	35,202,301	169,964,394	0.000	0	10,582,967,430	18,750	3,217	967,168	804
184	0.000	820,666,777	205,166,694	34,645,881	170,520,813	0.000	0	10,412,446,617	18,750	3,166	951,584	792
185	0.000	820,666,777	205,166,694	34,087,641	171,079,054	0.000	0	10,241,367,564	18,750	3,115	935,949	779
186	0.000	820,666,777	205,166,694	33,527,572	171,639,122	0.000	0	10,069,728,442	18,750	3,064	920,263	766
187	0.342	1,101,040,020	275,260,005	44,228,088	231,031,917	0.342	3,440,229,945	13,278,926,470	18,750	3,013	904,526	753
188	0.000	1,101,040,020	275,260,005	43,471,750	231,788,255	0.000	0	13,047,138,214	18,750	2,961	888,737	740
189	0.000	1,101,040,020	275,260,005	42,712,935	232,547,070	0.000	0	12,814,591,145	18,750	2,909	872,897	727
190	0.000	1,101,040,020	275,260,005	41,951,637	233,308,368	0.000	0	12,581,282,777	18,750	2,858	857,004	714
191	0.000	1,101,040,020	275,260,005	41,187,846	234,072,159	0.000	0	12,347,210,617	18,750	2,806	841,060	701
192	0.000	1,101,040,020	275,260,005	40,421,555	234,838,450	0.000	0	12,112,372,167	18,750	2,753	825,063	688
193	0.342	1,477,200,199	369,300,050	53,199,753	316,100,297	0.342	4,138,080,354	15,934,352,224	18,750	2,701	809,015	675
194	0.000	1,477,200,199	369,300,050	52,164,923	317,135,127	0.000	0	15,617,217,097	18,750	2,649	792,913	662
195	0.000	1,477,200,199	369,300,050	51,126,705	318,173,345	0.000	0	15,299,043,752	18,750	2,596	776,759	649
196	0.000	1,477,200,199	369,300,050	50,085,088	319,214,962	0.000	0	14,979,828,791	18,750	2,543	760,552	636
197	0.000	1,477,200,199	369,300,050	49,040,061	320,259,988	0.000	0	14,659,568,802	18,750	2,490	744,292	622
198	0.000	1,477,200,199	369,300,050	47,991,614	321,308,436	0.000	0	14,338,260,366	18,750	2,437	727,978	609
199	0.342	1,981,872,036	495,468,009	62,976,261	432,491,748	0.342	4,898,534,549	18,804,303,166	18,750	2,383	711,611	596
200	0.000	1,981,872,036	495,468,009	61,560,395	433,907,614	0.000	0	18,370,395,553	18,750	2,330	695,191	582
201	0.000	1,981,872,036	495,468,009	60,139,895	435,328,114	0.000	0	17,935,067,438	18,750	2,276	678,717	569
202	0.000	1,981,872,036	495,468,009	58,714,744	436,753,265	0.000	0	17,498,314,173	18,750	2,222	662,189	555
203	0.000	1,981,872,036	495,468,009	57,284,927	438,183,082	0.000	0	17,060,131,091	18,750	2,168	645,607	542
204	0.000	1,981,872,036	495,468,009	55,850,430	439,617,579	0.000	0	16,620,513,512	18,750	2,114	628,970	528
205	0.342	2,658,960,358	664,740,089	73,000,334	591,739,756	0.342	5,678,245,308	21,707,019,064	18,750	2,059	612,279	515
206	0.000	2,658,960,358	664,740,089	71,063,132	593,676,958	0.000	0	21,113,342,107	18,750	2,004	595,534	501
207	0.000	2,658,960,358	664,740,089	69,119,588	595,620,501	0.000	0	20,517,721,605	18,750	1,950	578,733	487
208	0.000	2,658,960,358	664,740,089	67,169,681	597,570,408	0.000	0	19,920,151,197	18,750	1,895	561,878	474
209	0.000	2,658,960,358	664,740,089	65,213,391	599,526,698	0.000	0	19,320,624,499	18,750	1,839	544,967	460
210	0.000	2,658,960,358	664,740,089	63,250,697	601,489,392	0.000	0	18,719,135,107	18,750	1,784	528,002	446
211	0.304	3,466,860,152	866,715,038	79,901,401	786,813,637	0.304	5,687,631,016	23,619,952,486	18,750	1,729	510,980	432

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL	Real Loan Balance (000) TL	
	212.	0.000	3,466,860,152	866,715,038	77,325,578	789,389,460	0.000	0	22,830,563,026	18,750	1,673	
213	0.000	3,466,860,152	866,715,038	74,741,322	791,973,716	0.000	0	22,038,589,310	18,750	1,617	476,770	404
214	0.000	3,466,860,152	866,715,038	72,148,607	794,566,431	0.000	0	21,244,022,879	18,750	1,561	459,581	390
215	0.000	3,466,860,152	866,715,038	69,547,403	797,167,635	0.000	0	20,446,855,244	18,750	1,505	442,335	376
216	0.000	3,466,860,152	866,715,038	66,937,683	799,777,355	0.000	0	19,647,077,889	18,750	1,448	425,033	362
217	0.304	4,520,232,608	1,130,058,152	83,862,264	1,046,195,888	0.304	5,969,577,597	24,570,459,598	18,750	1,391	407,675	348
218	0.000	4,520,232,608	1,130,058,152	80,437,291	1,049,620,861	0.000	0	23,520,838,737	18,750	1,335	390,259	334
219	0.000	4,520,232,608	1,130,058,152	77,001,105	1,053,057,047	0.000	0	22,467,781,691	18,750	1,278	372,787	319
220	0.000	4,520,232,608	1,130,058,152	73,553,671	1,056,504,481	0.000	0	21,411,277,210	18,750	1,220	355,257	305
221	0.000	4,520,232,608	1,130,058,152	70,094,950	1,059,963,202	0.000	0	20,351,314,008	18,750	1,163	337,670	291
222	0.000	4,520,232,608	1,130,058,152	66,624,906	1,063,433,246	0.000	0	19,287,880,762	18,750	1,105	320,026	276
223	0.378	6,230,710,664	1,557,677,666	87,037,312	1,470,640,354	0.378	7,298,628,113	25,115,868,520	18,750	1,048	302,323	262
224	0.000	6,230,710,664	1,557,677,666	82,222,818	1,475,454,848	0.000	0	23,640,413,672	18,750	990	284,563	247
225	0.000	6,230,710,664	1,557,677,666	77,392,563	1,480,285,103	0.000	0	22,160,128,569	18,750	932	266,745	233
226	0.000	6,230,710,664	1,557,677,666	72,546,494	1,485,131,172	0.000	0	20,674,997,397	18,750	873	248,868	218
227	0.000	6,230,710,664	1,557,677,666	67,684,561	1,489,993,105	0.000	0	19,185,004,293	18,750	815	230,933	204
228	0.000	6,230,710,664	1,557,677,666	62,806,712	1,494,870,954	0.000	0	17,690,133,338	18,750	756	212,939	189
229	0.378	8,588,441,955	2,147,110,489	79,827,414	2,067,283,074	0.378	6,694,032,698	22,316,882,962	18,750	697	194,886	174
230	0.000	8,588,441,955	2,147,110,489	73,059,668	2,074,050,821	0.000	0	20,242,832,141	18,750	638	176,774	160
231	0.000	8,588,441,955	2,147,110,489	66,269,765	2,080,840,724	0.000	0	18,161,991,417	18,750	579	158,603	145
232	0.000	8,588,441,955	2,147,110,489	59,457,634	2,087,652,855	0.000	0	16,074,338,562	18,750	519	140,372	130
233	0.000	8,588,441,955	2,147,110,489	52,623,202	2,094,487,287	0.000	0	13,979,851,275	18,750	460	122,081	115
234	0.000	8,588,441,955	2,147,110,489	45,766,395	2,101,344,094	0.000	0	11,878,507,181	18,750	400	103,731	100
235	0.378	11,838,350,262	2,959,587,565	53,602,225	2,905,985,340	0.378	4,494,885,028	13,467,406,869	18,750	340	85,321	85
236	0.000	11,838,350,262	2,959,587,565	44,088,786	2,915,498,780	0.000	0	10,551,908,089	18,750	279	66,850	70
237	0.000	11,838,350,262	2,959,587,565	34,544,201	2,925,043,364	0.000	0	7,626,864,725	18,750	219	48,319	55
238	0.000	11,838,350,262	2,959,587,565	24,968,370	2,934,619,195	0.000	0	4,692,245,530	18,750	158	29,727	40
239	0.000	11,838,350,262	2,959,587,565	15,361,191	2,944,226,375	0.000	0	1,748,019,155	18,750	97	11,074	24
240	0.000	11,838,350,262	1,753,741,715	5,722,560	1,748,019,155	0.000	0	0	11,111	36	0	9

Case2
Yearly % Change in Prices and Salaries



Appendix 17. Monthly Payment Plans of The Proposed Model for Different Loan Amounts Case 1

Principal Loan Amount (TL)	4,350,000,000
Yearly Real Interest Rate	4%
Monthly Real Interest Rate	0.33%
Salary (TL)	75,000,000
Prefixed Repayment Salary Ratio	0.35
Loan Term	20
First Months Salary / House Price	0.0172414
NPV of I.F.I. Revenues (TL)	482,635,071
NPV of I.F.I. Revenues / House Price	0.11

Months	NOMINAL							REAL			Discounted I.F.I. Revenues (000) TL	
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL		Real Loan Balance (000) TL
0	0.000	0	0	0	0	0.000	0	4,350,000	0		4,350,000	
1	0.000	75,000	26,250	14,241	12,009	0.000	0	4,337,991	26,250	14,241	4,337,991	3,560
2	0.000	75,000	26,250	14,201	12,049	0.000	0	4,325,942	26,250	14,201	4,325,942	3,550
3	0.000	75,000	26,250	14,162	12,088	0.000	0	4,313,854	26,250	14,162	4,313,854	3,541
4	0.000	75,000	26,250	14,122	12,128	0.000	0	4,301,727	26,250	14,122	4,301,727	3,531
5	0.000	75,000	26,250	14,083	12,167	0.000	0	4,289,559	26,250	14,083	4,289,559	3,521
6	0.000	75,000	26,250	14,043	12,207	0.000	0	4,277,352	26,250	14,043	4,277,352	3,511
7	0.304	97,788	34,226	18,258	15,968	0.304	1,299,633	5,561,017	26,250	14,003	4,265,105	3,501
8	0.000	97,788	34,226	18,205	16,020	0.000	0	5,544,996	26,250	13,963	4,252,818	3,491
9	0.000	97,788	34,226	18,153	16,073	0.000	0	5,528,923	26,250	13,923	4,240,491	3,481
10	0.000	97,788	34,226	18,100	16,126	0.000	0	5,512,798	26,250	13,882	4,228,123	3,471
11	0.000	97,788	34,226	18,047	16,178	0.000	0	5,496,620	26,250	13,842	4,215,715	3,460
12	0.000	97,788	34,226	17,995	16,231	0.000	0	5,480,388	26,250	13,801	4,203,266	3,450
13	0.304	127,500	44,625	23,393	21,232	0.304	1,665,164	7,124,320	26,250	13,760	4,190,776	3,440
14	0.000	127,500	44,625	23,323	21,302	0.000	0	7,103,018	26,250	13,720	4,178,246	3,430

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
15	0.000	127,500	44,625	23,253	21,372	0.000	0	7,081,646	26,250	13,678	4,165,674	3,420
16	0.000	127,500	44,625	23,183	21,442	0.000	0	7,060,205	26,250	13,637	4,153,062	3,409
17	0.000	127,500	44,625	23,113	21,512	0.000	0	7,038,693	26,250	13,596	4,140,408	3,399
18	0.000	127,500	44,625	23,043	21,582	0.000	0	7,017,111	26,250	13,555	4,127,712	3,389
19	0.342	171,059	59,871	30,820	29,050	0.342	2,397,331	9,385,392	26,250	13,513	4,114,975	3,378
20	0.000	171,059	59,871	30,725	29,145	0.000	0	9,356,246	26,250	13,471	4,102,197	3,368
21	0.000	171,059	59,871	30,630	29,241	0.000	0	9,327,006	26,250	13,430	4,089,376	3,357
22	0.000	171,059	59,871	30,534	29,337	0.000	0	9,297,669	26,250	13,388	4,076,514	3,347
23	0.000	171,059	59,871	30,438	29,433	0.000	0	9,268,237	26,250	13,345	4,063,609	3,336
24	0.000	171,059	59,871	30,342	29,529	0.000	0	9,238,708	26,250	13,303	4,050,662	3,326
25	0.342	229,500	80,325	40,578	39,747	0.342	3,156,319	12,355,280	26,250	13,261	4,037,673	3,315
26	0.000	229,500	80,325	40,448	39,877	0.000	0	12,315,403	26,250	13,218	4,024,642	3,305
27	0.000	229,500	80,325	40,317	40,008	0.000	0	12,275,396	26,250	13,176	4,011,567	3,294
28	0.000	229,500	80,325	40,186	40,139	0.000	0	12,235,257	26,250	13,133	3,998,450	3,283
29	0.000	229,500	80,325	40,055	40,270	0.000	0	12,194,987	26,250	13,090	3,985,290	3,272
30	0.000	229,500	80,325	39,923	40,402	0.000	0	12,154,585	26,250	13,047	3,972,087	3,262
31	0.378	316,344	110,720	54,848	55,872	0.378	4,599,354	16,698,067	26,250	13,004	3,958,840	3,251
32	0.000	316,344	110,720	54,665	56,055	0.000	0	16,642,012	26,250	12,960	3,945,550	3,240
33	0.000	316,344	110,720	54,482	56,239	0.000	0	16,585,773	26,250	12,917	3,932,217	3,229
34	0.000	316,344	110,720	54,298	56,423	0.000	0	16,529,350	26,250	12,873	3,918,840	3,218
35	0.000	316,344	110,720	54,113	56,608	0.000	0	16,472,743	26,250	12,829	3,905,419	3,207
36	0.000	316,344	110,720	53,927	56,793	0.000	0	16,415,950	26,250	12,785	3,891,955	3,196
37	0.378	436,050	152,618	74,078	78,540	0.378	6,211,875	22,549,285	26,250	12,741	3,878,446	3,185
38	0.000	436,050	152,618	73,820	78,797	0.000	0	22,470,488	26,250	12,697	3,864,893	3,174
39	0.000	436,050	152,618	73,563	79,055	0.000	0	22,391,433	26,250	12,653	3,851,296	3,163
40	0.000	436,050	152,618	73,304	79,314	0.000	0	22,312,120	26,250	12,608	3,837,654	3,152
41	0.000	436,050	152,618	73,044	79,573	0.000	0	22,232,546	26,250	12,563	3,823,967	3,141
42	0.000	436,050	152,618	72,784	79,834	0.000	0	22,152,712	26,250	12,519	3,810,236	3,130
43	0.342	585,022	204,758	97,299	107,459	0.342	7,568,270	29,613,523	26,250	12,474	3,796,460	3,118
44	0.000	585,022	204,758	96,947	107,811	0.000	0	29,505,712	26,250	12,429	3,782,638	3,107
45	0.000	585,022	204,758	96,594	108,164	0.000	0	29,397,549	26,250	12,383	3,768,772	3,096
46	0.000	585,022	204,758	96,240	108,518	0.000	0	29,289,031	26,250	12,338	3,754,860	3,084
47	0.000	585,022	204,758	95,885	108,873	0.000	0	29,180,157	26,250	12,292	3,740,902	3,073
48	0.000	585,022	204,758	95,528	109,230	0.000	0	29,070,928	26,250	12,247	3,726,899	3,062

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
49	0.342	784,890	274,712	127,685	147,027	0.342	9,931,815	38,855,716	26,250	12,201	3,712,850	3,050
50	0.000	784,890	274,712	127,204	147,508	0.000	0	38,708,208	26,250	12,155	3,698,755	3,039
51	0.000	784,890	274,712	126,721	147,991	0.000	0	38,560,217	26,250	12,109	3,684,613	3,027
52	0.000	784,890	274,712	126,236	148,475	0.000	0	38,411,741	26,250	12,062	3,670,426	3,016
53	0.000	784,890	274,712	125,750	148,961	0.000	0	38,262,780	26,250	12,016	3,656,192	3,004
54	0.000	784,890	274,712	125,262	149,449	0.000	0	38,113,331	26,250	11,969	3,641,911	2,992
55	0.378	1,081,896	378,664	171,988	206,676	0.378	14,422,270	52,328,925	26,250	11,923	3,627,584	2,981
56	0.000	1,081,896	378,664	171,311	207,352	0.000	0	52,121,573	26,250	11,876	3,613,210	2,969
57	0.000	1,081,896	378,664	170,632	208,031	0.000	0	51,913,542	26,250	11,829	3,598,789	2,957
58	0.000	1,081,896	378,664	169,951	208,712	0.000	0	51,704,829	26,250	11,781	3,584,320	2,945
59	0.000	1,081,896	378,664	169,268	209,396	0.000	0	51,495,434	26,250	11,734	3,569,804	2,934
60	0.000	1,081,896	378,664	168,583	210,081	0.000	0	51,285,353	26,250	11,687	3,555,241	2,922
61	0.378	1,491,291	521,952	231,427	290,525	0.378	19,406,628	70,401,456	26,250	11,639	3,540,630	2,910
62	0.000	1,491,291	521,952	230,476	291,476	0.000	0	70,109,980	26,250	11,591	3,525,971	2,898
63	0.000	1,491,291	521,952	229,522	292,430	0.000	0	69,817,550	26,250	11,543	3,511,264	2,886
64	0.000	1,491,291	521,952	228,564	293,387	0.000	0	69,524,163	26,250	11,495	3,496,509	2,874
65	0.000	1,491,291	521,952	227,604	294,348	0.000	0	69,229,815	26,250	11,447	3,481,706	2,862
66	0.000	1,491,291	521,952	226,640	295,311	0.000	0	68,934,503	26,250	11,398	3,466,854	2,850
67	0.414	2,109,004	738,151	319,151	419,001	0.414	28,553,606	97,069,109	26,250	11,350	3,451,953	2,837
68	0.000	2,109,004	738,151	317,779	420,372	0.000	0	96,648,737	26,250	11,301	3,437,004	2,825
69	0.000	2,109,004	738,151	316,403	421,749	0.000	0	96,226,988	26,250	11,252	3,422,006	2,813
70	0.000	2,109,004	738,151	315,022	423,129	0.000	0	95,803,859	26,250	11,203	3,406,959	2,801
71	0.000	2,109,004	738,151	313,637	424,514	0.000	0	95,379,344	26,250	11,153	3,391,862	2,788
72	0.000	2,109,004	738,151	312,247	425,904	0.000	0	94,953,440	26,250	11,104	3,376,716	2,776
73	0.414	2,982,582	1,043,904	439,612	604,291	0.414	39,331,003	133,680,151	26,250	11,054	3,361,521	2,764
74	0.000	2,982,582	1,043,904	437,634	606,270	0.000	0	133,073,882	26,250	11,005	3,346,276	2,751
75	0.000	2,982,582	1,043,904	435,649	608,254	0.000	0	132,465,627	26,250	10,955	3,330,980	2,739
76	0.000	2,982,582	1,043,904	433,658	610,246	0.000	0	131,855,381	26,250	10,905	3,315,635	2,726
77	0.000	2,982,582	1,043,904	431,660	612,243	0.000	0	131,243,138	26,250	10,855	3,300,240	2,714
78	0.000	2,982,582	1,043,904	429,656	614,248	0.000	0	130,628,890	26,250	10,804	3,284,794	2,701
79	0.342	4,001,554	1,400,544	573,746	826,798	0.342	44,628,157	174,430,249	26,250	10,754	3,269,297	2,688
80	0.000	4,001,554	1,400,544	571,039	829,505	0.000	0	173,600,745	26,250	10,703	3,253,750	2,676
81	0.000	4,001,554	1,400,544	568,324	832,220	0.000	0	172,768,524	26,250	10,652	3,238,152	2,663
82	0.000	4,001,554	1,400,544	565,599	834,945	0.000	0	171,933,580	26,250	10,601	3,222,503	2,650

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
83	0.000	4,001,554	1,400,544	562,866	837,678	0.000	0	171,095,902	26,250	10,550	3,206,803	2,637
84	0.000	4,001,554	1,400,544	560,123	840,420	0.000	0	170,255,482	26,250	10,498	3,191,051	2,625
85	0.342	5,368,648	1,879,027	747,793	1,131,233	0.342	58,166,217	227,290,465	26,250	10,447	3,175,247	2,612
86	0.000	5,368,648	1,879,027	744,090	1,134,937	0.000	0	226,155,528	26,250	10,395	3,159,392	2,599
87	0.000	5,368,648	1,879,027	740,374	1,138,652	0.000	0	225,016,876	26,250	10,343	3,143,485	2,586
88	0.000	5,368,648	1,879,027	736,647	1,142,380	0.000	0	223,874,496	26,250	10,291	3,127,526	2,573
89	0.000	5,368,648	1,879,027	732,907	1,146,120	0.000	0	222,728,376	26,250	10,239	3,111,515	2,560
90	0.000	5,368,648	1,879,027	729,155	1,149,872	0.000	0	221,578,504	26,250	10,186	3,095,451	2,547
91	0.304	6,999,860	2,449,951	945,793	1,504,158	0.304	67,324,519	287,398,865	26,250	10,134	3,079,335	2,533
92	0.000	6,999,860	2,449,951	940,869	1,509,082	0.000	0	285,889,783	26,250	10,081	3,063,166	2,520
93	0.000	6,999,860	2,449,951	935,929	1,514,022	0.000	0	284,375,761	26,250	10,028	3,046,944	2,507
94	0.000	6,999,860	2,449,951	930,972	1,518,979	0.000	0	282,856,782	26,250	9,975	3,030,669	2,494
95	0.000	6,999,860	2,449,951	926,000	1,523,952	0.000	0	281,332,831	26,250	9,922	3,014,341	2,480
96	0.000	6,999,860	2,449,951	921,010	1,528,941	0.000	0	279,803,890	26,250	9,868	2,997,959	2,467
97	0.304	9,126,701	3,194,345	1,194,325	2,000,021	0.304	85,015,749	362,819,618	26,250	9,815	2,981,523	2,454
98	0.000	9,126,701	3,194,345	1,187,777	2,006,568	0.000	0	360,813,050	26,250	9,761	2,965,034	2,440
99	0.000	9,126,701	3,194,345	1,181,208	2,013,137	0.000	0	358,799,913	26,250	9,707	2,948,491	2,427
100	0.000	9,126,701	3,194,345	1,174,618	2,019,728	0.000	0	356,780,185	26,250	9,653	2,931,893	2,413
101	0.000	9,126,701	3,194,345	1,168,005	2,026,340	0.000	0	354,753,845	26,250	9,598	2,915,242	2,400
102	0.000	9,126,701	3,194,345	1,161,372	2,032,974	0.000	0	352,720,871	26,250	9,544	2,898,535	2,386
103	0.360	12,413,655	4,344,779	1,570,584	2,774,195	0.360	127,031,382	476,978,058	26,250	9,489	2,881,774	2,372
104	0.000	12,413,655	4,344,779	1,561,502	2,783,277	0.000	0	474,194,780	26,250	9,434	2,864,959	2,359
105	0.000	12,413,655	4,344,779	1,552,390	2,792,389	0.000	0	471,402,391	26,250	9,379	2,848,088	2,345
106	0.000	12,413,655	4,344,779	1,543,249	2,801,531	0.000	0	468,600,861	26,250	9,324	2,831,162	2,331
107	0.000	12,413,655	4,344,779	1,534,077	2,810,702	0.000	0	465,790,159	26,250	9,268	2,814,180	2,317
108	0.000	12,413,655	4,344,779	1,524,876	2,819,904	0.000	0	462,970,255	26,250	9,213	2,797,143	2,303
109	0.360	16,884,397	5,909,539	2,061,499	3,848,040	0.360	166,737,372	625,859,587	26,250	9,157	2,780,050	2,289
110	0.000	16,884,397	5,909,539	2,048,901	3,860,637	0.000	0	621,998,950	26,250	9,101	2,762,901	2,275
111	0.000	16,884,397	5,909,539	2,036,263	3,873,276	0.000	0	618,125,673	26,250	9,045	2,745,696	2,261
112	0.000	16,884,397	5,909,539	2,023,583	3,885,956	0.000	0	614,239,717	26,250	8,989	2,728,435	2,247
113	0.000	16,884,397	5,909,539	2,010,861	3,898,678	0.000	0	610,341,039	26,250	8,932	2,711,117	2,233
114	0.000	16,884,397	5,909,539	1,998,098	3,911,441	0.000	0	606,429,598	26,250	8,875	2,693,743	2,219
115	0.378	23,273,535	8,145,737	2,736,537	5,409,200	0.378	229,475,916	830,496,315	26,250	8,819	2,676,311	2,205
116	0.000	23,273,535	8,145,737	2,718,829	5,426,908	0.000	0	825,069,406	26,250	8,762	2,658,823	2,190

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
117	0.000	23,273,535	8,145,737	2,701,063	5,444,675	0.000	0	819,624,732	26,250	8,704	2,641,277	2,176
118	0.000	23,273,535	8,145,737	2,683,238	5,462,499	0.000	0	814,162,233	26,250	8,647	2,623,674	2,162
119	0.000	23,273,535	8,145,737	2,665,355	5,480,382	0.000	0	808,681,851	26,250	8,589	2,606,013	2,147
120	0.000	23,273,535	8,145,737	2,647,414	5,498,323	0.000	0	803,183,528	26,250	8,531	2,588,295	2,133
121	0.378	32,080,354	11,228,124	3,624,397	7,603,727	0.378	303,928,563	1,099,508,363	26,250	8,473	2,570,518	2,118
122	0.000	32,080,354	11,228,124	3,599,504	7,628,620	0.000	0	1,091,879,744	26,250	8,415	2,552,683	2,104
123	0.000	32,080,354	11,228,124	3,574,530	7,653,594	0.000	0	1,084,226,150	26,250	8,357	2,534,790	2,089
124	0.000	32,080,354	11,228,124	3,549,474	7,678,650	0.000	0	1,076,547,501	26,250	8,298	2,516,838	2,075
125	0.000	32,080,354	11,228,124	3,524,336	7,703,787	0.000	0	1,068,843,713	26,250	8,239	2,498,828	2,060
126	0.000	32,080,354	11,228,124	3,499,116	7,729,008	0.000	0	1,061,114,705	26,250	8,181	2,480,758	2,045
127	0.483	47,582,854	16,653,999	5,152,498	11,501,501	0.483	512,772,749	1,562,385,954	26,250	8,121	2,462,630	2,030
128	0.000	47,582,854	16,653,999	5,114,845	11,539,154	0.000	0	1,550,846,800	26,250	8,062	2,444,442	2,016
129	0.000	47,582,854	16,653,999	5,077,069	11,576,930	0.000	0	1,539,269,870	26,250	8,002	2,426,194	2,001
130	0.000	47,582,854	16,653,999	5,039,169	11,614,830	0.000	0	1,527,655,040	26,250	7,943	2,407,887	1,986
131	0.000	47,582,854	16,653,999	5,001,145	11,652,854	0.000	0	1,516,002,186	26,250	7,883	2,389,520	1,971
132	0.000	47,582,854	16,653,999	4,962,997	11,691,002	0.000	0	1,504,311,184	26,250	7,823	2,371,092	1,956
133	0.483	70,576,778	24,701,872	7,304,545	17,397,327	0.483	726,942,881	2,213,856,738	26,250	7,762	2,352,605	1,941
134	0.000	70,576,778	24,701,872	7,247,591	17,454,282	0.000	0	2,196,402,456	26,250	7,702	2,334,056	1,925
135	0.000	70,576,778	24,701,872	7,190,450	17,511,422	0.000	0	2,178,891,034	26,250	7,641	2,315,448	1,910
136	0.000	70,576,778	24,701,872	7,133,122	17,568,750	0.000	0	2,161,322,284	26,250	7,580	2,296,778	1,895
137	0.000	70,576,778	24,701,872	7,075,607	17,626,266	0.000	0	2,143,696,018	26,250	7,519	2,278,047	1,880
138	0.000	70,576,778	24,701,872	7,017,903	17,683,969	0.000	0	2,126,012,049	26,250	7,458	2,259,254	1,864
139	0.414	99,810,637	34,933,723	9,842,941	25,090,782	0.414	880,623,024	2,981,544,291	26,250	7,396	2,240,401	1,849
140	0.000	99,810,637	34,933,723	9,760,800	25,172,923	0.000	0	2,956,371,368	26,250	7,334	2,221,485	1,834
141	0.000	99,810,637	34,933,723	9,678,391	25,255,332	0.000	0	2,931,116,036	26,250	7,273	2,202,508	1,818
142	0.000	99,810,637	34,933,723	9,595,711	25,338,012	0.000	0	2,905,778,024	26,250	7,210	2,183,468	1,803
143	0.000	99,810,637	34,933,723	9,512,761	25,420,962	0.000	0	2,880,357,062	26,250	7,148	2,164,366	1,787
144	0.000	99,810,637	34,933,723	9,429,540	25,504,183	0.000	0	2,854,852,879	26,250	7,086	2,145,202	1,771
145	0.414	141,153,556	49,403,745	13,217,304	36,186,441	0.414	1,182,518,781	4,001,185,219	26,250	7,023	2,125,975	1,756
146	0.000	141,153,556	49,403,745	13,098,839	36,304,906	0.000	0	3,964,880,314	26,250	6,960	2,106,685	1,740
147	0.000	141,153,556	49,403,745	12,979,986	36,423,758	0.000	0	3,928,456,555	26,250	6,897	2,087,331	1,724
148	0.000	141,153,556	49,403,745	12,860,745	36,543,000	0.000	0	3,891,913,555	26,250	6,833	2,067,915	1,708
149	0.000	141,153,556	49,403,745	12,741,112	36,662,633	0.000	0	3,855,250,922	26,250	6,770	2,048,435	1,692
150	0.000	141,153,556	49,403,745	12,621,088	36,782,656	0.000	0	3,818,468,266	26,250	6,706	2,028,891	1,677

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
151	0.378	194,566,750	68,098,363	17,230,986	50,867,376	0.378	1,444,927,008	5,212,527,898	26,250	6,642	2,009,283	1,661
152	0.000	194,566,750	68,098,363	17,064,460	51,033,903	0.000	0	5,161,493,995	26,250	6,578	1,989,611	1,644
153	0.000	194,566,750	68,098,363	16,897,388	51,200,974	0.000	0	5,110,293,020	26,250	6,513	1,969,874	1,628
154	0.000	194,566,750	68,098,363	16,729,770	51,368,593	0.000	0	5,058,924,427	26,250	6,449	1,950,073	1,612
155	0.000	194,566,750	68,098,363	16,561,602	51,536,760	0.000	0	5,007,387,667	26,250	6,384	1,930,207	1,596
156	0.000	194,566,750	68,098,363	16,392,884	51,705,478	0.000	0	4,955,682,189	26,250	6,319	1,910,276	1,580
157	0.378	268,191,757	93,867,115	22,362,709	71,504,406	0.378	1,875,254,300	6,759,432,082	26,250	6,254	1,890,280	1,563
158	0.000	268,191,757	93,867,115	22,128,622	71,738,493	0.000	0	6,687,693,589	26,250	6,188	1,870,218	1,547
159	0.000	268,191,757	93,867,115	21,893,769	71,973,346	0.000	0	6,615,720,242	26,250	6,123	1,850,090	1,531
160	0.000	268,191,757	93,867,115	21,658,147	72,208,968	0.000	0	6,543,511,274	26,250	6,057	1,829,897	1,514
161	0.000	268,191,757	93,867,115	21,421,753	72,445,362	0.000	0	6,471,065,912	26,250	5,991	1,809,638	1,498
162	0.000	268,191,757	93,867,115	21,184,586	72,682,529	0.000	0	6,398,383,383	26,250	5,924	1,789,312	1,481
163	0.342	359,817,000	125,935,950	28,102,870	97,833,080	0.342	2,185,948,731	8,486,499,034	26,250	5,858	1,768,920	1,464
164	0.000	359,817,000	125,935,950	27,782,589	98,153,361	0.000	0	8,388,345,673	26,250	5,791	1,748,461	1,448
165	0.000	359,817,000	125,935,950	27,461,261	98,474,689	0.000	0	8,289,870,984	26,250	5,724	1,727,935	1,431
166	0.000	359,817,000	125,935,950	27,138,880	98,797,070	0.000	0	8,191,073,915	26,250	5,657	1,707,342	1,414
167	0.000	359,817,000	125,935,950	26,815,445	99,120,505	0.000	0	8,091,953,409	26,250	5,589	1,686,681	1,397
168	0.000	359,817,000	125,935,950	26,490,950	99,445,000	0.000	0	7,992,508,409	26,250	5,522	1,665,953	1,380
169	0.342	482,745,163	168,960,807	35,104,558	133,856,249	0.342	2,730,566,859	10,589,219,019	26,250	5,454	1,645,157	1,363
170	0.000	482,745,163	168,960,807	34,666,348	134,294,459	0.000	0	10,454,924,559	26,250	5,386	1,624,292	1,346
171	0.000	482,745,163	168,960,807	34,226,702	134,734,105	0.000	0	10,320,190,455	26,250	5,318	1,603,360	1,329
172	0.000	482,745,163	168,960,807	33,785,618	135,175,189	0.000	0	10,185,015,266	26,250	5,249	1,582,359	1,312
173	0.000	482,745,163	168,960,807	33,343,090	135,617,717	0.000	0	10,049,397,548	26,250	5,180	1,561,289	1,295
174	0.000	482,745,163	168,960,807	32,899,113	136,061,695	0.000	0	9,913,335,854	26,250	5,111	1,540,150	1,278
175	0.304	629,422,686	220,297,940	42,314,424	177,983,516	0.304	3,012,072,735	12,747,425,073	26,250	5,042	1,518,943	1,261
176	0.000	629,422,686	220,297,940	41,731,753	178,566,187	0.000	0	12,568,858,885	26,250	4,973	1,497,665	1,243
177	0.000	629,422,686	220,297,940	41,147,173	179,150,767	0.000	0	12,389,708,119	26,250	4,903	1,476,318	1,226
178	0.000	629,422,686	220,297,940	40,560,680	179,737,260	0.000	0	12,209,970,859	26,250	4,833	1,454,901	1,208
179	0.000	629,422,686	220,297,940	39,972,267	180,325,673	0.000	0	12,029,645,187	26,250	4,763	1,433,414	1,191
180	0.000	629,422,686	220,297,940	39,381,928	180,916,012	0.000	0	11,848,729,175	26,250	4,693	1,411,857	1,173
181	0.304	820,666,777	287,233,372	50,575,524	236,657,848	0.304	3,600,123,572	15,212,194,899	26,250	4,622	1,390,229	1,156
182	0.000	820,666,777	287,233,372	49,800,768	237,432,604	0.000	0	14,974,762,294	26,250	4,551	1,368,530	1,138
183	0.000	820,666,777	287,233,372	49,023,475	238,209,897	0.000	0	14,736,552,397	26,250	4,480	1,346,760	1,120
184	0.000	820,666,777	287,233,372	48,243,638	238,989,734	0.000	0	14,497,562,663	26,250	4,409	1,324,919	1,102

Months	NOMINAL								REAL			Discounted L.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
185	0.000	820,666,777	287,233,372	47,461,248	239,772,124	0.000	0	14,257,790,539	26,250	4,337	1,303,007	1,084
186	0.000	820,666,777	287,233,372	46,676,296	240,557,076	0.000	0	14,017,233,463	26,250	4,266	1,281,022	1,066
187	0.342	1,101,040,020	385,364,007	61,566,252	323,797,755	0.342	4,788,858,665	18,482,294,373	26,250	4,194	1,258,966	1,048
188	0.000	1,101,040,020	385,364,007	60,506,222	324,857,785	0.000	0	18,157,436,588	26,250	4,122	1,236,838	1,030
189	0.000	1,101,040,020	385,364,007	59,442,723	325,921,285	0.000	0	17,831,515,303	26,250	4,049	1,214,637	1,012
190	0.000	1,101,040,020	385,364,007	58,375,741	326,988,266	0.000	0	17,504,527,037	26,250	3,976	1,192,363	994
191	0.000	1,101,040,020	385,364,007	57,305,267	328,058,741	0.000	0	17,176,468,297	26,250	3,903	1,170,017	976
192	0.000	1,101,040,020	385,364,007	56,231,288	329,132,720	0.000	0	16,847,335,577	26,250	3,830	1,147,597	958
193	0.342	1,477,200,199	517,020,070	73,996,578	443,023,492	0.342	5,755,736,977	22,160,049,063	26,250	3,757	1,125,104	939
194	0.000	1,477,200,199	517,020,070	72,546,234	444,473,835	0.000	0	21,715,575,227	26,250	3,683	1,102,537	921
195	0.000	1,477,200,199	517,020,070	71,091,143	445,928,927	0.000	0	21,269,646,300	26,250	3,609	1,079,897	902
196	0.000	1,477,200,199	517,020,070	69,631,287	447,388,782	0.000	0	20,822,257,518	26,250	3,535	1,057,182	884
197	0.000	1,477,200,199	517,020,070	68,166,653	448,853,417	0.000	0	20,373,404,101	26,250	3,461	1,034,393	865
198	0.000	1,477,200,199	517,020,070	66,697,224	450,322,846	0.000	0	19,923,081,255	26,250	3,386	1,011,529	847
199	0.342	1,981,872,036	693,655,213	87,505,815	606,149,398	0.342	6,806,537,150	26,123,469,007	26,250	3,311	988,591	828
200	0.000	1,981,872,036	693,655,213	85,521,440	608,133,773	0.000	0	25,515,335,234	26,250	3,236	965,577	809
201	0.000	1,981,872,036	693,655,213	83,530,568	610,124,645	0.000	0	24,905,210,589	26,250	3,161	942,488	790
202	0.000	1,981,872,036	693,655,213	81,533,179	612,122,034	0.000	0	24,293,088,555	26,250	3,085	919,324	771
203	0.000	1,981,872,036	693,655,213	79,529,250	614,125,962	0.000	0	23,678,962,593	26,250	3,010	896,083	752
204	0.000	1,981,872,036	693,655,213	77,518,762	616,136,451	0.000	0	23,062,826,142	26,250	2,934	872,767	733
205	0.342	2,658,960,358	930,636,125	101,296,149	829,339,977	0.342	7,879,202,062	30,112,688,227	26,250	2,857	849,374	714
206	0.000	2,658,960,358	930,636,125	98,581,105	832,055,020	0.000	0	29,280,633,208	26,250	2,781	825,905	695
207	0.000	2,658,960,358	930,636,125	95,857,174	834,778,951	0.000	0	28,445,854,256	26,250	2,704	802,358	676
208	0.000	2,658,960,358	930,636,125	93,124,325	837,511,800	0.000	0	27,608,342,456	26,250	2,627	778,735	657
209	0.000	2,658,960,358	930,636,125	90,382,529	840,253,596	0.000	0	26,768,088,860	26,250	2,549	755,034	637
210	0.000	2,658,960,358	930,636,125	87,631,757	843,004,368	0.000	0	25,925,084,492	26,250	2,472	731,256	618
211	0.304	3,466,860,152	1,213,401,053	110,659,524	1,102,741,529	0.304	7,877,090,143	32,699,433,105	26,250	2,394	707,400	598
212	0.000	3,466,860,152	1,213,401,053	107,049,435	1,106,351,618	0.000	0	31,593,081,487	26,250	2,316	683,466	579
213	0.000	3,466,860,152	1,213,401,053	103,427,528	1,109,973,525	0.000	0	30,483,107,962	26,250	2,237	659,454	559
214	0.000	3,466,860,152	1,213,401,053	99,793,763	1,113,607,290	0.000	0	29,369,500,672	26,250	2,159	635,362	540
215	0.000	3,466,860,152	1,213,401,053	96,148,103	1,117,252,950	0.000	0	28,252,247,721	26,250	2,080	611,192	520
216	0.000	3,466,860,152	1,213,401,053	92,490,507	1,120,910,546	0.000	0	27,131,337,176	26,250	2,001	586,943	500
217	0.304	4,520,232,608	1,582,081,413	115,808,334	1,466,273,079	0.304	8,243,598,539	33,908,662,636	26,250	1,921	562,615	480
218	0.000	4,520,232,608	1,582,081,413	111,008,138	1,471,073,275	0.000	0	32,437,589,361	26,250	1,842	538,207	460

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL	Real Loan Balance (000) TL	
	219	0.000	4,520,232,608	1,582,081,413	106,192,227	1,475,889,186	0.000	0	30,961,700,175	26,250	1,762	
220	0.000	4,520,232,608	1,582,081,413	101,360,550	1,480,720,863	0.000	0	29,480,979,311	26,250	1,682	489,150	420
221	0.000	4,520,232,608	1,582,081,413	96,513,055	1,485,568,358	0.000	0	27,995,410,953	26,250	1,601	464,502	400
222	0.000	4,520,232,608	1,582,081,413	91,649,691	1,490,431,722	0.000	0	26,504,979,231	26,250	1,521	439,772	380
223	0.378	6,230,710,664	2,180,748,732	119,604,749	2,061,143,983	0.378	10,029,613,358	34,473,448,606	26,250	1,440	414,962	360
224	0.000	6,230,710,664	2,180,748,732	112,857,100	2,067,891,632	0.000	0	32,405,556,974	26,250	1,358	390,071	340
225	0.000	6,230,710,664	2,180,748,732	106,087,361	2,074,661,371	0.000	0	30,330,895,602	26,250	1,277	365,098	319
226	0.000	6,230,710,664	2,180,748,732	99,295,460	2,081,453,273	0.000	0	28,249,442,330	26,250	1,195	340,043	299
227	0.000	6,230,710,664	2,180,748,732	92,481,323	2,088,267,409	0.000	0	26,161,174,920	26,250	1,113	314,906	278
228	0.000	6,230,710,664	2,180,748,732	85,644,879	2,095,103,853	0.000	0	24,066,071,067	26,250	1,031	289,687	258
229	0.378	8,588,441,955	3,005,954,684	108,599,081	2,897,355,603	0.378	9,106,718,619	30,275,434,083	26,250	948	264,385	237
230	0.000	8,588,441,955	3,005,954,684	99,113,893	2,906,840,791	0.000	0	27,368,593,291	26,250	866	239,001	216
231	0.000	8,588,441,955	3,005,954,684	89,597,653	2,916,357,032	0.000	0	24,452,236,259	26,250	782	213,533	196
232	0.000	8,588,441,955	3,005,954,684	80,050,259	2,925,904,426	0.000	0	21,526,331,834	26,250	699	187,982	175
233	0.000	8,588,441,955	3,005,954,684	70,471,609	2,935,483,076	0.000	0	18,590,848,758	26,250	615	162,348	154
234	0.000	8,588,441,955	3,005,954,684	60,861,601	2,945,093,083	0.000	0	15,645,755,675	26,250	531	136,629	133
235	0.378	11,838,350,262	4,143,422,592	70,602,081	4,072,820,511	0.378	5,920,430,224	17,493,365,388	26,250	447	110,826	112
236	0.000	11,838,350,262	4,143,422,592	57,268,726	4,086,153,865	0.000	0	13,407,211,522	26,250	363	84,939	91
237	0.000	11,838,350,262	4,143,422,592	43,891,722	4,099,530,870	0.000	0	9,307,680,652	26,250	278	58,967	70
238	0.000	11,838,350,262	4,143,422,592	30,470,924	4,112,951,667	0.000	0	5,194,728,985	26,250	193	32,910	48
239	0.000	11,838,350,262	4,143,422,592	17,006,191	4,126,416,401	0.000	0	1,068,312,584	26,250	108	6,768	27
240	0.000	11,838,350,262	1,071,809,962	3,497,377	1,068,312,584	0.000	0	0	6,790	22	0	6

**Appendix 17. Monthly Payment Plans of The Proposed Model for Different Loan Amounts
Case 2**

Principal Loan Amount (TL)	6,210,000,000
Yearly Real Interest Rate	4%
Monthly Real Interest Rate	0.33%
Salary (TL)	75,000,000
Prefixed Repayment Salary Ratio	0.5
Loan Term	20
First Months Salary / House Price	0.012
NPV of I.F.I. Revenues (TL)	688,202,469
NPV of I.F.I. Revenues / House Price	0.11

Months	NOMINAL						REAL			Discounted I.F.I. Revenues (000) TL		
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real		Real	Real Loan
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL		Interest (000) TL	Balance (000) TL
0	0.000	0	0	0	0	0.000	0	6,210,000	0		6,210,000	
1	0.000	75,000	37,500	20,330	17,170	0.000	0	6,192,830	37,500	20,330	6,192,830	5,082
2	0.000	75,000	37,500	20,274	17,226	0.000	0	6,175,604	37,500	20,274	6,175,604	5,068
3	0.000	75,000	37,500	20,217	17,283	0.000	0	6,158,321	37,500	20,217	6,158,321	5,054
4	0.000	75,000	37,500	20,161	17,339	0.000	0	6,140,982	37,500	20,161	6,140,982	5,040
5	0.000	75,000	37,500	20,104	17,396	0.000	0	6,123,586	37,500	20,104	6,123,586	5,026
6	0.000	75,000	37,500	20,047	17,453	0.000	0	6,106,133	37,500	20,047	6,106,133	5,012
7	0.304	97,788	48,894	26,064	22,830	0.304	1,855,290	7,938,593	37,500	19,990	6,088,623	4,997
8	0.000	97,788	48,894	25,989	22,905	0.000	0	7,915,687	37,500	19,933	6,071,055	4,983
9	0.000	97,788	48,894	25,914	22,980	0.000	0	7,892,707	37,500	19,875	6,053,430	4,969
10	0.000	97,788	48,894	25,839	23,055	0.000	0	7,869,652	37,500	19,817	6,035,748	4,954
11	0.000	97,788	48,894	25,763	23,131	0.000	0	7,846,521	37,500	19,759	6,018,007	4,940
12	0.000	97,788	48,894	25,687	23,207	0.000	0	7,823,315	37,500	19,701	6,000,208	4,925
13	0.304	127,500	63,750	33,393	30,357	0.304	2,377,040	10,169,998	37,500	19,643	5,982,352	4,911
14	0.000	127,500	63,750	33,294	30,456	0.000	0	10,139,542	37,500	19,585	5,964,436	4,896

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
15	0.000	127,500	63,750	33,194	30,556	0.000	0	10,108,986	37,500	19,526	5,946,462	4,882
16	0.000	127,500	63,750	33,094	30,656	0.000	0	10,078,330	37,500	19,467	5,928,429	4,867
17	0.000	127,500	63,750	32,994	30,756	0.000	0	10,047,574	37,500	19,408	5,910,338	4,852
18	0.000	127,500	63,750	32,893	30,857	0.000	0	10,016,717	37,500	19,349	5,892,186	4,837
19	0.342	171,059	85,530	43,995	41,534	0.342	3,422,119	13,397,302	37,500	19,289	5,873,976	4,822
20	0.000	171,059	85,530	43,859	41,670	0.000	0	13,355,631	37,500	19,230	5,855,706	4,807
21	0.000	171,059	85,530	43,723	41,807	0.000	0	13,313,825	37,500	19,170	5,837,376	4,793
22	0.000	171,059	85,530	43,586	41,944	0.000	0	13,271,881	37,500	19,110	5,818,986	4,778
23	0.000	171,059	85,530	43,449	42,081	0.000	0	13,229,800	37,500	19,050	5,800,536	4,762
24	0.000	171,059	85,530	43,311	42,219	0.000	0	13,187,581	37,500	18,989	5,782,025	4,747
25	0.342	229,500	114,750	57,922	56,828	0.342	4,505,416	17,636,169	37,500	18,929	5,763,454	4,732
26	0.000	229,500	114,750	57,736	57,014	0.000	0	17,579,156	37,500	18,868	5,744,822	4,717
27	0.000	229,500	114,750	57,550	57,200	0.000	0	17,521,955	37,500	18,807	5,726,129	4,702
28	0.000	229,500	114,750	57,362	57,388	0.000	0	17,464,567	37,500	18,746	5,707,375	4,686
29	0.000	229,500	114,750	57,174	57,576	0.000	0	17,406,992	37,500	18,684	5,688,559	4,671
30	0.000	229,500	114,750	56,986	57,764	0.000	0	17,349,228	37,500	18,623	5,669,682	4,656
31	0.378	316,344	158,172	78,289	79,883	0.378	6,565,032	23,834,377	37,500	18,561	5,650,743	4,640
32	0.000	316,344	158,172	78,028	80,144	0.000	0	23,754,233	37,500	18,499	5,631,742	4,625
33	0.000	316,344	158,172	77,765	80,407	0.000	0	23,673,826	37,500	18,437	5,612,679	4,609
34	0.000	316,344	158,172	77,502	80,670	0.000	0	23,593,156	37,500	18,374	5,593,554	4,594
35	0.000	316,344	158,172	77,238	80,934	0.000	0	23,512,222	37,500	18,312	5,574,366	4,578
36	0.000	316,344	158,172	76,973	81,199	0.000	0	23,431,023	37,500	18,249	5,555,115	4,562
37	0.378	436,050	218,025	105,733	112,292	0.378	8,866,413	32,185,145	37,500	18,186	5,535,801	4,546
38	0.000	436,050	218,025	105,366	112,659	0.000	0	32,072,486	37,500	18,123	5,516,423	4,531
39	0.000	436,050	218,025	104,997	113,028	0.000	0	31,959,457	37,500	18,059	5,496,983	4,515
40	0.000	436,050	218,025	104,627	113,398	0.000	0	31,846,059	37,500	17,996	5,477,478	4,499
41	0.000	436,050	218,025	104,256	113,769	0.000	0	31,732,290	37,500	17,932	5,457,910	4,483
42	0.000	436,050	218,025	103,883	114,142	0.000	0	31,618,148	37,500	17,868	5,438,278	4,467
43	0.342	585,022	292,511	138,873	153,639	0.342	10,802,049	42,266,559	37,500	17,804	5,418,582	4,451
44	0.000	585,022	292,511	138,370	154,142	0.000	0	42,112,417	37,500	17,739	5,398,821	4,435
45	0.000	585,022	292,511	137,865	154,646	0.000	0	41,957,771	37,500	17,674	5,378,995	4,419
46	0.000	585,022	292,511	137,359	155,152	0.000	0	41,802,619	37,500	17,609	5,359,104	4,402
47	0.000	585,022	292,511	136,851	155,660	0.000	0	41,646,959	37,500	17,544	5,339,149	4,386
48	0.000	585,022	292,511	136,341	156,170	0.000	0	41,490,789	37,500	17,479	5,319,128	4,370

Months	NOMINAL					REAL						
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	Discounted
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments	Interest	Balance (000)	I.F.I. Revenues
									(000) TL	(000) TL	TL	(000) TL
49.	0.342	784,890	392,445	182,235	210,210	0.342	14,174,946	55,455,524	37,500	17,413	5,299,041	4,353
50	0.000	784,890	392,445	181,547	210,898	0.000	0	55,244,626	37,500	17,348	5,278,889	4,337
51	0.000	784,890	392,445	180,857	211,588	0.000	0	55,033,038	37,500	17,282	5,258,670	4,320
52	0.000	784,890	392,445	180,164	212,281	0.000	0	54,820,757	37,500	17,216	5,238,386	4,304
53	0.000	784,890	392,445	179,469	212,976	0.000	0	54,607,781	37,500	17,149	5,218,035	4,287
54	0.000	784,890	392,445	178,772	213,673	0.000	0	54,394,107	37,500	17,082	5,197,618	4,271
55	0.378	1,081,896	540,948	245,456	295,493	0.378	20,582,995	74,681,610	37,500	17,016	5,177,133	4,254
56	0.000	1,081,896	540,948	244,488	296,460	0.000	0	74,385,150	37,500	16,949	5,156,582	4,237
57	0.000	1,081,896	540,948	243,518	297,430	0.000	0	74,087,720	37,500	16,881	5,135,963	4,220
58	0.000	1,081,896	540,948	242,544	298,404	0.000	0	73,789,316	37,500	16,814	5,115,277	4,203
59	0.000	1,081,896	540,948	241,567	299,381	0.000	0	73,489,934	37,500	16,746	5,094,523	4,187
60	0.000	1,081,896	540,948	240,587	300,361	0.000	0	73,189,573	37,500	16,678	5,073,701	4,170
61	0.378	1,491,291	745,645	330,271	415,375	0.378	27,695,291	100,469,490	37,500	16,610	5,052,811	4,152
62	0.000	1,491,291	745,645	328,911	416,735	0.000	0	100,052,755	37,500	16,542	5,031,853	4,135
63	0.000	1,491,291	745,645	327,547	418,099	0.000	0	99,634,657	37,500	16,473	5,010,826	4,118
64	0.000	1,491,291	745,645	326,178	419,468	0.000	0	99,215,189	37,500	16,404	4,989,730	4,101
65	0.000	1,491,291	745,645	324,805	420,841	0.000	0	98,794,348	37,500	16,335	4,968,565	4,084
66	0.000	1,491,291	745,645	323,427	422,219	0.000	0	98,372,130	37,500	16,266	4,947,331	4,066
67	0.414	2,109,004	1,054,502	455,440	599,062	0.414	40,747,070	138,520,138	37,500	16,196	4,926,027	4,049
68	0.000	2,109,004	1,054,502	453,479	601,023	0.000	0	137,919,115	37,500	16,127	4,904,653	4,032
69	0.000	2,109,004	1,054,502	451,511	602,991	0.000	0	137,316,124	37,500	16,057	4,883,210	4,014
70	0.000	2,109,004	1,054,502	449,537	604,965	0.000	0	136,711,160	37,500	15,986	4,861,696	3,997
71	0.000	2,109,004	1,054,502	447,557	606,945	0.000	0	136,104,214	37,500	15,916	4,840,112	3,979
72	0.000	2,109,004	1,054,502	445,570	608,932	0.000	0	135,495,282	37,500	15,845	4,818,458	3,961
73	0.414	2,982,582	1,491,291	627,312	863,979	0.414	56,123,983	190,755,286	37,500	15,774	4,796,732	3,944
74	0.000	2,982,582	1,491,291	624,483	866,808	0.000	0	189,888,478	37,500	15,703	4,774,935	3,926
75	0.000	2,982,582	1,491,291	621,645	869,646	0.000	0	189,018,833	37,500	15,632	4,753,067	3,908
76	0.000	2,982,582	1,491,291	618,798	872,493	0.000	0	188,146,340	37,500	15,560	4,731,127	3,890
77	0.000	2,982,582	1,491,291	615,942	875,349	0.000	0	187,270,991	37,500	15,488	4,709,116	3,872
78	0.000	2,982,582	1,491,291	613,076	878,215	0.000	0	186,392,777	37,500	15,416	4,687,032	3,854
79	0.342	4,001,554	2,000,777	818,671	1,182,106	0.342	63,679,375	248,890,046	37,500	15,344	4,664,876	3,836
80	0.000	4,001,554	2,000,777	814,801	1,185,976	0.000	0	247,704,071	37,500	15,272	4,642,648	3,818
81	0.000	4,001,554	2,000,777	810,919	1,189,858	0.000	0	246,514,212	37,500	15,199	4,620,347	3,800
82	0.000	4,001,554	2,000,777	807,023	1,193,753	0.000	0	245,320,459	37,500	15,126	4,597,973	3,781

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	(000) TL	Interest (000) TL	
83	0.000	4,001,554	2,000,777	803,115	1,197,661	0.000	0	244,122,798	37,500	15,053	4,575,525	3,763
84	0.000	4,001,554	2,000,777	799,195	1,201,582	0.000	0	242,921,215	37,500	14,979	4,553,004	3,745
85	0.342	5,368,648	2,684,324	1,066,954	1,617,369	0.342	82,991,795	324,295,641	37,500	14,905	4,530,410	3,726
86	0.000	5,368,648	2,684,324	1,061,660	1,622,664	0.000	0	322,672,977	37,500	14,831	4,507,741	3,708
87	0.000	5,368,648	2,684,324	1,056,347	1,627,976	0.000	0	321,045,000	37,500	14,757	4,484,998	3,689
88	0.000	5,368,648	2,684,324	1,051,018	1,633,306	0.000	0	319,411,694	37,500	14,683	4,462,181	3,671
89	0.000	5,368,648	2,684,324	1,045,671	1,638,653	0.000	0	317,773,041	37,500	14,608	4,439,289	3,652
90	0.000	5,368,648	2,684,324	1,040,306	1,644,018	0.000	0	316,129,024	37,500	14,533	4,416,322	3,633
91	0.304	6,999,860	3,499,930	1,349,376	2,150,554	0.304	96,052,795	410,031,264	37,500	14,458	4,393,280	3,614
92	0.000	6,999,860	3,499,930	1,342,336	2,157,594	0.000	0	407,873,670	37,500	14,382	4,370,162	3,596
93	0.000	6,999,860	3,499,930	1,335,272	2,164,658	0.000	0	405,709,012	37,500	14,307	4,346,969	3,577
94	0.000	6,999,860	3,499,930	1,328,186	2,171,744	0.000	0	403,537,268	37,500	14,231	4,323,700	3,558
95	0.000	6,999,860	3,499,930	1,321,076	2,178,854	0.000	0	401,358,414	37,500	14,155	4,300,355	3,539
96	0.000	6,999,860	3,499,930	1,313,943	2,185,987	0.000	0	399,172,427	37,500	14,078	4,276,933	3,520
97	0.304	9,126,701	4,563,350	1,703,841	2,859,509	0.304	121,284,742	517,597,660	37,500	14,002	4,253,434	3,500
98	0.000	9,126,701	4,563,350	1,694,480	2,868,870	0.000	0	514,728,789	37,500	13,925	4,229,859	3,481
99	0.000	9,126,701	4,563,350	1,685,088	2,878,262	0.000	0	511,850,527	37,500	13,847	4,206,207	3,462
100	0.000	9,126,701	4,563,350	1,675,665	2,887,685	0.000	0	508,962,842	37,500	13,770	4,182,477	3,443
101	0.000	9,126,701	4,563,350	1,666,212	2,897,139	0.000	0	506,065,703	37,500	13,692	4,158,669	3,423
102	0.000	9,126,701	4,563,350	1,656,727	2,906,623	0.000	0	503,159,080	37,500	13,614	4,134,783	3,404
103	0.360	12,413,655	6,206,828	2,240,450	3,966,377	0.360	181,211,259	680,403,962	37,500	13,536	4,110,820	3,384
104	0.000	12,413,655	6,206,828	2,227,466	3,979,362	0.000	0	676,424,600	37,500	13,458	4,086,777	3,364
105	0.000	12,413,655	6,206,828	2,214,438	3,992,390	0.000	0	672,432,210	37,500	13,379	4,062,656	3,345
106	0.000	12,413,655	6,206,828	2,201,368	4,005,460	0.000	0	668,426,750	37,500	13,300	4,038,456	3,325
107	0.000	12,413,655	6,206,828	2,188,255	4,018,572	0.000	0	664,408,178	37,500	13,221	4,014,177	3,305
108	0.000	12,413,655	6,206,828	2,175,099	4,031,728	0.000	0	660,376,450	37,500	13,141	3,989,819	3,285
109	0.360	16,884,397	8,442,198	2,940,503	5,501,696	0.360	237,832,631	892,707,385	37,500	13,062	3,965,380	3,265
110	0.000	16,884,397	8,442,198	2,922,492	5,519,707	0.000	0	887,187,678	37,500	12,982	3,940,862	3,245
111	0.000	16,884,397	8,442,198	2,904,422	5,537,777	0.000	0	881,649,902	37,500	12,901	3,916,263	3,225
112	0.000	16,884,397	8,442,198	2,886,292	5,555,906	0.000	0	876,093,996	37,500	12,821	3,891,584	3,205
113	0.000	16,884,397	8,442,198	2,868,104	5,574,095	0.000	0	870,519,901	37,500	12,740	3,866,824	3,185
114	0.000	16,884,397	8,442,198	2,849,856	5,592,343	0.000	0	864,927,558	37,500	12,659	3,841,983	3,165
115	0.378	23,273,535	11,636,767	3,903,019	7,733,748	0.378	327,292,805	1,184,486,615	37,500	12,578	3,817,061	3,144
116	0.000	23,273,535	11,636,767	3,877,701	7,759,066	0.000	0	1,176,727,549	37,500	12,496	3,792,057	3,124

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Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
117	0.000	23,273,535	11,636,767	3,852,300	7,784,468	0.000	0	1,168,943,081	37,500	12,414	3,766,971	3,104
118	0.000	23,273,535	11,636,767	3,826,815	7,809,952	0.000	0	1,161,133,129	37,500	12,332	3,741,803	3,083
119	0.000	23,273,535	11,636,767	3,801,248	7,835,520	0.000	0	1,153,297,610	37,500	12,250	3,716,553	3,062
120	0.000	23,273,535	11,636,767	3,775,596	7,861,171	0.000	0	1,145,436,438	37,500	12,167	3,691,220	3,042
121	0.378	32,080,354	16,040,177	5,168,826	10,871,350	0.378	433,438,733	1,568,003,821	37,500	12,084	3,665,804	3,021
122	0.000	32,080,354	16,040,177	5,133,236	10,906,940	0.000	0	1,557,096,880	37,500	12,001	3,640,305	3,000
123	0.000	32,080,354	16,040,177	5,097,530	10,942,647	0.000	0	1,546,154,233	37,500	11,917	3,614,722	2,979
124	0.000	32,080,354	16,040,177	5,061,707	10,978,470	0.000	0	1,535,175,763	37,500	11,834	3,589,056	2,958
125	0.000	32,080,354	16,040,177	5,025,766	11,014,411	0.000	0	1,524,161,352	37,500	11,750	3,563,306	2,937
126	0.000	32,080,354	16,040,177	4,989,708	11,050,469	0.000	0	1,513,110,883	37,500	11,665	3,537,471	2,916
127	0.483	47,582,854	23,791,427	7,347,274	16,444,153	0.483	731,195,245	2,227,861,976	37,500	11,581	3,511,552	2,895
128	0.000	47,582,854	23,791,427	7,293,440	16,497,987	0.000	0	2,211,363,989	37,500	11,496	3,485,548	2,874
129	0.000	47,582,854	23,791,427	7,239,430	16,551,997	0.000	0	2,194,811,992	37,500	11,411	3,459,458	2,853
130	0.000	47,582,854	23,791,427	7,185,243	16,606,184	0.000	0	2,178,205,808	37,500	11,325	3,433,284	2,831
131	0.000	47,582,854	23,791,427	7,130,879	16,660,548	0.000	0	2,161,545,260	37,500	11,240	3,407,023	2,810
132	0.000	47,582,854	23,791,427	7,076,337	16,715,090	0.000	0	2,144,830,170	37,500	11,154	3,380,677	2,788
133	0.483	70,576,778	35,288,389	10,414,739	24,873,650	0.483	1,036,467,082	3,156,423,602	37,500	11,067	3,354,245	2,767
134	0.000	70,576,778	35,288,389	10,333,310	24,955,080	0.000	0	3,131,468,523	37,500	10,981	3,327,725	2,745
135	0.000	70,576,778	35,288,389	10,251,613	25,036,776	0.000	0	3,106,431,747	37,500	10,894	3,301,120	2,724
136	0.000	70,576,778	35,288,389	10,169,649	25,118,740	0.000	0	3,081,313,007	37,500	10,807	3,274,427	2,702
137	0.000	70,576,778	35,288,389	10,087,417	25,200,972	0.000	0	3,056,112,035	37,500	10,720	3,247,646	2,680
138	0.000	70,576,778	35,288,389	10,004,916	25,283,474	0.000	0	3,030,828,561	37,500	10,632	3,220,778	2,658
139	0.414	99,810,637	49,905,318	14,032,031	35,873,288	0.414	1,255,410,295	4,250,365,569	37,500	10,544	3,193,822	2,636
140	0.000	99,810,637	49,905,318	13,914,591	35,990,728	0.000	0	4,214,374,841	37,500	10,456	3,166,778	2,614
141	0.000	99,810,637	49,905,318	13,796,767	36,108,552	0.000	0	4,178,266,289	37,500	10,367	3,139,645	2,592
142	0.000	99,810,637	49,905,318	13,678,557	36,226,762	0.000	0	4,142,039,527	37,500	10,278	3,112,423	2,570
143	0.000	99,810,637	49,905,318	13,559,960	36,345,359	0.000	0	4,105,694,168	37,500	10,189	3,085,113	2,547
144	0.000	99,810,637	49,905,318	13,440,974	36,464,344	0.000	0	4,069,229,824	37,500	10,100	3,057,713	2,525
145	0.414	141,153,556	70,576,778	18,839,587	51,737,191	0.414	1,685,530,182	5,703,022,814	37,500	10,010	3,030,223	2,503
146	0.000	141,153,556	70,576,778	18,670,213	51,906,566	0.000	0	5,651,116,249	37,500	9,920	3,002,643	2,480
147	0.000	141,153,556	70,576,778	18,500,284	52,076,494	0.000	0	5,599,039,754	37,500	9,830	2,974,973	2,457
148	0.000	141,153,556	70,576,778	18,329,799	52,246,979	0.000	0	5,546,792,775	37,500	9,739	2,947,212	2,435
149	0.000	141,153,556	70,576,778	18,158,756	52,418,022	0.000	0	5,494,374,753	37,500	9,648	2,919,360	2,412
150	0.000	141,153,556	70,576,778	17,987,153	52,589,625	0.000	0	5,441,785,128	37,500	9,557	2,891,418	2,389

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
151.	0.378	194,566,750	97,283,375	24,556,267	72,727,108	0.378	2,059,198,022	7,428,256,043	37,500	9,466	2,863,383	2,366
152	0.000	194,566,750	97,283,375	24,318,177	72,965,198	0.000	0	7,355,290,845	37,500	9,374	2,835,257	2,343
153	0.000	194,566,750	97,283,375	24,079,308	73,204,067	0.000	0	7,282,086,778	37,500	9,282	2,807,039	2,320
154	0.000	194,566,750	97,283,375	23,839,657	73,443,718	0.000	0	7,208,643,060	37,500	9,190	2,778,729	2,297
155	0.000	194,566,750	97,283,375	23,599,222	73,684,154	0.000	0	7,134,958,906	37,500	9,097	2,750,326	2,274
156	0.000	194,566,750	97,283,375	23,357,999	73,925,376	0.000	0	7,061,033,530	37,500	9,004	2,721,829	2,251
157	0.378	268,191,757	134,095,879	31,863,188	102,232,690	0.378	2,671,929,512	9,630,730,351	37,500	8,911	2,693,240	2,228
158	0.000	268,191,757	134,095,879	31,528,505	102,567,374	0.000	0	9,528,162,978	37,500	8,817	2,664,557	2,204
159	0.000	268,191,757	134,095,879	31,192,726	102,903,152	0.000	0	9,425,259,825	37,500	8,723	2,635,780	2,181
160	0.000	268,191,757	134,095,879	30,855,848	103,240,031	0.000	0	9,322,019,795	37,500	8,629	2,606,909	2,157
161	0.000	268,191,757	134,095,879	30,517,867	103,578,012	0.000	0	9,218,441,783	37,500	8,534	2,577,943	2,134
162	0.000	268,191,757	134,095,879	30,178,780	103,917,099	0.000	0	9,114,524,684	37,500	8,440	2,548,883	2,110
163	0.342	359,817,000	179,908,500	40,032,659	139,875,841	0.342	3,113,893,382	12,088,542,225	37,500	8,344	2,519,727	2,086
164	0.000	359,817,000	179,908,500	39,574,742	140,333,758	0.000	0	11,948,208,466	37,500	8,249	2,490,476	2,062
165	0.000	359,817,000	179,908,500	39,115,325	140,793,175	0.000	0	11,807,415,291	37,500	8,153	2,461,129	2,038
166	0.000	359,817,000	179,908,500	38,654,405	141,254,095	0.000	0	11,666,161,197	37,500	8,057	2,431,686	2,014
167	0.000	359,817,000	179,908,500	38,191,976	141,716,524	0.000	0	11,524,444,673	37,500	7,961	2,402,147	1,990
168	0.000	359,817,000	179,908,500	37,728,033	142,180,467	0.000	0	11,382,264,206	37,500	7,864	2,372,511	1,966
169	0.342	482,745,163	241,372,581	49,992,985	191,379,596	0.342	3,888,645,695	15,079,530,305	37,500	7,767	2,342,778	1,942
170	0.000	482,745,163	241,372,581	49,366,458	192,006,123	0.000	0	14,887,524,181	37,500	7,670	2,312,948	1,917
171	0.000	482,745,163	241,372,581	48,737,880	192,634,701	0.000	0	14,694,889,480	37,500	7,572	2,283,020	1,893
172	0.000	482,745,163	241,372,581	48,107,244	193,265,337	0.000	0	14,501,624,143	37,500	7,474	2,252,994	1,869
173	0.000	482,745,163	241,372,581	47,474,544	193,898,038	0.000	0	14,307,726,105	37,500	7,376	2,222,869	1,844
174	0.000	482,745,163	241,372,581	46,839,772	194,532,809	0.000	0	14,113,193,296	37,500	7,277	2,192,647	1,819
175	0.304	629,422,686	314,711,343	60,241,240	254,470,102	0.304	4,288,159,440	18,146,882,634	37,500	7,178	2,162,325	1,795
176	0.000	629,422,686	314,711,343	59,408,172	255,303,171	0.000	0	17,891,579,462	37,500	7,079	2,131,904	1,770
177	0.000	629,422,686	314,711,343	58,572,375	256,138,967	0.000	0	17,635,440,495	37,500	6,979	2,101,383	1,745
178	0.000	629,422,686	314,711,343	57,733,843	256,977,500	0.000	0	17,378,462,996	37,500	6,879	2,070,762	1,720
179	0.000	629,422,686	314,711,343	56,892,566	257,818,777	0.000	0	17,120,644,218	37,500	6,779	2,040,041	1,695
180	0.000	629,422,686	314,711,343	56,048,534	258,662,809	0.000	0	16,861,981,410	37,500	6,679	2,009,220	1,670
181	0.304	820,666,777	410,333,389	71,974,262	338,359,126	0.304	5,123,352,543	21,646,974,826	37,500	6,578	1,978,298	1,644
182	0.000	820,666,777	410,333,389	70,866,563	339,466,826	0.000	0	21,307,508,001	37,500	6,476	1,947,274	1,619
183	0.000	820,666,777	410,333,389	69,755,237	340,578,152	0.000	0	20,966,929,849	37,500	6,375	1,916,149	1,594
184	0.000	820,666,777	410,333,389	68,640,272	341,693,116	0.000	0	20,625,236,732	37,500	6,273	1,884,922	1,568

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
185	0.000	820,666,777	410,333,389	67,521,658	342,811,731	0.000	0	20,282,425,002	37,500	6,171	1,853,593	1,543
186	0.000	820,666,777	410,333,389	66,399,382	343,934,007	0.000	0	19,938,490,995	37,500	6,068	1,822,161	1,517
187	0.342	1,101,040,020	550,520,010	87,573,498	462,946,513	0.342	6,811,801,745	26,287,346,227	37,500	5,965	1,790,626	1,491
188	0.000	1,101,040,020	550,520,010	86,057,931	464,462,079	0.000	0	25,822,884,148	37,500	5,862	1,758,988	1,466
189	0.000	1,101,040,020	550,520,010	84,537,403	465,982,607	0.000	0	25,356,901,541	37,500	5,758	1,727,247	1,440
190	0.000	1,101,040,020	550,520,010	83,011,897	467,508,113	0.000	0	24,889,393,429	37,500	5,655	1,695,401	1,414
191	0.000	1,101,040,020	550,520,010	81,481,397	469,038,613	0.000	0	24,420,354,816	37,500	5,550	1,663,451	1,388
192	0.000	1,101,040,020	550,520,010	79,945,887	470,574,123	0.000	0	23,949,780,693	37,500	5,446	1,631,397	1,361
193	0.342	1,477,200,199	738,600,099	105,191,815	633,408,284	0.342	8,182,221,912	31,498,594,321	37,500	5,341	1,599,238	1,335
194	0.000	1,477,200,199	738,600,099	103,118,201	635,481,898	0.000	0	30,863,112,423	37,500	5,235	1,566,973	1,309
195	0.000	1,477,200,199	738,600,099	101,037,799	637,562,300	0.000	0	30,225,550,123	37,500	5,130	1,534,603	1,282
196	0.000	1,477,200,199	738,600,099	98,950,586	639,649,513	0.000	0	29,585,900,609	37,500	5,024	1,502,127	1,256
197	0.000	1,477,200,199	738,600,099	96,856,540	641,743,560	0.000	0	28,944,157,050	37,500	4,918	1,469,545	1,229
198	0.000	1,477,200,199	738,600,099	94,755,638	643,844,461	0.000	0	28,300,312,589	37,500	4,811	1,436,856	1,203
199	0.342	1,981,872,036	990,936,018	124,300,147	866,635,872	0.342	9,668,541,051	37,102,217,768	37,500	4,704	1,404,060	1,176
200	0.000	1,981,872,036	990,936,018	121,463,006	869,473,012	0.000	0	36,232,744,756	37,500	4,597	1,371,156	1,149
201	0.000	1,981,872,036	990,936,018	118,616,578	872,319,440	0.000	0	35,360,425,316	37,500	4,489	1,338,145	1,122
202	0.000	1,981,872,036	990,936,018	115,760,831	875,175,187	0.000	0	34,485,250,129	37,500	4,381	1,305,026	1,095
203	0.000	1,981,872,036	990,936,018	112,895,735	878,040,283	0.000	0	33,607,209,846	37,500	4,272	1,271,798	1,068
204	0.000	1,981,872,036	990,936,018	110,021,260	880,914,758	0.000	0	32,726,295,087	37,500	4,164	1,238,461	1,041
205	0.342	2,658,960,358	1,329,480,179	143,739,871	1,185,740,308	0.342	11,180,637,193	42,721,191,972	37,500	4,054	1,205,016	1,014
206	0.000	2,658,960,358	1,329,480,179	139,858,066	1,189,622,113	0.000	0	41,531,569,859	37,500	3,945	1,171,461	986
207	0.000	2,658,960,358	1,329,480,179	135,963,552	1,193,516,626	0.000	0	40,338,053,233	37,500	3,835	1,137,796	959
208	0.000	2,658,960,358	1,329,480,179	132,056,290	1,197,423,889	0.000	0	39,140,629,343	37,500	3,725	1,104,021	931
209	0.000	2,658,960,358	1,329,480,179	128,136,235	1,201,343,943	0.000	0	37,939,285,400	37,500	3,614	1,070,135	904
210	0.000	2,658,960,358	1,329,480,179	124,203,348	1,205,276,831	0.000	0	36,734,008,569	37,500	3,503	1,036,138	876
211	0.304	3,466,860,152	1,733,430,076	156,796,708	1,576,633,368	0.304	11,161,278,834	46,318,654,035	37,500	3,392	1,002,030	848
212	0.000	3,466,860,152	1,733,430,076	151,635,220	1,581,794,856	0.000	0	44,736,859,179	37,500	3,280	967,811	820
213	0.000	3,466,860,152	1,733,430,076	146,456,836	1,586,973,240	0.000	0	43,149,885,939	37,500	3,168	933,479	792
214	0.000	3,466,860,152	1,733,430,076	141,261,498	1,592,168,578	0.000	0	41,557,717,361	37,500	3,056	899,035	764
215	0.000	3,466,860,152	1,733,430,076	136,049,153	1,597,380,923	0.000	0	39,960,336,438	37,500	2,943	864,478	736
216	0.000	3,466,860,152	1,733,430,076	130,819,743	1,602,610,333	0.000	0	38,357,726,105	37,500	2,830	829,808	708
217	0.304	4,520,232,608	2,260,116,304	163,727,440	2,096,388,864	0.304	11,654,629,951	47,915,967,192	37,500	2,717	795,025	679
218	0.000	4,520,232,608	2,260,116,304	156,864,408	2,103,251,896	0.000	0	45,812,715,296	37,500	2,603	760,128	651

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
219	0.000	4,520,232,608	2,260,116,304	149,978,909	2,110,137,395	0.000	0	43,702,577,900	37,500	2,488	725,116	622
220	0.000	4,520,232,608	2,260,116,304	143,070,868	2,117,045,436	0.000	0	41,585,532,464	37,500	2,374	689,990	593
221	0.000	4,520,232,608	2,260,116,304	136,140,212	2,123,976,092	0.000	0	39,461,556,372	37,500	2,259	654,749	565
222	0.000	4,520,232,608	2,260,116,304	129,186,867	2,130,929,437	0.000	0	37,330,626,935	37,500	2,143	619,392	536
223	0.378	6,230,710,664	3,115,355,332	168,455,905	2,946,899,427	0.378	14,126,091,227	48,509,818,735	37,500	2,028	583,920	507
224	0.000	6,230,710,664	3,115,355,332	158,808,523	2,956,546,809	0.000	0	45,553,271,926	37,500	1,912	548,332	478
225	0.000	6,230,710,664	3,115,355,332	149,129,559	2,966,225,774	0.000	0	42,587,046,153	37,500	1,795	512,627	449
226	0.000	6,230,710,664	3,115,355,332	139,418,907	2,975,936,425	0.000	0	39,611,109,728	37,500	1,678	476,805	420
227	0.000	6,230,710,664	3,115,355,332	129,676,466	2,985,678,866	0.000	0	36,625,430,862	37,500	1,561	440,866	390
228	0.000	6,230,710,664	3,115,355,332	119,902,130	2,995,453,202	0.000	0	33,629,977,660	37,500	1,443	404,809	361
229	0.378	8,588,441,955	4,294,220,978	151,756,582	4,142,464,396	0.378	12,725,747,500	42,213,260,763	37,500	1,325	368,634	331
230	0.000	8,588,441,955	4,294,220,978	138,195,231	4,156,025,747	0.000	0	38,057,235,016	37,500	1,207	332,341	302
231	0.000	8,588,441,955	4,294,220,978	124,589,484	4,169,631,493	0.000	0	33,887,603,523	37,500	1,088	295,929	272
232	0.000	8,588,441,955	4,294,220,978	110,939,196	4,183,281,782	0.000	0	29,704,321,741	37,500	969	259,398	242
233	0.000	8,588,441,955	4,294,220,978	97,244,220	4,196,976,758	0.000	0	25,507,344,983	37,500	849	222,747	212
234	0.000	8,588,441,955	4,294,220,978	83,504,410	4,210,716,568	0.000	0	21,296,628,415	37,500	729	185,976	182
235	0.378	11,838,350,262	5,919,175,131	96,101,864	5,823,073,267	0.378	8,058,748,018	23,532,303,166	37,500	609	149,085	152
236	0.000	11,838,350,262	5,919,175,131	77,038,637	5,842,136,494	0.000	0	17,690,166,672	37,500	488	112,073	122
237	0.000	11,838,350,262	5,919,175,131	57,913,002	5,861,262,129	0.000	0	11,828,904,544	37,500	367	74,940	92
238	0.000	11,838,350,262	5,919,175,131	38,724,755	5,880,450,376	0.000	0	5,948,454,168	37,500	245	37,685	61
239	0.000	11,838,350,262	5,919,175,131	19,473,691	5,899,701,440	0.000	0	48,752,728	37,500	123	309	31
240	0.000	11,838,350,262	48,912,332	159,604	48,752,728	0.000	0	0	310	1	309	0

Appendix 17. Monthly Payment Plans of The Proposed Model for Different Loan Amounts Case 3

Principal Loan Amount (TL)	8,080,900,000
Yearly Real Interest Rate	4%
Monthly Real Interest Rate	0.33%
Salary (TL)	75,000,000
Prefixed Repayment Salary Ratio	0.65
Loan Term	20
First Months Salary / House Price	0.0093
NPV of I.F.I. Revenues (TL)	896,747,675
NPV of I.F.I. Revenues / House Price	0.11

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments	Interest	Balance	
0	0.000	0)	0	0	0	0.000	0	8,080,000	0		8,080,000	
1	0.000	75,000	48,750	26,452	22,298	0.000	0	8,057,702	48,750	26,452	8,057,702	6,613
2	0.000	75,000	48,750	26,379	22,371	0.000	0	8,035,331	48,750	26,379	8,035,331	6,595
3	0.000	75,000	48,750	26,306	22,444	0.000	0	8,012,886	48,750	26,306	8,012,886	6,576
4	0.000	75,000	48,750	26,232	22,518	0.000	0	7,990,368	48,750	26,232	7,990,368	6,558
5	0.000	75,000	48,750	26,158	22,592	0.000	0	7,967,777	48,750	26,158	7,967,777	6,540
6	0.000	75,000	48,750	26,084	22,666	0.000	0	7,945,111	48,750	26,084	7,945,111	6,521
7	0.304	97,788	63,562	33,913	29,649	0.304	2,414,046	10,329,508	48,750	26,010	7,922,371	6,503
8	0.000	97,788	63,562	33,816	29,746	0.000	0	10,299,762	48,750	25,936	7,899,557	6,484
9	0.000	97,788	63,562	33,719	29,843	0.000	0	10,269,919	48,750	25,861	7,876,668	6,465
10	0.000	97,788	63,562	33,621	29,941	0.000	0	10,239,978	48,750	25,786	7,853,704	6,447
11	0.000	97,788	63,562	33,523	30,039	0.000	0	10,209,939	48,750	25,711	7,830,665	6,428
12	0.000	97,788	63,562	33,425	30,138	0.000	0	10,179,801	48,750	25,636	7,807,551	6,409
13	0.304	127,500	82,875	43,452	39,423	0.304	3,093,036	13,233,413	48,750	25,560	7,784,361	6,390
14	0.000	127,500	82,875	43,323	39,552	0.000	0	13,193,861	48,750	25,484	7,761,095	6,371

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments	Interest	Balance	
15	0.000	127,500	82,875	43,193	39,682	0.000	0	13,154,179	48,750	25,408	7,737,753	6,352
16	0.000	127,500	82,875	43,063	39,812	0.000	0	13,114,368	48,750	25,331	7,714,334	6,333
17	0.000	127,500	82,875	42,933	39,942	0.000	0	13,074,426	48,750	25,255	7,690,839	6,314
18	0.000	127,500	82,875	42,802	40,073	0.000	0	13,034,353	48,750	25,178	7,667,267	6,294
19	0.342	171,059	111,188	57,249	53,939	0.342	4,453,067	17,433,481	48,750	25,101	7,643,617	6,275
20	0.000	171,059	111,188	57,073	54,116	0.000	0	17,379,365	48,750	25,023	7,619,890	6,256
21	0.000	171,059	111,188	56,896	54,293	0.000	0	17,325,072	48,750	24,946	7,596,086	6,236
22	0.000	171,059	111,188	56,718	54,471	0.000	0	17,270,601	48,750	24,868	7,572,204	6,217
23	0.000	171,059	111,188	56,539	54,649	0.000	0	17,215,952	48,750	24,789	7,548,243	6,197
24	0.000	171,059	111,188	56,361	54,828	0.000	0	17,161,124	48,750	24,711	7,524,204	6,178
25	0.342	229,500	149,175	75,375	73,800	0.342	5,862,940	22,950,264	48,750	24,632	7,500,086	6,158
26	0.000	229,500	149,175	75,133	74,042	0.000	0	22,876,222	48,750	24,553	7,475,890	6,138
27	0.000	229,500	149,175	74,891	74,284	0.000	0	22,801,938	48,750	24,474	7,451,614	6,119
28	0.000	229,500	149,175	74,648	74,527	0.000	0	22,727,410	48,750	24,395	7,427,258	6,099
29	0.000	229,500	149,175	74,404	74,771	0.000	0	22,652,639	48,750	24,315	7,402,823	6,079
30	0.000	229,500	149,175	74,159	75,016	0.000	0	22,577,623	48,750	24,235	7,378,308	6,059
31	0.378	316,344	205,624	101,882	103,741	0.378	8,543,483	31,017,364	48,750	24,155	7,353,713	6,039
32	0.000	316,344	205,624	101,543	104,081	0.000	0	30,913,284	48,750	24,074	7,329,037	6,019
33	0.000	316,344	205,624	101,202	104,422	0.000	0	30,808,862	48,750	23,993	7,304,280	5,998
34	0.000	316,344	205,624	100,860	104,763	0.000	0	30,704,099	48,750	23,912	7,279,443	5,978
35	0.000	316,344	205,624	100,517	105,106	0.000	0	30,598,992	48,750	23,831	7,254,524	5,958
36	0.000	316,344	205,624	100,173	105,450	0.000	0	30,493,542	48,750	23,749	7,229,523	5,937
37	0.378	436,050	283,433	137,603	145,829	0.378	11,538,905	41,886,618	48,750	23,668	7,204,441	5,917
38	0.000	436,050	283,433	137,126	146,307	0.000	0	41,740,311	48,750	23,585	7,179,276	5,896
39	0.000	436,050	283,433	136,647	146,786	0.000	0	41,593,526	48,750	23,503	7,154,029	5,876
40	0.000	436,050	283,433	136,166	147,266	0.000	0	41,446,259	48,750	23,420	7,128,700	5,855
41	0.000	436,050	283,433	135,684	147,748	0.000	0	41,298,511	48,750	23,338	7,103,287	5,834
42	0.000	436,050	283,433	135,201	148,232	0.000	0	41,150,279	48,750	23,254	7,077,791	5,814
43	0.342	585,022	380,265	180,740	199,525	0.342	14,058,614	55,009,368	48,750	23,171	7,052,212	5,793
44	0.000	585,022	380,265	180,086	200,178	0.000	0	54,809,190	48,750	23,087	7,026,549	5,772
45	0.000	585,022	380,265	179,431	200,834	0.000	0	54,608,356	48,750	23,003	7,000,802	5,751
46	0.000	585,022	380,265	178,774	201,491	0.000	0	54,406,865	48,750	22,919	6,974,971	5,730
47	0.000	585,022	380,265	178,114	202,151	0.000	0	54,204,714	48,750	22,834	6,949,056	5,709
48	0.000	585,022	380,265	177,452	202,812	0.000	0	54,001,902	48,750	22,749	6,923,055	5,687

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
49	0.342	784,890	510,178	237,186	272,992	0.342	18,449,252	72,178,162	48,750	22,664	6,896,969	5,666
50	0.000	784,890	510,178	236,293	273,886	0.000	0	71,904,276	48,750	22,579	6,870,798	5,645
51	0.000	784,890	510,178	235,396	274,783	0.000	0	71,629,493	48,750	22,493	6,844,541	5,623
52	0.000	784,890	510,178	234,496	275,682	0.000	0	71,353,811	48,750	22,407	6,818,199	5,602
53	0.000	784,890	510,178	233,594	276,585	0.000	0	71,077,226	48,750	22,321	6,791,770	5,580
54	0.000	784,890	510,178	232,688	277,490	0.000	0	70,799,736	48,750	22,234	6,765,254	5,559
55	0.378	1,081,896	703,233	319,487	383,746	0.378	26,790,965	97,206,956	48,750	22,148	6,738,652	5,537
56	0.000	1,081,896	703,233	318,230	385,002	0.000	0	96,821,953	48,750	22,061	6,711,962	5,515
57	0.000	1,081,896	703,233	316,970	386,263	0.000	0	96,435,691	48,750	21,973	6,685,186	5,493
58	0.000	1,081,896	703,233	315,705	387,527	0.000	0	96,048,164	48,750	21,886	6,658,321	5,471
59	0.000	1,081,896	703,233	314,437	388,796	0.000	0	95,659,368	48,750	21,798	6,631,369	5,449
60	0.000	1,081,896	703,233	313,164	390,069	0.000	0	95,269,299	48,750	21,709	6,604,328	5,427
61	0.378	1,491,291	969,339	429,906	539,433	0.378	36,050,367	130,780,234	48,750	21,621	6,577,199	5,405
62	0.000	1,491,291	969,339	428,140	541,199	0.000	0	130,239,035	48,750	21,532	6,549,981	5,383
63	0.000	1,491,291	969,339	426,369	542,970	0.000	0	129,696,065	48,750	21,443	6,522,674	5,361
64	0.000	1,491,291	969,339	424,591	544,748	0.000	0	129,151,317	48,750	21,354	6,495,277	5,338
65	0.000	1,491,291	969,339	422,808	546,531	0.000	0	128,604,785	48,750	21,264	6,467,791	5,316
66	0.000	1,491,291	969,339	421,019	548,321	0.000	0	128,056,465	48,750	21,174	6,440,215	5,293
67	0.414	2,109,004	1,370,853	592,872	777,981	0.414	53,042,724	180,321,208	48,750	21,084	6,412,549	5,271
68	0.000	2,109,004	1,370,853	590,325	780,528	0.000	0	179,540,680	48,750	20,993	6,384,792	5,248
69	0.000	2,109,004	1,370,853	587,769	783,083	0.000	0	178,757,597	48,750	20,902	6,356,944	5,226
70	0.000	2,109,004	1,370,853	585,206	785,647	0.000	0	177,971,950	48,750	20,811	6,329,005	5,203
71	0.000	2,109,004	1,370,853	582,634	788,219	0.000	0	177,183,732	48,750	20,720	6,300,974	5,180
72	0.000	2,109,004	1,370,853	580,053	790,799	0.000	0	176,392,933	48,750	20,628	6,272,852	5,157
73	0.414	2,982,582	1,938,678	816,658	1,122,020	0.414	73,064,345	248,335,257	48,750	20,536	6,244,638	5,134
74	0.000	2,982,582	1,938,678	812,985	1,125,693	0.000	0	247,209,564	48,750	20,443	6,216,331	5,111
75	0.000	2,982,582	1,938,678	809,300	1,129,379	0.000	0	246,080,186	48,750	20,351	6,187,932	5,088
76	0.000	2,982,582	1,938,678	805,602	1,133,076	0.000	0	244,947,110	48,750	20,258	6,159,439	5,064
77	0.000	2,982,582	1,938,678	801,893	1,136,785	0.000	0	243,810,325	48,750	20,164	6,130,854	5,041
78	0.000	2,982,582	1,938,678	798,172	1,140,507	0.000	0	242,669,818	48,750	20,071	6,102,175	5,018
79	0.342	4,001,554	2,601,010	1,065,850	1,535,160	0.342	82,905,907	324,040,566	48,750	19,977	6,073,402	4,994
80	0.000	4,001,554	2,601,010	1,060,824	1,540,185	0.000	0	322,500,380	48,750	19,883	6,044,534	4,971
81	0.000	4,001,554	2,601,010	1,055,782	1,545,228	0.000	0	320,955,153	48,750	19,788	6,015,573	4,947
82	0.000	4,001,554	2,601,010	1,050,724	1,550,286	0.000	0	319,404,867	48,750	19,693	5,986,516	4,923

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
83	0.000	4,001,554	2,601,010	1,045,648	1,555,361	0.000	0	317,849,505	48,750	19,598	5,957,364	4,900
84	0.000	4,001,554	2,601,010	1,040,557	1,560,453	0.000	0	316,289,052	48,750	19,503	5,928,117	4,876
85	0.342	5,368,648	3,489,621	1,389,199	2,100,422	0.342	108,057,240	422,245,871	48,750	19,407	5,898,774	4,852
86	0.000	5,368,648	3,489,621	1,382,323	2,107,298	0.000	0	420,138,573	48,750	19,311	5,869,335	4,828
87	0.000	5,368,648	3,489,621	1,375,424	2,114,197	0.000	0	418,024,376	48,750	19,215	5,839,800	4,804
88	0.000	5,368,648	3,489,621	1,368,503	2,121,118	0.000	0	415,903,258	48,750	19,118	5,810,168	4,779
89	0.000	5,368,648	3,489,621	1,361,559	2,128,062	0.000	0	413,775,196	48,750	19,021	5,780,439	4,755
90	0.000	5,368,648	3,489,621	1,354,592	2,135,029	0.000	0	411,640,168	48,750	18,924	5,750,613	4,731
91	0.304	6,999,860	4,549,909	1,757,059	2,792,850	0.304	125,072,947	533,920,264	48,750	18,826	5,720,689	4,707
92	0.000	6,999,860	4,549,909	1,747,916	2,801,993	0.000	0	531,118,271	48,750	18,728	5,690,667	4,682
93	0.000	6,999,860	4,549,909	1,738,743	2,811,166	0.000	0	528,307,105	48,750	18,630	5,660,546	4,657
94	0.000	6,999,860	4,549,909	1,729,540	2,820,369	0.000	0	525,486,736	48,750	18,531	5,630,328	4,633
95	0.000	6,999,860	4,549,909	1,720,307	2,829,602	0.000	0	522,657,134	48,750	18,432	5,600,010	4,608
96	0.000	6,999,860	4,549,909	1,711,043	2,838,866	0.000	0	519,818,268	48,750	18,333	5,569,593	4,583
97	0.304	9,126,701	5,932,356	2,218,810	3,713,545	0.304	157,941,833	674,046,556	48,750	18,233	5,539,076	4,558
98	0.000	9,126,701	5,932,356	2,206,653	3,725,703	0.000	0	670,320,853	48,750	18,133	5,508,460	4,533
99	0.000	9,126,701	5,932,356	2,194,456	3,737,900	0.000	0	666,582,954	48,750	18,033	5,477,743	4,508
100	0.000	9,126,701	5,932,356	2,182,219	3,750,136	0.000	0	662,832,817	48,750	17,933	5,446,926	4,483
101	0.000	9,126,701	5,932,356	2,169,942	3,762,413	0.000	0	659,070,404	48,750	17,832	5,416,007	4,458
102	0.000	9,126,701	5,932,356	2,157,625	3,774,731	0.000	0	655,295,673	48,750	17,731	5,384,988	4,433
103	0.360	12,413,655	8,068,876	2,917,879	5,150,997	0.360	236,002,804	886,147,481	48,750	17,629	5,353,867	4,407
104	0.000	12,413,655	8,068,876	2,901,016	5,167,860	0.000	0	880,979,621	48,750	17,527	5,322,644	4,382
105	0.000	12,413,655	8,068,876	2,884,098	5,184,778	0.000	0	875,794,843	48,750	17,425	5,291,319	4,356
106	0.000	12,413,655	8,068,876	2,867,124	5,201,752	0.000	0	870,593,091	48,750	17,322	5,259,892	4,331
107	0.000	12,413,655	8,068,876	2,850,095	5,218,781	0.000	0	865,374,311	48,750	17,220	5,228,361	4,305
108	0.000	12,413,655	8,068,876	2,833,010	5,235,866	0.000	0	860,138,445	48,750	17,116	5,196,727	4,279
109	0.360	16,884,397	10,974,858	3,829,997	7,144,861	0.360	309,776,324	1,162,769,908	48,750	17,013	5,164,990	4,253
110	0.000	16,884,397	10,974,858	3,806,606	7,168,252	0.000	0	1,155,601,656	48,750	16,909	5,133,149	4,227
111	0.000	16,884,397	10,974,858	3,783,139	7,191,719	0.000	0	1,148,409,937	48,750	16,805	5,101,204	4,201
112	0.000	16,884,397	10,974,858	3,759,595	7,215,263	0.000	0	1,141,194,675	48,750	16,700	5,069,154	4,175
113	0.000	16,884,397	10,974,858	3,735,974	7,238,883	0.000	0	1,133,955,791	48,750	16,595	5,036,999	4,149
114	0.000	16,884,397	10,974,858	3,712,276	7,262,582	0.000	0	1,126,693,210	48,750	16,490	5,004,739	4,122
115	0.378	23,273,535	15,127,798	5,084,247	10,043,551	0.378	426,346,203	1,542,995,863	48,750	16,384	4,972,373	4,096
116	0.000	23,273,535	15,127,798	5,051,367	10,076,431	0.000	0	1,532,919,432	48,750	16,278	4,939,901	4,070

Months	NOMINAL							REAL			Discounted I.F.I. Revenues (000) TL	
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real		Real Loan
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL		Balance (000) TL
117	0.000	23,273,535	15,127,798	5,018,379	10,109,418	0.000	0	1,522,810,014	48,750	16,172	4,907,323	4,043
118	0.000	23,273,535	15,127,798	4,985,284	10,142,514	0.000	0	1,512,667,500	48,750	16,065	4,874,638	4,016
119	0.000	23,273,535	15,127,798	4,952,080	10,175,718	0.000	0	1,502,491,782	48,750	15,958	4,841,847	3,990
120	0.000	23,273,535	15,127,798	4,918,767	10,209,030	0.000	0	1,492,282,752	48,750	15,851	4,808,947	3,963
121	0.378	32,080,354	20,852,230	6,733,984	14,118,246	0.378	564,687,068	2,042,851,574	48,750	15,743	4,775,941	3,936
122	0.000	32,080,354	20,852,230	6,687,764	14,164,465	0.000	0	2,028,687,109	48,750	15,635	4,742,826	3,909
123	0.000	32,080,354	20,852,230	6,641,394	14,210,836	0.000	0	2,014,476,272	48,750	15,527	4,709,603	3,882
124	0.000	32,080,354	20,852,230	6,594,871	14,257,359	0.000	0	2,000,218,913	48,750	15,418	4,676,271	3,855
125	0.000	32,080,354	20,852,230	6,548,196	14,304,034	0.000	0	1,985,914,880	48,750	15,309	4,642,830	3,827
126	0.000	32,080,354	20,852,230	6,501,369	14,350,861	0.000	0	1,971,564,018	48,750	15,199	4,609,279	3,800
127	0.483	47,582,854	30,928,855	9,573,404	21,355,451	0.483	952,738,000	2,902,946,567	48,750	15,090	4,575,619	3,772
128	0.000	47,582,854	30,928,855	9,503,492	21,425,364	0.000	0	2,881,521,203	48,750	14,979	4,541,848	3,745
129	0.000	47,582,854	30,928,855	9,433,351	21,495,505	0.000	0	2,860,025,699	48,750	14,869	4,507,967	3,717
130	0.000	47,582,854	30,928,855	9,362,980	21,565,875	0.000	0	2,838,459,823	48,750	14,758	4,473,975	3,689
131	0.000	47,582,854	30,928,855	9,292,379	21,636,476	0.000	0	2,816,823,347	48,750	14,647	4,439,871	3,662
132	0.000	47,582,854	30,928,855	9,221,547	21,707,309	0.000	0	2,795,116,038	48,750	14,535	4,405,656	3,634
133	0.483	70,576,778	45,874,906	13,572,359	32,302,547	0.483	1,350,711,029	4,113,524,520	48,750	14,423	4,371,329	3,606
134	0.000	70,576,778	45,874,906	13,466,609	32,408,297	0.000	0	4,081,116,223	48,750	14,311	4,336,890	3,578
135	0.000	70,576,778	45,874,906	13,360,513	32,514,393	0.000	0	4,048,601,830	48,750	14,198	4,302,338	3,549
136	0.000	70,576,778	45,874,906	13,254,069	32,620,837	0.000	0	4,015,980,993	48,750	14,085	4,267,672	3,521
137	0.000	70,576,778	45,874,906	13,147,277	32,727,629	0.000	0	3,983,253,364	48,750	13,971	4,232,894	3,493
138	0.000	70,576,778	45,874,906	13,040,135	32,834,771	0.000	0	3,950,418,593	48,750	13,857	4,198,001	3,464
139	0.414	99,810,637	64,876,914	18,289,518	46,587,396	0.414	1,636,316,958	5,540,148,156	48,750	13,743	4,162,994	3,436
140	0.000	99,810,637	64,876,914	18,137,003	46,739,911	0.000	0	5,493,408,245	48,750	13,629	4,127,873	3,407
141	0.000	99,810,637	64,876,914	17,983,989	46,892,925	0.000	0	5,446,515,320	48,750	13,514	4,092,636	3,378
142	0.000	99,810,637	64,876,914	17,830,474	47,046,440	0.000	0	5,399,468,880	48,750	13,398	4,057,285	3,350
143	0.000	99,810,637	64,876,914	17,676,456	47,200,458	0.000	0	5,352,268,422	48,750	13,282	4,021,817	3,321
144	0.000	99,810,637	64,876,914	17,521,934	47,354,980	0.000	0	5,304,913,442	48,750	13,166	3,986,234	3,292
145	0.414	141,153,556	91,749,812	24,560,514	67,189,297	0.414	2,197,367,095	7,435,091,240	48,750	13,050	3,950,533	3,262
146	0.000	141,153,556	91,749,812	24,340,554	67,409,258	0.000	0	7,367,681,982	48,750	12,933	3,914,716	3,233
147	0.000	141,153,556	91,749,812	24,119,874	67,629,938	0.000	0	7,300,052,044	48,750	12,816	3,878,782	3,204
148	0.000	141,153,556	91,749,812	23,898,471	67,851,341	0.000	0	7,232,200,703	48,750	12,698	3,842,730	3,175
149	0.000	141,153,556	91,749,812	23,676,343	68,073,469	0.000	0	7,164,127,235	48,750	12,580	3,806,560	3,145
150	0.000	141,153,556	91,749,812	23,453,488	68,296,323	0.000	0	7,095,830,911	48,750	12,462	3,770,272	3,115

Month	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
151	0.378	194,566,750	126,468,388	32,020,213	94,448,175	0.378	2,685,097,010	9,686,479,747	48,750	12,343	3,733,865	3,086
152	0.000	194,566,750	126,468,388	31,711,014	94,757,374	0.000	0	9,591,722,373	48,750	12,224	3,697,339	3,056
153	0.000	194,566,750	126,468,388	31,400,803	95,067,585	0.000	0	9,496,654,789	48,750	12,104	3,660,693	3,026
154	0.000	194,566,750	126,468,388	31,089,577	95,378,811	0.000	0	9,401,275,977	48,750	11,984	3,623,927	2,996
155	0.000	194,566,750	126,468,388	30,777,331	95,691,057	0.000	0	9,305,584,921	48,750	11,864	3,587,041	2,966
156	0.000	194,566,750	126,468,388	30,464,064	96,004,324	0.000	0	9,209,580,597	48,750	11,743	3,550,034	2,936
157	0.378	268,191,757	174,324,642	41,558,590	132,766,052	0.378	3,484,950,196	12,561,764,741	48,750	11,622	3,512,906	2,905
158	0.000	268,191,757	174,324,642	41,123,949	133,200,693	0.000	0	12,428,564,048	48,750	11,500	3,475,656	2,875
159	0.000	268,191,757	174,324,642	40,687,885	133,636,758	0.000	0	12,294,927,291	48,750	11,378	3,438,284	2,845
160	0.000	268,191,757	174,324,642	40,250,393	134,074,250	0.000	0	12,160,853,041	48,750	11,256	3,400,790	2,814
161	0.000	268,191,757	174,324,642	39,811,468	134,513,174	0.000	0	12,026,339,867	48,750	11,133	3,363,174	2,783
162	0.000	268,191,757	174,324,642	39,371,107	134,953,535	0.000	0	11,891,386,332	48,750	11,010	3,325,434	2,753
163	0.342	359,817,000	233,881,050	52,229,143	181,651,907	0.342	4,062,582,579	15,772,317,004	48,750	10,887	3,287,571	2,722
164	0.000	359,817,000	233,881,050	51,634,462	182,246,588	0.000	0	15,590,070,416	48,750	10,763	3,249,583	2,691
165	0.000	359,817,000	233,881,050	51,037,834	182,843,216	0.000	0	15,407,227,199	48,750	10,638	3,211,471	2,660
166	0.000	359,817,000	233,881,050	50,439,253	183,441,797	0.000	0	15,223,785,402	48,750	10,514	3,173,235	2,628
167	0.000	359,817,000	233,881,050	49,838,712	184,042,338	0.000	0	15,039,743,064	48,750	10,388	3,134,873	2,597
168	0.000	359,817,000	233,881,050	49,236,205	184,644,845	0.000	0	14,855,098,219	48,750	10,263	3,096,386	2,566
169	0.342	482,745,163	313,784,356	65,246,307	248,538,049	0.342	5,075,107,439	19,681,667,609	48,750	10,137	3,057,773	2,534
170	0.000	482,745,163	313,784,356	64,432,658	249,351,698	0.000	0	19,432,315,911	48,750	10,010	3,019,033	2,503
171	0.000	482,745,163	313,784,356	63,616,346	250,168,010	0.000	0	19,182,147,901	48,750	9,884	2,980,167	2,471
172	0.000	482,745,163	313,784,356	62,797,361	250,986,995	0.000	0	18,931,160,906	48,750	9,756	2,941,173	2,439
173	0.000	482,745,163	313,784,356	61,975,695	251,808,661	0.000	0	18,679,352,244	48,750	9,629	2,902,052	2,407
174	0.000	482,745,163	313,784,356	61,151,339	252,633,017	0.000	0	18,426,719,227	48,750	9,501	2,862,802	2,375
175	0.304	629,422,686	409,124,746	78,653,243	330,471,502	0.304	5,598,783,234	23,695,030,959	48,750	9,372	2,823,424	2,343
176	0.000	629,422,686	409,124,746	77,571,365	331,553,380	0.000	0	23,363,477,578	48,750	9,243	2,783,917	2,311
177	0.000	629,422,686	409,124,746	76,485,946	332,638,800	0.000	0	23,030,838,779	48,750	9,114	2,744,281	2,278
178	0.000	629,422,686	409,124,746	75,396,973	333,727,772	0.000	0	22,697,111,006	48,750	8,984	2,704,515	2,246
179	0.000	629,422,686	409,124,746	74,304,435	334,820,310	0.000	0	22,362,290,696	48,750	8,854	2,664,619	2,213
180	0.000	629,422,686	409,124,746	73,208,321	335,916,425	0.000	0	22,026,374,271	48,750	8,723	2,624,593	2,181
181	0.304	820,666,777	533,433,405	94,018,135	439,415,270	0.304	6,692,504,154	28,279,463,155	48,750	8,592	2,584,435	2,148
182	0.000	820,666,777	533,433,405	92,579,604	440,833,802	0.000	0	27,838,609,353	48,750	8,461	2,544,146	2,115
183	0.000	820,666,777	533,433,405	91,136,363	442,297,042	0.000	0	27,396,312,311	48,750	8,329	2,503,724	2,082
184	0.000	820,666,777	533,433,405	89,688,397	443,745,008	0.000	0	26,952,567,304	48,750	8,197	2,463,171	2,049

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL	Real Loan Balance (000) TL	
	185	0.000	820,666,777	533,433,405	88,235,692	445,197,713	0.000	0	26,507,369,590	48,750	8,064	
186	0.000	820,666,777	533,433,405	86,778,230	446,655,175	0.000	0	26,060,714,416	48,750	7,931	2,381,665	1,983
187	0.342	1,101,040,020	715,676,013	114,463,422	601,212,591	0.342	8,903,402,970	34,362,904,794	48,750	7,797	2,340,712	1,949
188	0.000	1,101,040,020	715,676,013	112,495,208	603,180,805	0.000	0	33,759,723,989	48,750	7,663	2,299,625	1,916
189	0.000	1,101,040,020	715,676,013	110,520,551	605,155,462	0.000	0	33,154,568,528	48,750	7,528	2,258,404	1,882
190	0.000	1,101,040,020	715,676,013	108,539,430	607,136,583	0.000	0	32,547,431,944	48,750	7,393	2,217,047	1,848
191	0.000	1,101,040,020	715,676,013	106,551,823	609,124,190	0.000	0	31,938,307,754	48,750	7,258	2,175,555	1,815
192	0.000	1,101,040,020	715,676,013	104,557,709	611,118,304	0.000	0	31,327,189,450	48,750	7,122	2,133,927	1,781
193	0.342	1,477,200,199	960,180,129	137,594,743	822,585,386	0.342	10,702,645,642	41,207,249,706	48,750	6,986	2,092,163	1,746
194	0.000	1,477,200,199	960,180,129	134,901,813	825,278,317	0.000	0	40,381,971,389	48,750	6,849	2,050,262	1,712
195	0.000	1,477,200,199	960,180,129	132,200,066	827,980,063	0.000	0	39,553,991,326	48,750	6,712	2,008,224	1,678
196	0.000	1,477,200,199	960,180,129	129,489,475	830,690,654	0.000	0	38,723,300,672	48,750	6,574	1,966,049	1,644
197	0.000	1,477,200,199	960,180,129	126,770,010	833,410,119	0.000	0	37,889,890,553	48,750	6,436	1,923,735	1,609
198	0.000	1,477,200,199	960,180,129	124,041,642	836,138,487	0.000	0	37,053,752,066	48,750	6,298	1,881,283	1,574
199	0.342	1,981,872,036	1,288,216,824	162,746,853	1,125,469,971	0.342	12,659,072,999	48,587,355,094	48,750	6,159	1,838,692	1,540
200	0.000	1,981,872,036	1,288,216,824	159,062,357	1,129,154,466	0.000	0	47,458,200,627	48,750	6,019	1,795,961	1,505
201	0.000	1,981,872,036	1,288,216,824	155,365,799	1,132,851,024	0.000	0	46,325,349,603	48,750	5,880	1,753,091	1,470
202	0.000	1,981,872,036	1,288,216,824	151,657,140	1,136,559,684	0.000	0	45,188,789,919	48,750	5,739	1,710,080	1,435
203	0.000	1,981,872,036	1,288,216,824	147,936,339	1,140,280,484	0.000	0	44,048,509,435	48,750	5,598	1,666,928	1,400
204	0.000	1,981,872,036	1,288,216,824	144,203,358	1,144,013,466	0.000	0	42,904,495,969	48,750	5,457	1,623,635	1,364
205	0.342	2,658,960,358	1,728,324,233	188,444,390	1,539,879,843	0.342	14,657,925,747	56,022,541,873	48,750	5,315	1,580,201	1,329
206	0.000	2,658,960,358	1,728,324,233	183,403,224	1,544,921,008	0.000	0	54,477,620,865	48,750	5,173	1,536,624	1,293
207	0.000	2,658,960,358	1,728,324,233	178,345,555	1,549,978,678	0.000	0	52,927,642,187	48,750	5,031	1,492,904	1,258
208	0.000	2,658,960,358	1,728,324,233	173,271,328	1,555,052,905	0.000	0	51,372,589,282	48,750	4,887	1,449,042	1,222
209	0.000	2,658,960,358	1,728,324,233	168,180,489	1,560,143,743	0.000	0	49,812,445,539	48,750	4,744	1,405,035	1,186
210	0.000	2,658,960,358	1,728,324,233	163,072,985	1,565,251,248	0.000	0	48,247,194,291	48,750	4,600	1,360,885	1,150
211	0.304	3,466,860,152	2,253,459,099	205,939,986	2,047,519,112	0.304	14,659,450,722	60,859,125,901	48,750	4,455	1,316,590	1,114
212	0.000	3,466,860,152	2,253,459,099	199,236,942	2,054,222,157	0.000	0	58,804,903,744	48,750	4,310	1,272,150	1,078
213	0.000	3,466,860,152	2,253,459,099	192,511,953	2,060,947,146	0.000	0	56,743,956,598	48,750	4,165	1,227,565	1,041
214	0.000	3,466,860,152	2,253,459,099	185,764,948	2,067,694,151	0.000	0	54,676,262,447	48,750	4,019	1,182,834	1,005
215	0.000	3,466,860,152	2,253,459,099	178,995,856	2,074,463,243	0.000	0	52,601,799,204	48,750	3,872	1,137,956	968
216	0.000	3,466,860,152	2,253,459,099	172,204,603	2,081,254,496	0.000	0	50,520,544,708	48,750	3,725	1,092,932	931
217	0.304	4,520,232,608	2,938,151,195	215,643,634	2,722,507,562	0.304	15,350,186,607	63,148,223,753	48,750	3,578	1,047,760	894
218	0.000	4,520,232,608	2,938,151,195	206,730,852	2,731,420,343	0.000	0	60,416,803,410	48,750	3,430	1,002,440	858

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real	Real	Real Loan	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	Payments (000) TL	Interest (000) TL	Balance (000) TL	
219	0.000	4,520,232,608	2,938,151,195	197,788,893	2,740,362,302	0.000	0	57,676,441,107	48,750	3,282	956,971	820
220	0.000	4,520,232,608	2,938,151,195	188,817,660	2,749,333,536	0.000	0	54,927,107,572	48,750	3,133	911,354	783
221	0.000	4,520,232,608	2,938,151,195	179,817,057	2,758,334,138	0.000	0	52,168,773,434	48,750	2,984	865,588	746
222	0.000	4,520,232,608	2,938,151,195	170,786,989	2,767,364,206	0.000	0	49,401,409,227	48,750	2,834	819,671	708
223	0.378	6,230,710,664	4,049,961,932	222,925,780	3,827,036,152	0.378	18,693,734,094	64,268,107,169	48,750	2,683	773,605	671
224	0.000	6,230,710,664	4,049,961,932	210,397,059	3,839,564,873	0.000	0	60,428,542,297	48,750	2,533	727,387	633
225	0.000	6,230,710,664	4,049,961,932	197,827,323	3,852,134,609	0.000	0	56,576,407,688	48,750	2,381	681,019	595
226	0.000	6,230,710,664	4,049,961,932	185,216,437	3,864,745,495	0.000	0	52,711,662,193	48,750	2,229	634,498	557
227	0.000	6,230,710,664	4,049,961,932	172,564,266	3,877,397,666	0.000	0	48,834,264,527	48,750	2,077	587,825	519
228	0.000	6,230,710,664	4,049,961,932	159,870,675	3,890,091,257	0.000	0	44,944,173,270	48,750	1,924	541,000	481
229	0.378	8,588,441,955	5,582,487,271	202,812,329	5,379,674,942	0.378	17,007,094,277	56,571,592,605	48,750	1,771	494,021	443
230	0.000	8,588,441,955	5,582,487,271	185,200,673	5,397,286,598	0.000	0	51,174,306,007	48,750	1,617	446,888	404
231	0.000	8,588,441,955	5,582,487,271	167,531,361	5,414,955,910	0.000	0	45,759,350,098	48,750	1,463	399,601	366
232	0.000	8,588,441,955	5,582,487,271	149,804,205	5,432,683,066	0.000	0	40,326,667,031	48,750	1,308	352,159	327
233	0.000	8,588,441,955	5,582,487,271	132,019,014	5,450,468,257	0.000	0	34,876,198,775	48,750	1,153	304,562	288
234	0.000	8,588,441,955	5,582,487,271	114,175,599	5,468,311,672	0.000	0	29,407,887,103	48,750	997	256,809	249
235	0.378	11,838,350,262	7,694,927,670	132,704,234	7,562,223,436	0.378	11,128,087,849	32,973,751,516	48,750	841	208,900	210
236	0.000	11,838,350,262	7,694,927,670	107,947,482	7,586,980,188	0.000	0	25,386,771,328	48,750	684	160,834	171
237	0.000	11,838,350,262	7,694,927,670	83,109,683	7,611,817,987	0.000	0	17,774,953,341	48,750	527	112,610	132
238	0.000	11,838,350,262	7,694,927,670	58,190,572	7,636,737,098	0.000	0	10,138,216,242	48,750	369	64,229	92
239	0.000	11,838,350,262	7,694,927,670	33,189,882	7,661,737,788	0.000	0	2,476,478,454	48,750	210	15,689	53
240	0.000	11,838,350,262	2,484,585,800	8,107,346	2,476,478,454	0.000	0	0	15,741	51	0	13

**Appendix 17. Monthly Payment Plans of The Proposed Model for Different Loan Amounts
Case 4**

Principal Loan Amount (TL)	10,580,000,000
Yearly Real Interest Rate	4%
Monthly Real Interest Rate	0.33%
Salary (TL)	75,000,000
Prefixed Repayment Salary Ratio	0.85
Loan Term	20
First Months Salary / House Price	0.0071
NPV of I.F.I. Revenues (TL)	1,176,793,155
NPV of I.F.I. Revenues / House Price	0.11

Months	NOMINAL							REAL			Discounted I.F.I. Revenues (000) TL	
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL		Real Loan Balance (000) TL
0	0.000	0	0	0	0	0.000	0	10,580,000	0		10,580,000	
1	0.000	75,000	63,750	34,636	29,114	0.000	0	10,550,886	63,750	34,636	10,550,886	8,659
2	0.000	75,000	63,750	34,541	29,209	0.000	0	10,521,677	63,750	34,541	10,521,677	8,635
3	0.000	75,000	63,750	34,445	29,305	0.000	0	10,492,372	63,750	34,445	10,492,372	8,611
4	0.000	75,000	63,750	34,349	29,401	0.000	0	10,462,972	63,750	34,349	10,462,972	8,587
5	0.000	75,000	63,750	34,253	29,497	0.000	0	10,433,475	63,750	34,253	10,433,475	8,563
6	0.000	75,000	63,750	34,156	29,594	0.000	0	10,403,881	63,750	34,156	10,403,881	8,539
7	0.304	97,788	83,120	44,408	38,712	0.304	3,161,120	13,526,290	63,750	34,060	10,374,191	8,515
8	0.000	97,788	83,120	44,282	38,838	0.000	0	13,487,451	63,750	33,962	10,344,403	8,491
9	0.000	97,788	83,120	44,154	38,965	0.000	0	13,448,486	63,750	33,865	10,314,518	8,466
10	0.000	97,788	83,120	44,027	39,093	0.000	0	13,409,393	63,750	33,767	10,284,535	8,442
11	0.000	97,788	83,120	43,899	39,221	0.000	0	13,370,172	63,750	33,669	10,254,454	8,417
12	0.000	97,788	83,120	43,770	39,349	0.000	0	13,330,823	63,750	33,570	10,224,274	8,393
13	0.304	127,500	108,375	56,902	51,473	0.304	4,050,444	17,329,793	63,750	33,472	10,193,996	8,368
14	0.000	127,500	108,375	56,733	51,642	0.000	0	17,278,151	63,750	33,372	10,163,618	8,343

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
15	0.000	127,500	108,375	56,564	51,811	0.000	0	17,226,340	63,750	33,273	10,133,141	8,318
16	0.000	127,500	108,375	56,395	51,980	0.000	0	17,174,360	63,750	33,173	10,102,565	8,293
17	0.000	127,500	108,375	56,224	52,151	0.000	0	17,122,209	63,750	33,073	10,071,888	8,268
18	0.000	127,500	108,375	56,054	52,321	0.000	0	17,069,888	63,750	32,973	10,041,111	8,243
19	0.342	171,059	145,400	74,974	70,426	0.342	5,831,770	22,831,232	63,750	32,872	10,010,233	8,218
20	0.000	171,059	145,400	74,744	70,657	0.000	0	22,760,575	63,750	32,771	9,979,254	8,193
21	0.000	171,059	145,400	74,512	70,888	0.000	0	22,689,687	63,750	32,669	9,948,173	8,167
22	0.000	171,059	145,400	74,280	71,120	0.000	0	22,618,567	63,750	32,568	9,916,991	8,142
23	0.000	171,059	145,400	74,047	71,353	0.000	0	22,547,214	63,750	32,466	9,885,706	8,116
24	0.000	171,059	145,400	73,814	71,587	0.000	0	22,475,627	63,750	32,363	9,854,320	8,091
25	0.342	229,500	195,075	98,717	96,358	0.342	7,678,591	30,057,860	63,750	32,260	9,822,830	8,065
26	0.000	229,500	195,075	98,402	96,673	0.000	0	29,961,187	63,750	32,157	9,791,237	8,039
27	0.000	229,500	195,075	98,085	96,990	0.000	0	29,864,197	63,750	32,054	9,759,541	8,013
28	0.000	229,500	195,075	97,768	97,307	0.000	0	29,766,889	63,750	31,950	9,727,742	7,988
29	0.000	229,500	195,075	97,449	97,626	0.000	0	29,669,263	63,750	31,846	9,695,838	7,962
30	0.000	229,500	195,075	97,129	97,946	0.000	0	29,571,318	63,750	31,742	9,663,829	7,935
31	0.378	316,344	268,892	133,442	135,451	0.378	11,189,931	40,625,798	63,750	31,637	9,631,716	7,909
32	0.000	316,344	268,892	132,998	135,894	0.000	0	40,489,904	63,750	31,532	9,599,498	7,883
33	0.000	316,344	268,892	132,553	136,339	0.000	0	40,353,565	63,750	31,426	9,567,174	7,857
34	0.000	316,344	268,892	132,107	136,785	0.000	0	40,216,780	63,750	31,320	9,534,745	7,830
35	0.000	316,344	268,892	131,659	137,233	0.000	0	40,079,547	63,750	31,214	9,502,209	7,804
36	0.000	316,344	268,892	131,210	137,682	0.000	0	39,941,865	63,750	31,108	9,469,567	7,777
37	0.378	436,050	370,643	180,239	190,403	0.378	15,114,196	54,865,658	63,750	31,001	9,436,818	7,750
38	0.000	436,050	370,643	179,616	191,027	0.000	0	54,674,631	63,750	30,894	9,403,961	7,723
39	0.000	436,050	370,643	178,991	191,652	0.000	0	54,482,979	63,750	30,786	9,370,997	7,697
40	0.000	436,050	370,643	178,363	192,279	0.000	0	54,290,700	63,750	30,678	9,337,926	7,670
41	0.000	436,050	370,643	177,734	192,909	0.000	0	54,097,791	63,750	30,570	9,304,746	7,642
42	0.000	436,050	370,643	177,102	193,540	0.000	0	53,904,250	63,750	30,461	9,271,457	7,615
43	0.342	585,022	497,269	236,757	260,512	0.342	18,415,890	72,059,629	63,750	30,352	9,238,059	7,588
44	0.000	585,022	497,269	235,904	261,365	0.000	0	71,798,264	63,750	30,243	9,204,552	7,561
45	0.000	585,022	497,269	235,049	262,220	0.000	0	71,536,044	63,750	30,133	9,170,936	7,533
46	0.000	585,022	497,269	234,190	263,079	0.000	0	71,272,965	63,750	30,023	9,137,209	7,506
47	0.000	585,022	497,269	233,329	263,940	0.000	0	71,009,025	63,750	29,913	9,103,372	7,478
48	0.000	585,022	497,269	232,465	264,804	0.000	0	70,744,221	63,750	29,802	9,069,424	7,451

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
49	0.342	784,890	667,156	310,722	356,435	0.342	24,169,111	94,556,898	63,750	29,691	9,035,365	7,423
50	0.000	784,890	667,156	309,555	357,602	0.000	0	94,199,296	63,750	29,579	9,001,194	7,395
51	0.000	784,890	667,156	308,384	358,773	0.000	0	93,840,523	63,750	29,468	8,966,912	7,367
52	0.000	784,890	667,156	307,209	359,947	0.000	0	93,480,576	63,750	29,355	8,932,517	7,339
53	0.000	784,890	667,156	306,031	361,125	0.000	0	93,119,451	63,750	29,243	8,898,010	7,311
54	0.000	784,890	667,156	304,849	362,308	0.000	0	92,757,143	63,750	29,130	8,863,389	7,282
55	0.378	1,081,896	919,612	418,570	501,042	0.378	35,099,755	127,355,857	63,750	29,016	8,828,656	7,254
56	0.000	1,081,896	919,612	416,930	502,682	0.000	0	126,853,175	63,750	28,903	8,793,809	7,226
57	0.000	1,081,896	919,612	415,284	504,327	0.000	0	126,348,848	63,750	28,789	8,758,847	7,197
58	0.000	1,081,896	919,612	413,633	505,979	0.000	0	125,842,869	63,750	28,674	8,723,771	7,169
59	0.000	1,081,896	919,612	411,977	507,635	0.000	0	125,335,234	63,750	28,559	8,688,581	7,140
60	0.000	1,081,896	919,612	410,315	509,297	0.000	0	124,825,937	63,750	28,444	8,653,275	7,111
61	0.378	1,491,291	1,267,597	563,282	704,315	0.378	47,234,743	171,356,365	63,750	28,329	8,617,854	7,082
62	0.000	1,491,291	1,267,597	560,976	706,621	0.000	0	170,649,744	63,750	28,213	8,582,316	7,053
63	0.000	1,491,291	1,267,597	558,663	708,934	0.000	0	169,940,810	63,750	28,096	8,546,662	7,024
64	0.000	1,491,291	1,267,597	556,342	711,255	0.000	0	169,229,554	63,750	27,980	8,510,892	6,995
65	0.000	1,491,291	1,267,597	554,014	713,584	0.000	0	168,515,970	63,750	27,862	8,475,004	6,966
66	0.000	1,491,291	1,267,597	551,677	715,920	0.000	0	167,800,050	63,750	27,745	8,438,999	6,936
67	0.414	2,109,004	1,792,653	776,875	1,015,778	0.414	69,505,057	236,289,329	63,750	27,627	8,402,876	6,907
68	0.000	2,109,004	1,792,653	773,550	1,019,104	0.000	0	235,270,225	63,750	27,509	8,366,635	6,877
69	0.000	2,109,004	1,792,653	770,213	1,022,440	0.000	0	234,247,786	63,750	27,390	8,330,275	6,848
70	0.000	2,109,004	1,792,653	766,866	1,025,787	0.000	0	233,221,998	63,750	27,271	8,293,797	6,818
71	0.000	2,109,004	1,792,653	763,508	1,029,145	0.000	0	232,192,853	63,750	27,152	8,257,198	6,788
72	0.000	2,109,004	1,792,653	760,139	1,032,514	0.000	0	231,160,339	63,750	27,032	8,220,480	6,758
73	0.414	2,982,582	2,535,195	1,070,219	1,464,976	0.414	95,749,747	325,445,110	63,750	26,912	8,183,642	6,728
74	0.000	2,982,582	2,535,195	1,065,423	1,469,772	0.000	0	323,975,338	63,750	26,791	8,146,683	6,698
75	0.000	2,982,582	2,535,195	1,060,611	1,474,584	0.000	0	322,500,754	63,750	26,670	8,109,603	6,668
76	0.000	2,982,582	2,535,195	1,055,784	1,479,411	0.000	0	321,021,343	63,750	26,549	8,072,402	6,637
77	0.000	2,982,582	2,535,195	1,050,940	1,484,254	0.000	0	319,537,089	63,750	26,427	8,035,079	6,607
78	0.000	2,982,582	2,535,195	1,046,081	1,489,113	0.000	0	318,047,975	63,750	26,305	7,997,634	6,576
79	0.342	4,001,554	3,401,321	1,396,925	2,004,396	0.342	108,658,160	424,701,740	63,750	26,182	7,960,066	6,546
80	0.000	4,001,554	3,401,321	1,390,363	2,010,958	0.000	0	422,690,782	63,750	26,059	7,922,375	6,515
81	0.000	4,001,554	3,401,321	1,383,780	2,017,541	0.000	0	420,673,241	63,750	25,936	7,884,561	6,484
82	0.000	4,001,554	3,401,321	1,377,175	2,024,146	0.000	0	418,649,096	63,750	25,812	7,846,623	6,453

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
83	0.000	4,001,554	3,401,321	1,370,548	2,030,772	0.000	0	416,618,323	63,750	25,688	7,808,561	6,422
84	0.000	4,001,554	3,401,321	1,363,900	2,037,421	0.000	0	414,580,902	63,750	25,563	7,770,374	6,391
85	0.342	5,368,648	4,563,350	1,820,915	2,742,435	0.342	141,637,746	553,476,213	63,750	25,438	7,732,062	6,360
86	0.000	5,368,648	4,563,350	1,811,937	2,751,413	0.000	0	550,724,799	63,750	25,313	7,693,625	6,328
87	0.000	5,368,648	4,563,350	1,802,930	2,760,421	0.000	0	547,964,379	63,750	25,187	7,655,062	6,297
88	0.000	5,368,648	4,563,350	1,793,893	2,769,458	0.000	0	545,194,921	63,750	25,061	7,616,372	6,265
89	0.000	5,368,648	4,563,350	1,784,826	2,778,524	0.000	0	542,416,397	63,750	24,934	7,577,556	6,234
90	0.000	5,368,648	4,563,350	1,775,730	2,787,620	0.000	0	539,628,776	63,750	24,807	7,538,613	6,202
91	0.304	6,999,860	5,949,881	2,303,370	3,646,511	0.304	163,961,067	699,943,332	63,750	24,679	7,499,543	6,170
92	0.000	6,999,860	5,949,881	2,291,432	3,658,449	0.000	0	696,284,884	63,750	24,552	7,460,344	6,138
93	0.000	6,999,860	5,949,881	2,279,456	3,670,426	0.000	0	692,614,458	63,750	24,423	7,421,018	6,106
94	0.000	6,999,860	5,949,881	2,267,440	3,682,442	0.000	0	688,932,017	63,750	24,294	7,381,562	6,074
95	0.000	6,999,860	5,949,881	2,255,384	3,694,497	0.000	0	685,237,520	63,750	24,165	7,341,977	6,041
96	0.000	6,999,860	5,949,881	2,243,289	3,706,592	0.000	0	681,530,928	63,750	24,036	7,302,263	6,009
97	0.304	9,126,701	7,757,696	2,909,070	4,848,626	0.304	207,076,685	883,758,987	63,750	23,906	7,262,419	5,976
98	0.000	9,126,701	7,757,696	2,893,197	4,864,499	0.000	0	878,894,488	63,750	23,775	7,222,444	5,944
99	0.000	9,126,701	7,757,696	2,877,272	4,880,424	0.000	0	874,014,065	63,750	23,644	7,182,338	5,911
100	0.000	9,126,701	7,757,696	2,861,295	4,896,401	0.000	0	869,117,663	63,750	23,513	7,142,102	5,878
101	0.000	9,126,701	7,757,696	2,845,265	4,912,431	0.000	0	864,205,233	63,750	23,381	7,101,733	5,845
102	0.000	9,126,701	7,757,696	2,829,183	4,928,513	0.000	0	859,276,720	63,750	23,249	7,061,232	5,812
103	0.360	12,413,655	10,551,607	3,826,159	6,725,448	0.360	309,465,977	1,162,017,249	63,750	23,117	7,020,599	5,779
104	0.000	12,413,655	10,551,607	3,804,142	6,747,465	0.000	0	1,155,269,784	63,750	22,984	6,979,832	5,746
105	0.000	12,413,655	10,551,607	3,782,053	6,769,554	0.000	0	1,148,500,230	63,750	22,850	6,938,933	5,713
106	0.000	12,413,655	10,551,607	3,759,891	6,791,716	0.000	0	1,141,708,513	63,750	22,716	6,897,899	5,679
107	0.000	12,413,655	10,551,607	3,737,657	6,813,950	0.000	0	1,134,894,563	63,750	22,582	6,856,731	5,645
108	0.000	12,413,655	10,551,607	3,715,349	6,836,258	0.000	0	1,128,058,305	63,750	22,447	6,815,428	5,612
109	0.360	16,884,397	14,351,737	5,022,981	9,328,756	0.360	406,266,872	1,524,996,422	63,750	22,312	6,773,990	5,578
110	0.000	16,884,397	14,351,737	4,992,441	9,359,296	0.000	0	1,515,637,126	63,750	22,176	6,732,416	5,544
111	0.000	16,884,397	14,351,737	4,961,802	9,389,936	0.000	0	1,506,247,190	63,750	22,040	6,690,706	5,510
112	0.000	16,884,397	14,351,737	4,931,061	9,420,676	0.000	0	1,496,826,514	63,750	21,904	6,648,860	5,476
113	0.000	16,884,397	14,351,737	4,900,221	9,451,517	0.000	0	1,487,374,998	63,750	21,767	6,606,877	5,442
114	0.000	16,884,397	14,351,737	4,869,279	9,482,458	0.000	0	1,477,892,539	63,750	21,629	6,564,756	5,407
115	0.378	23,273,535	19,782,505	6,669,048	13,113,457	0.378	559,241,742	2,024,020,824	63,750	21,491	6,522,497	5,373
116	0.000	23,273,535	19,782,505	6,626,117	13,156,387	0.000	0	2,010,864,437	63,750	21,353	6,480,100	5,338

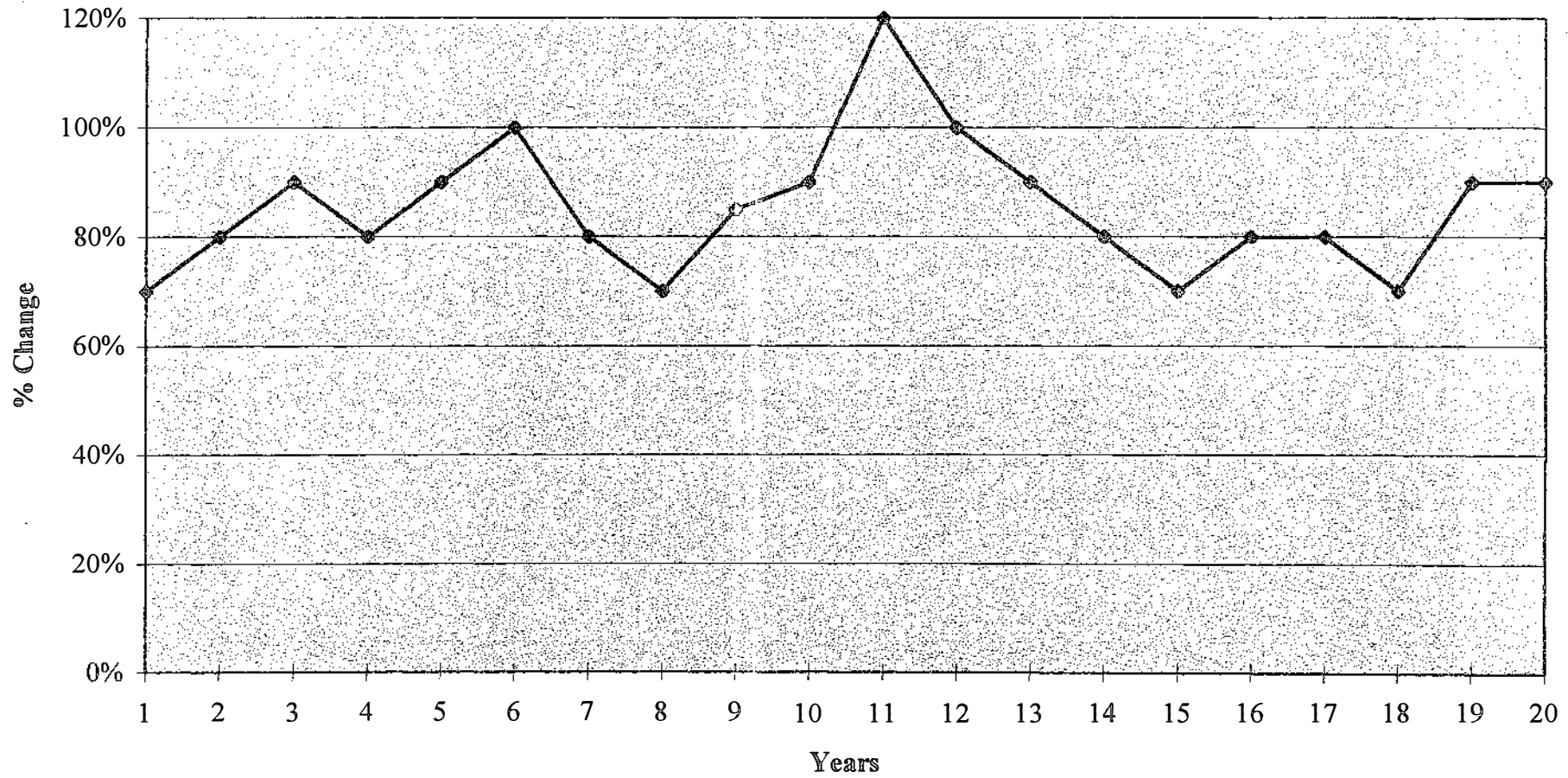
Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL	Real Loan Balance (000) TL	
	117	0.000	23,273,535	19,782,505	6,583,047	13,199,458	0.000	0	1,997,664,979	63,750	21,214	
118	0.000	23,273,535	19,782,505	6,539,835	13,242,669	0.000	0	1,984,422,310	63,750	21,075	6,394,889	5,269
119	0.000	23,273,535	19,782,505	6,496,482	13,286,022	0.000	0	1,971,136,288	63,750	20,935	6,352,074	5,234
120	0.000	23,273,535	19,782,505	6,452,987	13,329,517	0.000	0	1,957,806,771	63,750	20,795	6,309,119	5,199
121	0.378	32,080,354	27,268,301	8,834,679	18,433,622	0.378	740,843,627	2,680,216,776	63,750	20,654	6,266,024	5,164
122	0.000	32,080,354	27,268,301	8,774,332	18,493,968	0.000	0	2,661,722,807	63,750	20,513	6,222,787	5,128
123	0.000	32,080,354	27,268,301	8,713,788	18,554,513	0.000	0	2,643,168,295	63,750	20,372	6,179,409	5,093
124	0.000	32,080,354	27,268,301	8,653,045	18,615,255	0.000	0	2,624,553,039	63,750	20,230	6,135,889	5,057
125	0.000	32,080,354	27,268,301	8,592,104	18,676,197	0.000	0	2,605,876,842	63,750	20,087	6,092,226	5,022
126	0.000	32,080,354	27,268,301	8,530,963	18,737,338	0.000	0	2,587,139,504	63,750	19,944	6,048,420	4,986
127	0.483	47,582,854	40,445,426	12,562,479	27,882,947	0.483	1,250,208,511	3,809,465,068	63,750	19,801	6,004,471	4,950
128	0.000	47,582,854	40,445,426	12,471,197	27,974,229	0.000	0	3,781,490,839	63,750	19,657	5,960,378	4,914
129	0.000	47,582,854	40,445,426	12,379,617	28,065,809	0.000	0	3,753,425,030	63,750	19,513	5,916,141	4,878
130	0.000	47,582,854	40,445,426	12,287,737	28,157,689	0.000	0	3,725,267,341	63,750	19,368	5,871,759	4,842
131	0.000	47,582,854	40,445,426	12,195,556	28,249,870	0.000	0	3,697,017,471	63,750	19,223	5,827,232	4,806
132	0.000	47,582,854	40,445,426	12,103,073	28,342,353	0.000	0	3,668,675,118	63,750	19,077	5,782,558	4,769
133	0.483	70,576,778	59,990,261	17,814,135	42,176,126	0.483	1,772,849,454	5,399,348,446	63,750	18,931	5,737,739	4,733
134	0.000	70,576,778	59,990,261	17,676,062	42,314,200	0.000	0	5,357,034,246	63,750	18,784	5,692,773	4,696
135	0.000	70,576,778	59,990,261	17,537,536	42,452,725	0.000	0	5,314,581,521	63,750	18,637	5,647,660	4,659
136	0.000	70,576,778	59,990,261	17,398,557	42,591,705	0.000	0	5,271,989,817	63,750	18,489	5,602,398	4,622
137	0.000	70,576,778	59,990,261	17,259,123	42,731,139	0.000	0	5,229,258,678	63,750	18,341	5,556,989	4,585
138	0.000	70,576,778	59,990,261	17,119,232	42,871,029	0.000	0	5,186,387,649	63,750	18,192	5,511,431	4,548
139	0.414	99,810,637	84,839,041	24,011,767	60,827,274	0.414	2,148,272,104	7,273,832,478	63,750	18,043	5,465,724	4,511
140	0.000	99,810,637	84,839,041	23,812,635	61,026,407	0.000	0	7,212,806,072	63,750	17,893	5,419,868	4,473
141	0.000	99,810,637	84,839,041	23,612,850	61,226,191	0.000	0	7,151,579,880	63,750	17,743	5,373,861	4,436
142	0.000	99,810,637	84,839,041	23,412,412	61,426,630	0.000	0	7,090,153,251	63,750	17,593	5,327,704	4,398
143	0.000	99,810,637	84,839,041	23,211,317	61,627,725	0.000	0	7,028,525,526	63,750	17,442	5,281,395	4,360
144	0.000	99,810,637	84,839,041	23,009,564	61,829,478	0.000	0	6,966,696,048	63,750	17,290	5,234,935	4,322
145	0.414	141,153,556	119,980,523	32,254,181	87,726,342	0.414	2,885,699,988	9,764,669,694	63,750	17,138	5,188,323	4,284
146	0.000	141,153,556	119,980,523	31,966,988	88,013,535	0.000	0	9,676,656,159	63,750	16,985	5,141,558	4,246
147	0.000	141,153,556	119,980,523	31,678,854	88,301,669	0.000	0	9,588,354,490	63,750	16,832	5,094,640	4,208
148	0.000	141,153,556	119,980,523	31,389,778	88,590,745	0.000	0	9,499,763,745	63,750	16,679	5,047,569	4,170
149	0.000	141,153,556	119,980,523	31,099,754	88,880,768	0.000	0	9,410,882,976	63,750	16,524	5,000,343	4,131
150	0.000	141,153,556	119,980,523	30,808,782	89,171,741	0.000	0	9,321,711,235	63,750	16,370	4,952,963	4,092

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real Payments	Real Interest	Real Loan Balance	
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	(000) TL	(000) TL	(000) TL	
151	0.378	194,566,750	165,381,738	42,064,584	123,317,153	0.378	3,527,380,977	12,725,775,058	63,750	16,215	4,905,428	4,054
152	0.000	194,566,750	165,381,738	41,660,876	123,720,862	0.000	0	12,602,034,197	63,750	16,059	4,857,737	4,015
153	0.000	194,566,750	165,381,738	41,255,846	124,125,892	0.000	0	12,477,928,305	63,750	15,903	4,809,890	3,976
154	0.000	194,566,750	165,381,738	40,849,490	124,532,247	0.000	0	12,353,396,058	63,750	15,746	4,761,886	3,937
155	0.000	194,566,750	165,381,738	40,441,804	124,939,934	0.000	0	12,228,456,124	63,750	15,589	4,713,725	3,897
156	0.000	194,566,750	165,381,738	40,032,783	125,348,954	0.000	0	12,103,107,169	63,750	15,432	4,665,407	3,858
157	0.378	268,191,757	227,962,994	54,615,742	173,347,252	0.378	4,579,874,758	16,509,634,676	63,750	15,273	4,616,930	3,818
158	0.000	268,191,757	227,962,994	54,048,248	173,914,746	0.000	0	16,335,719,930	63,750	15,115	4,568,295	3,779
159	0.000	268,191,757	227,962,994	53,478,896	174,484,097	0.000	0	16,161,235,832	63,750	14,955	4,519,500	3,739
160	0.000	268,191,757	227,962,994	52,907,681	175,055,313	0.000	0	15,986,180,519	63,750	14,796	4,470,546	3,699
161	0.000	268,191,757	227,962,994	52,334,595	175,628,399	0.000	0	15,810,552,121	63,750	14,635	4,421,431	3,659
162	0.000	268,191,757	227,962,994	51,759,633	176,203,360	0.000	0	15,634,348,761	63,750	14,475	4,372,156	3,619
163	0.342	359,817,000	305,844,450	68,668,918	237,175,532	0.342	5,341,331,207	20,738,504,436	63,750	14,313	4,322,719	3,578
164	0.000	359,817,000	305,844,450	67,892,467	237,951,983	0.000	0	20,500,552,453	63,750	14,151	4,273,121	3,538
165	0.000	359,817,000	305,844,450	67,113,474	238,730,976	0.000	0	20,261,821,477	63,750	13,989	4,223,360	3,497
166	0.000	359,817,000	305,844,450	66,331,931	239,512,519	0.000	0	20,022,308,958	63,750	13,826	4,173,436	3,457
167	0.000	359,817,000	305,844,450	65,547,829	240,296,621	0.000	0	19,782,012,337	63,750	13,663	4,123,349	3,416
168	0.000	359,817,000	305,844,450	64,761,161	241,083,289	0.000	0	19,540,929,048	63,750	13,499	4,073,097	3,375
169	0.342	482,745,163	410,333,389	85,827,333	324,506,056	0.342	6,675,978,369	25,892,401,361	63,750	13,334	4,022,682	3,334
170	0.000	482,745,163	410,333,389	84,764,984	325,568,404	0.000	0	25,566,832,956	63,750	13,169	3,972,101	3,292
171	0.000	482,745,163	410,333,389	83,699,158	326,634,230	0.000	0	25,240,198,726	63,750	13,004	3,921,354	3,251
172	0.000	482,745,163	410,333,389	82,629,843	327,703,546	0.000	0	24,912,495,180	63,750	12,837	3,870,442	3,209
173	0.000	482,745,163	410,333,389	81,557,027	328,776,362	0.000	0	24,583,718,818	63,750	12,671	3,819,363	3,168
174	0.000	482,745,163	410,333,389	80,480,698	329,852,690	0.000	0	24,253,866,128	63,750	12,504	3,768,116	3,126
175	0.304	629,422,686	535,009,283	103,526,038	431,483,245	0.304	7,369,306,351	31,191,689,234	63,750	12,336	3,716,702	3,084
176	0.000	629,422,686	535,009,283	102,113,474	432,895,809	0.000	0	30,758,793,426	63,750	12,168	3,665,120	3,042
177	0.000	629,422,686	535,009,283	100,696,286	434,312,997	0.000	0	30,324,480,429	63,750	11,999	3,613,368	3,000
178	0.000	629,422,686	535,009,283	99,274,458	435,734,825	0.000	0	29,888,745,604	63,750	11,829	3,561,448	2,957
179	0.000	629,422,686	535,009,283	97,847,976	437,161,307	0.000	0	29,451,584,297	63,750	11,659	3,509,357	2,915
180	0.000	629,422,686	535,009,283	96,416,823	438,592,460	0.000	0	29,012,991,837	63,750	11,489	3,457,096	2,872
181	0.304	820,666,777	697,566,761	123,840,054	573,726,707	0.304	8,815,321,396	37,254,586,527	63,750	11,318	3,404,663	2,829
182	0.000	820,666,777	697,566,761	121,961,822	575,604,939	0.000	0	36,678,981,588	63,750	11,146	3,352,059	2,786
183	0.000	820,666,777	697,566,761	120,077,441	577,489,319	0.000	0	36,101,492,269	63,750	10,974	3,299,283	2,743
184	0.000	820,666,777	697,566,761	118,186,891	579,379,869	0.000	0	35,522,112,400	63,750	10,801	3,246,334	2,700

Months	NOMINAL							REAL			Discounted I.F.I. Revenues (000) TL	
	Salary	Salary	Monthly Payment	Interest Payments	Principal Payments	Consumer	Index Adjustment	Loan Balance	Real Payments	Real Interest		Real Loan Balance
	Index	(000) TL	(000) TL	(000) TL	(000) TL	Price Index	(000) TL	(000) TL	(000) TL	(000) TL		(000) TL
185	0.000	820,666,777	697,566,761	116,290,153	581,276,608	0.000	0	34,940,835,792	63,750	10,628	3,193,212	2,657
186	0.000	820,666,777	697,566,761	114,387,204	583,179,556	0.000	0	34,357,656,235	63,750	10,454	3,139,915	2,613
187	0.342	1,101,040,020	935,884,017	150,905,107	784,978,910	0.342	11,737,976,699	45,310,654,024	63,750	10,279	3,086,445	2,570
188	0.000	1,101,040,020	935,884,017	148,335,291	787,548,727	0.000	0	44,523,105,298	63,750	10,104	3,032,799	2,526
189	0.000	1,101,040,020	935,884,017	145,757,061	790,126,956	0.000	0	43,732,978,341	63,750	9,929	2,978,977	2,482
190	0.000	1,101,040,020	935,884,017	143,170,391	792,713,626	0.000	0	42,940,264,715	63,750	9,752	2,924,980	2,438
191	0.000	1,101,040,020	935,884,017	140,575,253	795,308,764	0.000	0	42,144,955,951	63,750	9,576	2,870,805	2,394
192	0.000	1,101,040,020	935,884,017	137,971,619	797,912,398	0.000	0	41,347,043,553	63,750	9,398	2,816,454	2,350
193	0.342	1,477,200,199	1,255,620,169	181,603,774	1,074,016,395	0.342	14,125,836,479	54,398,863,637	63,750	9,220	2,761,924	2,305
194	0.000	1,477,200,199	1,255,620,169	178,087,724	1,077,532,445	0.000	0	53,321,331,192	63,750	9,042	2,707,216	2,260
195	0.000	1,477,200,199	1,255,620,169	174,560,163	1,081,060,006	0.000	0	52,240,271,186	63,750	8,863	2,652,329	2,216
196	0.000	1,477,200,199	1,255,620,169	171,021,054	1,084,599,115	0.000	0	51,155,672,071	63,750	8,683	2,597,262	2,171
197	0.000	1,477,200,199	1,255,620,169	167,470,359	1,088,149,810	0.000	0	50,067,522,261	63,750	8,503	2,542,014	2,126
198	0.000	1,477,200,199	1,255,620,169	163,908,039	1,091,712,130	0.000	0	48,975,810,131	63,750	8,322	2,486,586	2,080
199	0.342	1,981,872,036	1,684,591,231	215,110,712	1,469,480,519	0.342	16,732,134,293	64,238,463,905	63,750	8,140	2,430,977	2,035
200	0.000	1,981,872,036	1,684,591,231	210,300,015	1,474,291,216	0.000	0	62,764,172,689	63,750	7,958	2,375,185	1,990
201	0.000	1,981,872,036	1,684,591,231	205,473,569	1,479,117,662	0.000	0	61,285,055,027	63,750	7,776	2,319,211	1,944
202	0.000	1,981,872,036	1,684,591,231	200,631,323	1,483,959,908	0.000	0	59,801,095,118	63,750	7,592	2,263,053	1,898
203	0.000	1,981,872,036	1,684,591,231	195,773,224	1,488,818,007	0.000	0	58,312,277,111	63,750	7,409	2,206,712	1,852
204	0.000	1,981,872,036	1,684,591,231	190,899,221	1,493,692,010	0.000	0	56,818,585,102	63,750	7,224	2,150,186	1,806
205	0.342	2,658,960,358	2,260,116,304	249,557,613	2,010,558,691	0.342	19,411,546,102	74,219,572,513	63,750	7,039	2,093,475	1,760
206	0.000	2,658,960,358	2,260,116,304	242,975,567	2,017,140,737	0.000	0	72,202,431,776	63,750	6,853	2,036,579	1,713
207	0.000	2,658,960,358	2,260,116,304	236,371,973	2,023,744,331	0.000	0	70,178,687,445	63,750	6,667	1,979,496	1,667
208	0.000	2,658,960,358	2,260,116,304	229,746,761	2,030,369,543	0.000	0	68,148,317,902	63,750	6,480	1,922,226	1,620
209	0.000	2,658,960,358	2,260,116,304	223,099,859	2,037,016,445	0.000	0	66,111,301,457	63,750	6,293	1,864,769	1,573
210	0.000	2,658,960,358	2,260,116,304	216,431,198	2,043,685,106	0.000	0	64,067,616,351	63,750	6,105	1,807,124	1,526
211	0.304	3,466,860,152	2,946,831,129	273,468,421	2,673,362,708	0.304	19,466,335,371	80,860,589,014	63,750	5,916	1,749,290	1,479
212	0.000	3,466,860,152	2,946,831,129	264,716,527	2,682,114,602	0.000	0	78,178,474,412	63,750	5,727	1,691,267	1,432
213	0.000	3,466,860,152	2,946,831,129	255,935,982	2,690,895,147	0.000	0	75,487,579,265	63,750	5,537	1,633,054	1,384
214	0.000	3,466,860,152	2,946,831,129	247,126,691	2,699,704,438	0.000	0	72,787,874,827	63,750	5,346	1,574,650	1,337
215	0.000	3,466,860,152	2,946,831,129	238,288,561	2,708,542,568	0.000	0	70,079,332,259	63,750	5,155	1,516,055	1,289
216	0.000	3,466,860,152	2,946,831,129	229,421,498	2,717,409,631	0.000	0	67,361,922,628	63,750	4,963	1,457,268	1,241
217	0.304	4,520,232,608	3,842,197,717	287,529,951	3,554,667,766	0.304	20,467,278,975	84,274,533,837	63,750	4,771	1,398,289	1,193
218	0.000	4,520,232,608	3,842,197,717	275,892,894	3,566,304,823	0.000	0	80,708,229,015	63,750	4,578	1,339,116	1,144

Months	NOMINAL								REAL			Discounted I.F.I. Revenues (000) TL
	Salary Index	Salary (000) TL	Monthly Payment (000) TL	Interest Payments (000) TL	Principal Payments (000) TL	Consumer Price Index	Index Adjustment (000) TL	Loan Balance (000) TL	Real Payments (000) TL	Real Interest (000) TL	Real Loan Balance (000) TL	
	219	0.000	4,520,232,608	3,842,197,717	264,217,740	3,577,979,977	0.000	0	77,130,249,038	63,750	4,384	
220	0.000	4,520,232,608	3,842,197,717	252,504,365	3,589,693,352	0.000	0	73,540,555,685	63,750	4,190	1,220,190	1,047
221	0.000	4,520,232,608	3,842,197,717	240,752,643	3,601,445,074	0.000	0	69,939,110,611	63,750	3,995	1,160,434	999
222	0.000	4,520,232,608	3,842,197,717	228,962,449	3,613,235,268	0.000	0	66,325,875,343	63,750	3,799	1,100,483	950
223	0.378	6,230,710,664	5,296,104,065	299,298,091	4,996,805,974	0.378	25,098,034,582	86,427,103,952	63,750	3,603	1,040,336	901
224	0.000	6,230,710,664	5,296,104,065	282,939,848	5,013,164,216	0.000	0	81,413,939,736	63,750	3,406	979,992	851
225	0.000	6,230,710,664	5,296,104,065	266,528,053	5,029,576,011	0.000	0	76,384,363,725	63,750	3,208	919,450	802
226	0.000	6,230,710,664	5,296,104,065	250,062,530	5,046,041,534	0.000	0	71,338,322,190	63,750	3,010	858,710	753
227	0.000	6,230,710,664	5,296,104,065	233,543,103	5,062,560,961	0.000	0	66,275,761,229	63,750	2,811	797,771	703
228	0.000	6,230,710,664	5,296,104,065	216,969,596	5,079,134,468	0.000	0	61,196,626,761	63,750	2,612	736,633	653
229	0.378	8,588,441,955	7,300,175,662	276,152,157	7,024,023,505	0.378	23,157,101,913	77,329,705,169	63,750	2,412	675,295	603
230	0.000	8,588,441,955	7,300,175,662	253,157,332	7,047,018,330	0.000	0	70,282,686,839	63,750	2,211	613,755	553
231	0.000	8,588,441,955	7,300,175,662	230,087,228	7,070,088,434	0.000	0	63,212,598,405	63,750	2,009	552,015	502
232	0.000	8,588,441,955	7,300,175,662	206,941,598	7,093,234,064	0.000	0	56,119,364,341	63,750	1,807	490,072	452
233	0.000	8,588,441,955	7,300,175,662	183,720,196	7,116,455,467	0.000	0	49,002,908,874	63,750	1,604	427,926	401
234	0.000	8,588,441,955	7,300,175,662	160,422,772	7,139,752,890	0.000	0	41,863,155,984	63,750	1,401	365,577	350
235	0.378	11,838,350,262	10,062,597,723	188,909,119	9,873,688,604	0.378	15,841,222,316	47,830,689,696	63,750	1,197	303,024	299
236	0.000	11,838,350,262	10,062,597,723	156,585,232	9,906,012,491	0.000	0	37,924,677,205	63,750	992	240,266	248
237	0.000	11,838,350,262	10,062,597,723	124,155,524	9,938,442,198	0.000	0	27,986,235,007	63,750	787	177,302	197
238	0.000	11,838,350,262	10,062,597,723	91,619,651	9,970,978,072	0.000	0	18,015,256,936	63,750	580	114,133	145
239	0.000	11,838,350,262	10,062,597,723	58,977,263	10,003,620,459	0.000	0	8,011,636,476	63,750	374	50,756	93
240	0.000	11,838,350,262	8,037,864,489	26,228,013	8,011,636,476	0.000	0	0	50,923	166	0	42

**Data Used in Appendix 17 for
Yearly % Change in Prices and Salaries**



Appendix 18

Examples for the Proposed Model

<i>HOUSE BUYER</i>	
BASE SALARY (6/1)	75,000,000 TL
MONTHLY PAYMENT / SALARY	0.25
MONTHLY PAYMENT	18,750,000 TL
HOUSE PRICE	3,110,000,000 TL
<i>INVESTORS</i>	
INVESTMENT FOR WHOLE SALARY INCOME	12,447,000,000 TL
WHOLE SALARY INCOME	75,000,000 TL
INVESTMENT FOR 10% SALARY INCOME	1,244,700,000 TL
<i>INTERMEDIARY FINANCIAL INSTITUTION</i>	
NPV OF IFI EARNINGS PER WHOLE SALARY INCOME CERTIFICATE	1,368,000,000 TL
NPV OF IFI EARNINGS / HOUSE PRICE	0.11

<i>HOUSE BUYER</i>	
BASE SALARY (6/1)	75,000,000 TL
MONTHLY PAYMENT / SALARY	0.35
MONTHLY PAYMENT	26,250,000 TL
HOUSE PRICE	4,350,000,000 TL
<i>INVESTORS</i>	
INVESTMENT FOR WHOLE SALARY INCOME	12,447,000,000 TL
WHOLE SALARY INCOME	75,000,000 TL
INVESTMENT FOR 10% SALARY INCOME	1,244,700,000 TL
<i>INTERMEDIARY FINANCIAL INSTITUTION</i>	
NPV OF IFI EARNINGS PER WHOLE SALARY INCOME CERTIFICATE	1,368,000,000 TL
NPV OF IFI EARNINGS / HOUSE PRICE	0.11

HOUSE BUYER	
BASE SALARY (6/1)	75,000,000 TL
MONTHLY PAYMENT / SALARY	0.50
MONTHLY PAYMENT	37,500,000 TL
HOUSE PRICE	6,210,000,000 TL
INVESTORS	
INVESTMENT FOR WHOLE SALARY INCOME	12,447,000,000 TL
WHOLE SALARY INCOME	75,000,000 TL
INVESTMENT FOR 10% SALARY INCOME	1,244,700,000 TL
INTERMEDIARY FINANCIAL INSTITUTION	
NPV OF IFI EARNINGS PER WHOLE SALARY INCOME CERTIFICATE	1,368,000,000 TL
NPV OF IFI EARNINGS / HOUSE PRICE	0.11

HOUSE BUYER	
BASE SALARY (6/1)	75,000,000 TL
MONTHLY PAYMENT / SALARY	0.65
MONTHLY PAYMENT	48,750,000 TL
HOUSE PRICE	8,080,000,000 TL
INVESTORS	
INVESTMENT FOR WHOLE SALARY INCOME	12,447,000,000 TL
WHOLE SALARY INCOME	75,000,000 TL
INVESTMENT FOR 10% SALARY INCOME	1,244,700,000 TL
INTERMEDIARY FINANCIAL INSTITUTION	
NPV OF IFI EARNINGS PER WHOLE SALARY INCOME CERTIFICATE	1,368,000,000 TL
NPV OF IFI EARNINGS / HOUSE PRICE	0.11

<i>HOUSE BUYER</i>	
BASE SALARY (6/1)	75,000,000 TL
MONTHLY PAYMENT / SALARY	0.85
MONTHLY PAYMENT	63,750,000 TL
HOUSE PRICE	10,580,000,000 TL
<i>INVESTORS</i>	
INVESTMENT FOR WHOLE SALARY INCOME	12,447,000,000 TL
WHOLE SALARY INCOME	75,000,000 TL
INVESTMENT FOR 10% SALARY INCOME	1,244,700,000 TL
<i>INTERMEDIARY FINANCIAL INSTITUTION</i>	
NPV OF IFI EARNINGS PER WHOLE SALARY INCOME CERTIFICATE	1,368,000,000 TL
NPV OF IFI EARNINGS / HOUSE PRICE	0.11

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