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A CRITIQUE ON TURKISH REAL ESTATE MARKET

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May, 2008

A CRITIQUE ON TURKISH REAL ESTATE MARKET[1]

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7 May 2008

ABSTRACT

We discuss issues of real estate price bubble, the extent of wealth effects, affordability, financial deepening and credit market risks. Our simulations indicate that given current wealth levels, cost of credit and maturity, average homes are not affordable by average consumers. The market requires further reduction in the cost of credit and extension of maturity to manage a significant demand shift in the real estate market. We present evidence that Turkey's credit markets are shallow to result in a banking crisis emerging from real estate credits. Finally, we document evidence in favor of the presence of wealth effects on consumption.

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[1] Opinions expressed in this study are of author's and do not represent the views of the Central Bank of Turkey.

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1. Introduction

"To have a roof to live under"

Recent data on credit growth and increase in real estate prices in Turkey raise concerns towards pricing of assets beyond their "normal" market values. Abnormal returns on asset prices – especially in the real estate market – have also been heavily discussed in many developed economies. And recently, the term "real estate price bubble" has received stronger attention.[4] Especially for emerging economies, macroeconomic stability and induced capital flows – due to global excess liquidity – led to an increase in the supply of funds and therefore lowered the cost of financing. The immediate impact was observed in consumer credits and credits for real estate purchases. With a reduction in the cost of financing, the demand for house ownership increased and higher real estate prices are observed – partly due to inelastic supply of houses.

Investment in the Turkish real estate market has gained pace in the 1990s and accelerated further right after the 2001 financial crisis. The increase in the growth rate of the economy, along with declining interest rates motivated the investment in real estate market. The prospects for European Union (EU) accession coupled with increased capital flows also increased the supply of funds. Optimistic scenarios brought along the severe banking competition in lending excess funds to real estate. Currently, bank competition is aggressive in the financing of housing purchases, so aggressive that especially in the short – run banks can offer lower rates for real estate

[4] We observe a similar trend in most developed economies (OECD, IMF).

credits, although at some times this return is lower than the cost of acquiring deposits. This in turn leads to a maturity mismatch between the assets and the liabilities of the banks' balance sheets. Since the lending is for longer term, with an expected decline in interest rates, bank's can write off profits in the medium-term. However, this is conditional on the inability to refinance the high cost of credit with the low cost one.[5] On the other hand, if the banking sector were financing real estate purchases through foreign credit then we would observe currency mismatch since most real estate credits are in domestic currency. If maturity and currency mismatches are not well governed a small financial turmoil may lead to devastating results in both the housing market and the financial sector.

The increased demand in the real estate market resulted in capital gains in investment for real estate. In this environment, households observe two effects depending on whether they are owners of real estate or planning to acquire one. In the former group, the rise in the asset prices along with the decline in the interest rates lead to the so called "wealth effect". A positive shock to households' total wealth leads to an increase in their current and future consumption.[6] In the second group, where households are on the buyer side of the market, there are both *income and substitution effects*. The decline in interest rates generates an income effect that motivates households to purchase houses whereas the increase in house prices leads

[5] There is no institutional framework other than taxes to deter the borrowers to substitute away from high cost credits; however recent – February 2006 – tax regulation removed tax barriers in the refinancing of housing credits.

[6] If this shock was observed in the financial wealth the impact is not as strong on the level and pattern of consumption. The main difference lies in the volatility of financial and non-financial assets. The latter is less volatile and changes in the level of non-financial assets are recognized as permanent.

them to substitute away. The resultant impact depends on whichever force is greater.[7]

It is important for a policy maker to observe how the increase in wealth is translated into an increase in consumption (increased demand). The immediate answer lies in the sophistication of the financial markets that allows households to utilize refinancing of their mortgage. With decline in interest rates and increase in real estate prices, households can substitute away from high to low cost financing and realize the capital gain. However, households do not have to realize the gains to actually observe the wealth effect. Expectation for an increase in the lifetime wealth also motivates higher consumption.

All these links have not been explored for Turkey, in this respect; this study will shed light onto the spoken but formally untouched issues. To motivate this we will answer three important questions on Turkish real estate market. First, do we observe a real estate price bubble in Turkey? Second, what would be the implications of real estate credit expansion on credit risks? And third, to what extent we observe wealth effects derived from real estate price increases? A formal answer to these questions will allow policy makers to device policies on financial deepening, demand and expectations management.

Our answer to the first question is that real estate prices have recently picked up to the pre – 2001 crisis levels. Given that Turkey experienced 16 quarters of magnificent economic growth, this pick up is not substantial. For second question recent data

[7] There may be some *behavioral dynamics* inherent in the demand for real estate. In countries like Turkey, households prefer the ownership of a house than renting one.

addresses that there is no slowdown in the rate of increase of real estate credits – around 350 percent on an annual basis. This number could alarm many, however, the share of real estate credits in GDP is only 2.5 percent. Given that these credits are backed by real estate and diversified among a large number of consumers, risks can be managed to an extent in the banking sector. As for the last question, our results indicate that, there is a positive association between the household real estate wealth and consumption – a one percent increase in real estate wealth results in a 0.2 percent increase in total consumption. These answers present evidence that developments in the real estate market have not been alarming yet, but there are indications for problems in the medium term.

The next section presents the relevant literature for Real Estate Price Increases and Bubbles, which is followed by section 3 with an analysis of real estate prices in Ankara and tries to answer the question of a presence of real estate bubble in Turkey. In Section 4 an analysis of bank credits and affordability of real estate is discussed and in section 5 the presence of wealth effects is addressed. Eventually, section 6 concludes.

2. Real Estate Price Increases and Bubbles

A real estate bubble or housing bubble for residential markets is a type of economic bubble seen as rising house prices. Real estate bubbles occur periodically in local or global real estate markets. Whether real estate price bubble busts cause banking crises is ambiguous but a high correlation is found between real estate price bubble busts in developing and industrialized countries and banking crises in those countries

(Erdonmez, 2005). Examples of such financial crises are Tulipmania in Holland; South Sea Bubble in England; Mississippi Boom in France, and 1929 Great Depression in the United States. More recently, Japan (1990s), Norway, Finland and Sweden (1980s and 1990s), and in developing countries: Argentine, Chili, Indonesia, Mexico, Malaysia, Thailand have experienced such crises.

Three phases are observed for real estate price bubbles. The first phase of an active real estate price bubble is the credit growth in a country, which increases housing prices for years. The second phase is the bubble crash, which can last for a few days, few months, or a longer period of time. In the third phase, firms and institutions that purchased the assets at higher prices go bankrupt. Following the third phase, banking and exchange rate crises are observed in the economy, which are disruptive for the real sector.

Hebling and Terrones (2003) calculate that housing price bubbles last five years on average and cause approximately eight percent of GDP loss. These bubbles have a greater negative effect on consumption and banking system than equity price bubbles. Moreover, housing price busts have adverse effects on the capacity and willingness of the banking system to lend. This eventually causes a decline in private investment. Terrones (2004) argues that Global house price boom in industrial countries cannot be solely due to low interest rates. In Australia, Ireland, Spain and the United Kingdom, housing affordability ratios have also reached record-high levels and house prices across countries are highly synchronized.

Poterba (1991) provides three explanations for house price movements in the past three decades: changes in construction costs; changes in the real after-tax cost of ownership; and changes in demographic factors. His framework for explaining house price movements considers both the existing houses and the flow of constructions. In terms of the land costs, he finds that a surprisingly small fraction of the changes in house prices may be explained by changing land costs. In terms of the demographics, Poterba suggests that the rise in house prices in the late 1970s, might partly be explained by the individuals, between the ages of 20-34, increasing their housing consumption to start a family.

3. Real Estate Prices In Turkey, Bubble?

The significant recovery after the 2001 financial crisis with an IMF based stabilization program and political stability changed the macroeconomic agenda of Turkey from high to low inflation, unstable to stable and high growth and a period of significant reforms towards more sound institutions.[8] Nominal interest rates in this period fell significantly, which opened up the possibilities for Banks to shift their portfolio allocations from funding public sector to extending credit for private investment. During the 2002 - 2005 period, the share of Treasury bonds on banks' balance sheet is significantly reduced and the share of consumer and producer credits increased (Graph 1), (Table 1)[9].

[8] Turkey grew by 7 percent on average; inflation fell from 47 percent on average in 2002 to below 8 percent by the end of 2005. Risk premium fell from 16 to 8 percent ex-post.

[9] Public banks after the crisis were re-capitalized with Treasury papers, therefore consolidated balance sheets of the banking sector may seem to present evidence against our argument, however, excluding this restructuring we still observe the portfolio shifts of the private banks balance sheets.

Lower nominal interest rates created an illusion for reduced costs of financing therefore increased the demand for credits. Moreover, banks competing in the credit market reduced rates even further to take advantage of the "first mover" and still enjoyed high real returns. In the meantime, the deposits, real estate credits and total credits grew (Table 1, Table 2). The increased demand for real estate also boosted housing prices and the term "bubble" in the real estate market began to be pronounced.[10]

To cross check this argument we gathered real estate price and rent data from TURYAP, the largest real estate broker in Turkey, for Ankara. The figures are the ask prices of houses on the market.[11] It is an unbalanced panel with an annual frequency for the 2000 – 2005 period collected from 30 to 37 districts of Ankara (Table 3). The annual figures are for January of the corresponding year. Starting from the year 2005 we have monthly figures covering the first six months of the year. August 1999 earthquake significantly depressed real estate prices in Istanbul, however we observe that, across regions, prices in Ankara were relatively stable during and after the earthquake therefore has a good representation of average real estate price level in Turkey. From the Table we also observe that the financial crisis in the year 2001 leveled out most of assets' returns.

Immediately after the 1999 earthquake, an average home in Ankara was priced at 39,652 YTL with a one standard deviation of 16,605 YTL. The same home was rented for 2,868 YTL per year, by June 2005 the sale prices on average increased to

[10] There still remains the question whether the houses on the market are sold at the ask price – the price that most analysts take as the reference point.
[11] These are three bedroom apartments facing the street with furnace. There is a separation between new and old houses as well as luxurious and simple.

129,231 YTL and the associated pick up in rents was 7,128 YTL per year. This addresses a 186.3 percent increase in real estate prices in nominal terms, despite in real terms represents a 14.8 percent decline (TABLE 4). One can argue that as a result of the financial crisis there was a large correction in the exchange rates. In our data set some of the houses that we considered were on the market with a price tag in US dollars. On Table 5, we redid all the analysis in US dollars and kept the real estate sold in US dollars as is.[12] We observe that, in the same period, there is a 20 percent increase in real estate prices.[13] Still a 20 percent increase lagged behind an economy that grew 8 percent on average in the last four years.

We observe a more dramatic decline in the rent prices in real terms with 35.1 percent. The percussions of the crisis reflected in liquidation of real estate. The increase in the supply of housing depressed prices and rents asymmetrically, where the decline in the latter was more pronounced than the former. We believe that this is a result of fixed costs associated with keeping a house empty. Most housing in Turkey are apartment buildings, which require tenants/owners to pay a monthly maintenance fee i.e. doorkeeper fees, fuel for heating, garden maintenance, apartment maintenance etc. Especially, the fee is larger in the winter due to greater use of fuel or natural gas to heat up the unit.[14] Owners are required to pay the fees, when houses are not rented. This puts a downward pressure on rent prices. So it is not surprising to see decreasing rents when prices of houses for sale are growing.[15]

[12] We used the end of the period Turkish Lira / US dollar exchange rate to covert real estate priced in Turkish Lira.
[13] In this period Turkish Lira appreciated against the US dollars (in nominal terms).
[14] The main reason the cost of keeping and maintaining a house is growing with rising energy prices.
[15] Of course this statement is true for houses that are kept for investment purposes.

In order to identify bubbles (before they burst), economists have developed a number of financial ratios and economic indicators that can be used to evaluate whether homes in a given area are fairly valued or not. **Price to rent ratio** is a vital component of mortgage lending decisions. It is used to assess whether housing is within reach of the average buyer or not. If it rises over its long-term average, it could be an indication that prices are overlooked (OECD Economic Outlook, 2005, p.198). For Ireland, Netherlands, Spain, UK, Australia and New Zealand, these ratios exceed their long-term averages by 40% or more. In Canada, Denmark, France and the US, this run-up is more moderate. **Affordability ratio** is another one of these indicators. The price to income ratio is the basic affordability measure for housing in a given area. It is generally the ratio of median house prices to median disposable incomes of the households, expressed as a percentage of annual income.

On Table 4 and 5, we present the price to rent ratio for the Ankara real estate market. The peak of that ratio was in the beginning of 2002 with 20.7, when all rent prices were depressed. As of June 2005, we observe a moderation of the ratio to an average of 18. On Table 6 we present a comparison of *growth* in affordability ratios in the world. In Turkey, this ratio has grown only as much as the world average. Interestingly, excluding the negative numbers on the table, Turkey falls well below world average.

Given the analysis of real price increase and price to rent ratios it is hard to claim a price bubble in the real estate market. What we observed so far is only a recovery from a financial crisis. However, we have to remind that such a discussion would be relevant in the medium term if current trends continue.

4. Bank Credits and Affordability of Real Estate

Acquired macroeconomic stability with increased capital inflows, with sizable long-term capital inflows, especially in the banking sector, began to flourish Turkish credit markets. In the past year, foreign investors began to purchase a significant stake in private banks. 25.5 percent of Garanti Bank was sold to GE Financial, 89.3 percent of Disbank was acquired by Fortis, and Bank Paribas' share on Turkish Ekonomi Bank has increased to 42.1.

Declining nominal interest rates changed portfolio allocations of private banks. There is a significant shift from investment in government bonds to credit, especially to consumer credits. Consumer and commercial credits shares increased in total deposits. Moreover, with increasing diversification of loans, the share of credit defaults declined from 11.4 to 4.7 percent (Table 1).[16] The restructuring of public banks in the post crisis was mainly through recapitalization of these banks with government bonds. The total bale – out reached to 20 billion US dollars (Kaplan, 2004). However, even when it is controlled, declining trend in the share of government bonds in banks balance sheets continued. We observe around a 10 percent decline in the 2003 – 2005 period (Table 1). Nevertheless, the credit base increased by more than 15 percent.

The expansion of credit is also due to the severe banking competition in lending excess funds to real estate. Currently, bank competition is aggressive in the financing

[16] We cannot neglect that a part of the improvement should be attributed to the favorable economic conditions

of housing purchases even in the pricing of credit between domestic and foreign banks. Average cost of acquiring demand deposits is around 20.4 percent. When domestic banks credit interest rate offers are higher than 24 percent, foreign banks' are on average 17.2 percent (Table 2).

As discussed earlier, the convergence process induces capital inflows that forced a real appreciation of Turkish Lira against US dollars. Moreover, the cost of long – term credit in foreign currency terms is lower than domestic currency. In this respect, foreign banks may be financing their credit base through foreign borrowing. The implication of this type of behavior will be reflected in the foreign exchange (Fx) short positions of the banking sector. We observe that the growth rate of Fx short position of foreign banks' is higher than domestic banks'. Of course, this is also conditional on the possibility that Fx liabilities are not hedged. We require further analysis to justify these points and relegate it for future versions of the paper.

In the short – run banks can offer lower financing rates for real estate credits, and this return is lower than the cost of acquiring deposits. The motivation is the expectation for medium to longer – term profits to cover short terms losses. The maturity mismatch does not constitute a problem if banks possess enough capital to cover these losses.[17] The average maturity of time deposits is three months and real estate credits are almost five years. Since the lending is for longer term, with an expected decline in interest rates in deposits, banks can write down profits in the medium-term. However, this is conditional on the *inability* to refinance the high cost of credit with the low cost one. This is especially evident in substituting away from

[17] This is true if long – term credits are not financed with long-term foreign currency debt. If this is the case then this brings front unhedged exchange rate risks.

credit card debt to consumer credits. This in turn establishes higher risks for the banking sector. A small financial turmoil may lead to devastating results if the maturity mismatch is not well governed.

We still have the question of affordability in our hands. Given that credit market conditions are favorable, consumers are able to finance their house purchase easily and motivate a discussion about credit boom and asset price bubbles. In this regard we take a step in explaining affordable housing through a representative consumers budget constraint. We want to identify the purchasing power of borrowers (lifetime wages and stock of assets) given credit supply, cost of credit on optimal maturity and the prices of real estate. These four variables simply constitute the lifetime budget constraint of an individual.

$$C + (1+r) * B \leq W + S \tag{1}$$

In this equation C represents lifetime consumption, W is the lifetime earnings, B is the borrowed amount and r is the cost of the loan and S as the lifetime savings in terms of financial or real estate wealth. The model is of no borrowing constraints and the individual can borrow the value of the house after subtracting accumulated savings. We also assume away the bequest motive that would indicate that borrowing is spent before the individual dies. These assumptions will be sufficient for the constraint to be satisfied with equality over an individual lifetime.

Let's assume that our representative individual accumulates assets until time t=T which we define by S_T and spends this amount on the purchase of a real estate along

with a loan from the bank to cover the rest of the house value. The nature of S_T changes from intangible assets to tangible asset after the purchase. We assume that borrower acquires a constant payment obligation to the bank, which we define as α. Given α and S_T, we can define period budget constraint of an individual as follows.

$$S_t + \omega_t \geq \alpha + c_t \tag{2}$$

ω and c are the period earnings[18] and consumption, respectively. We can relate equations (1) and (2) by α since it is a function of gross repayments of the loan. To make use of our simplifying assumption of constant payments for a given maturity m, α can be written as follows.

$$\alpha = \frac{(1+r)*B}{m} \tag{3}$$

We use equation (3) to simulate the principal and interest payment components of α. We are searching for the value of interest payments, given maturity and interest rates, that will motivate the borrower to stop borrowing beyond their affordability threshold, which is defined by the total of accumulated savings, consumption, and period earnings. We display the surface of principal plus interest payments in Graph 3.[19] To do this we take a fixed maturity and vary interest rates to come up with a constant stream of payments for the loan contract B. If we do this for various maturity dates, i.e. from one to 30 years, we can come up with a payment surface.

[18] What we mean by period earnings is the GDP per capita, earnings include all wage income and rent income i.e. profit shares, return to savings etc.
[19] We only consider constant payment schedules.

We also depict the interest payment schedule that determines the curvature of the payment schedule.

We can now calibrate the affordable payment schedule for a real estate purchase. In this respect, we require the saving stock of the individual that is calculated through real and financial wealth, the consumption per capita, and the period earnings to form the upper bound for constant payment stream.[20] To be consistent we convert all the variables to annual figures.

Notice that we have a representative individual therefore all calculations are based on the median consumer and done on a per capita basis. We use the current prices taken at the end – of – 2005. The saving per capital is simply calculated by assuming that the total capital stock of Turkey is equal to the total Savings. Our capital stock is obtained from Saygili, Cihan and Yurtoglu (2001) covering up to the year 2004. The 2005 figures of capital stock and GDP are simply forecasted by aggregating the 2004 values through an investment deflator. Our population figures are also accumulated to 2005 by assuming a 1.5 percent population growth.

The numbers that we use for calculations are presented on Table 7. We assume that average household is consisting of four persons. The total available household income for credit repayments is equal to 10,300 YTL. This is calculated as the difference between per capita income and per capita consumption multiplied by four people (10,300=(6,701-4,126) x 4) serves as the upper bound for annual payments of a house. The total of saving stock and financial wealth per capita is 20,201 (=per

[20] Financial wealth is calculated as the sum of stock market wealth and broad money. We used M3 definition of the broad money.

capita capital stock (14,664) + per capita financial wealth (5,537)). Therefore, a household can put 80,804 YTL as a down payment, which is the maximum that can be put forward on the purchase of a house. From Table 4, we obtain the average home price, which is 130,000 YTL. Households would require a loan for approximately 50,000 YTL to cover the difference between their savings and the value of the house. At an annual interest rate of 18.2 percent (compound of 1.4 percent monthly) and average maturity in the 4.8 years level, annual payments for a 50,000 YTL loan is 14,700 YTL. This payment schedule is not affordable for an average household.

Another exercise is to ask the question from an interest rate perspective. What would be the required reduction in interest rates in order to afford an average home? Conditional on a loan for a 30-year maturity, we make similar calculations. Results indicate that monthly interest rates must be around 1 percent (12.7 percent annual).

In light of these results we can claim that a representative individual in our economy will not be able to purchase an average home. What we currently observe in the credit markets is the following; it is likely that the people at the upper quartiles of the income distribution are the ones who are purchasing the real estate and most likely this is done with investment motivation. This argument is consistent with the share of real estate credits in GNP. The current level is only 2.5 percent corresponding to the higher income groups' share in the population.

5. Identifying Wealth Effects

Economic implication of changes in housing prices might reflect the key role that housing play in societies (Terrones, 2004). In industrial countries real estate is seen as the main asset in household wealth. Large house price movements affect household's net wealth, capacity to borrow and spend to a great extent.[21] The main channel through which housing cycles affect economic activity is via wealth effect on consumption - a gain in real estate prices induces a higher rate of household consumption (World Economic Outlook, 2002). The strength of the aggregate wealth effect also depends on several other factors such as homeownership rates, expectations, preferences, transaction costs, and housing taxes and subsidies. In a number of countries, including Australia, Canada, the Netherlands, the UK, and the US, changes in housing wealth have a significant effect on consumption where as in France, Germany, Italy, Japan and Spain, the housing wealth effects appears to be smaller or insignificant (OECD Economic Outlook, 2005, p.215).

For household owners, the channels for housing prices to affect household consumption through wealth effect are twofold; a **realized wealth effect** (direct effect) where households finance their consumption through refinancing through colletarizing the capital gain incurred in the value of the house, and **unrealized wealth effect**, in which the increase in consumption is as a result of expected increase in the lifetime wealth. In the latter households do not refinance or sell the house. For those who rent

[21] The dimension of saving behavior is examined by Englehardt (1996). His study, on house prices and homeowner saving behavior, explores the empirical link between house price appreciation and the savings behavior of homeowners during the 1980's. According to this study, households that experience real gains do not change their saving behavior. Real housing capital gains results in a decline in non-housing savings and substitute directly for the non-housing wealth in financing retirement consumption.

the house, the budget constraint effect will kick in; an increase in the value of the house will be reflected in higher rents. Given that housing is an imperfectly substitutable commodity the household consumption will decrease. The fourth effect that can be addressed here is the access to credit. A well functioning credit market is necessary for the households to enjoy the full impact of wealth effects.

There are two perspectives regarding the impact of rising house prices on private consumption. One perspective suggests that rising asset prices might *hint future output growth* and therefore increases private consumption (Morck et al (1990), and Poterba and Samwick (1995)). The second perspective describes *the real wealth effect, namely* an increase in asset prices results in higher household consumption.

Ludvig and Sløk (2002) study the extension of the life cycle model of consumption to study the real wealth effect. They describe wealth as financial and non-financial. To proxy former, they use the stock market wealth and for the latter they use real estate wealth. Their consumption function consists of *log* of private per capita consumption, disposable income and housing and stock market wealth. The short run relationship is described with the first lag of each explanatory variable: two wealth measures. The impact of these two sorts of wealth is dependent on the permanent and transitory components as well as the associated risks with them. They find positive wealth effects and conclude that consumption reacts stronger to changes in stock market wealth than to changes in housing wealth.

Housing prices are generally used as a proxy for housing wealth.[22] Although, our dataset includes house prices it does not extend to before the year 2000, it is not available in higher frequencies and its coverage is limited to Ankara. We still have to find a variable that is consistent with consumption data, disposable income and stock market wealth. We choose to use Rent Price Index (RPI) that is published by the Turkey's Statistics Institution (TurkStat) to serve this purpose.

Before we move to the dataset we have to explore whether the predictions of the earlier dataset are consistent with RPI. To motivate that, we present the plot of the rent and price data and the RPI on Graph 4.[23] We normalized RPI with the year 2000 rent prices from our dataset. A close look at the graph indicates the co-movement between these variables. The degree of correlation coefficient between two rent data is 0.59.[24] RPI is always below the rent prices over this period, therefore the results of the regressions would be more conservative. The second justification that we have to make is whether rent prices can be used as a proxy for housing prices. We provide two sets of justification, the first is the correlation between the housing and rent prices in our dataset, the correlation coefficient is ranging from 0.74 to 0.84 (Table 8). The second justification is the correlation coefficient between housing

[22] There are studies that compute the aggregate value of the owner-occupied housing by price indices, home ownership rates, and the total number of households in a country. However, they also point that house prices serve as a good proxy for real estate wealth.

[23] The increase in rents is governed by the legislation through tying the increase in the rents as a function of the Consumer price inflation and the Treasury bond return for the existing tenants. The current law indicates that the lease contracts must be made on a three-year term. Therefore, the increase in real estate prices may not be fully reflected in the RPI.

[24] We have annual data for 2000 – 2004 and two quarterly data for the year 2005. Getting a correlation coefficient of 0.59 presents a strong relationship with only six degrees of freedom. Moreover, this relationship is searched in the percentage change of the two rent variables.

prices in our dataset and the RPI, the correlation is 0.2.[25] Therefore, we can conclude that RPI will serve as a good proxy in identifying real estate wealth effect.[26]

At this stage of the paper such a shift is necessary in order to have a consistent regression relationship between the consumption data and RPI to proxy for wealth effects. Our data set, although powerful to describe the average price variation in Turkey, lacks comprehensiveness. Moreover, in order to talk about long-run wealth effects we need to have a longer span of data with enough frequency to explain higher order relationship.

The analysis covers Turkey for the 1990 – 2005 period in quarterly frequency. To proxy real estate wealth we use the percentage change in RPI (REW), for financial wealth, we use the quarterly return on Istanbul Stock Exchange 100 Index (SMW). Disposable Income (YD) is calculated by the National Income Accounting methodology, derived from GNP. Consumption (C) data exclude expenditures on rent. We de-seasonalize consumption, disposable income and RPI data with Tramo/Seats. Lastly, we employ two dummy variables to control for the 1994 and 2001 financial crises.

Instead of using YD as a control variable we use it to normalize consumption. We rely on the lifecycle hypothesis to motivate our regressions. The general specification is the extension of the life cycle model of consumption as given in equation (4). We

[25] This is the correlation coefficient of percentage change in the variable to avoid the capture of trend movements.

[26] We acknowledge that both rent price index and Ankara price index are driven by a third factor to results in a high correlation between the two.

try alternative variations of this regression by placing restrictions on the model parameters.

$$\left(\frac{C}{YD}\right)_t = cons + \beta * REW_t + \gamma * SMW_t + D94_t + D01_t + error_t \qquad (4)$$

We deviate from the literature to look for evidence in the subcomponents of the consumption. In this respect, the numerator C is a short hand to write total consumption expenditures (CT), consumption in durables (CD), consumption in semi – durables (CSD) and consumption of services (CS). The presence of wealth effects is simply $\beta \geq 0$ and $\gamma \geq 0$. However, consumption in durables is also an investment in assets that imperfectly substitutes housing. An increase in the value of the houses will increase the demand for durable goods consumptions[27], i.e. household furniture. In this respect although income effects motivate higher consumption of durables, the increase in the prices of these goods will have a substitution effect. Whichever dominates would drive the sign of the coefficient β. For semi – durable and services consumption we would predict that income effect dominates. Higher wealth would induce people to increase the consumption of these commodities.

Results are presented on Table's 8a,b. Except consumption in durables we observe a positive impact of real estate wealth on consumption with parameters raging from slightly above zero to 0.2 percent; a percent increase in real estate wealth would increase total consumption as a percentage of disposable income by 0.2 percent. The lowest impact is seen with consumption in services, which is surprising. The predictive power of the regression is the highest for consumption in durables with

[27] We observe that car sales do increase in asset price booms.

dummy variables (Table 9a). When we look at the impact of financial wealth on consumption in durables we observe that it is insignificant and is dominated by real estate wealth. This is contrary to the predictions of Ludvig and Sløk (2002) and inline with Case, Quigley, and Shiller (2001).

We believe that wealth effect has become more important over time and with the scheduled introduction of mortgage law we would observe a liquidity expansion with lower credit costs. In most OECD countries, the real estate wealth effect functions through the refinancing of loans due to decline in mortgage rates (OECD Economic Outlook, 2000). We want to stress the importance of access to credit. Ludvig and Sløk (2002) found that the estimated housing price elasticity for the bank-based economies is insignificant and also lower than the significant estimate of the market-based economies, which depicts the impact of financial system on housing wealth effect.

The results should be looked at with caution since we made significant restrictions on the model and variables. It is the sign rather than the magnitude that we stress here and restate the positive correlation between housing wealth and consumption. The credit markets are arguably shallow and the economy has been hit by severe financial crisis, all these limit the scope of the estimated parameters. Moreover, the homeownership ratio in Turkey is around 72 percent (Table 10). Therefore, if wealth effect exists, which is mostly based on expected increase in lifetime wealth, it only applies to the share of the homeowner population since second mortgage is virtually impossible to obtain.

6. Conclusion and Directions for Future Research

Turkey's real estate market is growing with speed. After opening up for free trade and capital flows, Turkey experienced two significant financial crises, 1994 and 2001, emerging due to domestic factors and financial stress due to the Asian financial crisis of 1997 – 1998. Propagation of shocks restricted the growth rate of the economy, which is required to sustain growth in the real estate market. However, recent pick up brought concerns of real estate price bubble and credit boom. Moreover, in an environment where credit markets are expanding, and there is a continuous growth in new financial instruments, i.e. mortgage, wealth effects emerge.

We circled our answers on these questions and provided a discussion on wealth effects. Our results point out that as opposed to many beliefs, we do not find evidence towards a real estate price bubble in Turkey. Moreover, we point out that the prices have not recovered to the year 2000 levels in real terms. To achieve this result we employed consumer price discounting, an analysis for price – rent ratios, which is later used to address issues about price bubbles, and provided simulations for affordability of housing.

Price to rent ratio on average is around 18 for Turkey in the recent past, which is below the world average. Also, as compared to global real estate trends this ratio grew even slower. Our simulations point out that average income individuals are not able to purchase average homes in Turkey given current maturity and nominal cost of home credits. Those who can enter into a loan contract must be on the upper

quartiles of the income distribution however a discussion of that is relegated to further research.

We observe an accelerated growth in credit numbers for Turkey; however, the share of real estate credits is only a small fraction, 2.5 percent of GNP and 10 percent of total credit base. The current level of credit is also below the level achieved in the year 2000. Despite accelerated growth in credit base, we still have time to discuss credit booms and financial fragility. However, we address the duality in the financial markets. The competition for the domestic credit market is motivating foreign banks to write off short – term losses in return for longer-term gains since they are locked in the downside of the deposit and credit rates, unless they provide financing through longer-term foreign credit. In the former case, we observe a maturity mismatch and in the latter they must be exposed to exchange rate risks. Domestic banks, on the other hand, are mostly exposed to maturity mismatch and they can make profits out of real estate credits even in the short – run.

Our last argument is the presence of wealth effects. We observe positive and significant wealth effects in Turkey. We also search for the wealth effects in sub-components of consumption. We can document positive impact of higher real estate wealth in all components of consumption but not on durable goods consumption.

One has to note that this is the first comprehensive study on real estate markets in Turkey, which will motivate our research on the topic. Moreover, the identification of the stance of the market gives us a strong foundation to make robust predictions for the near future of this market. Further increases in the credit base will also motivate

discussions about financial fragility. Nevertheless, with further deepening of financial markets we will also observe the strong presence of wealth effects.

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Table 1

Changes in the Balance Sheets of the Banking Sector (%)

	2003	2004	2005*
Total Credit / Total Deposits	48.2	54.4	63.8
Total Govt. Bonds / Deposits	66.3	62.5	56.7
Loans Under Follow - Up / Total Credit	11.4	5.7	4.7
Loans from Foreign Banks / Total Deposits	11.0	12.5	16.7
Total Deposits / Total Assets	40.7	44.1	48.7

Source: Banking Supervision Agency[28]
* November.

Table 2

Real Estate Credits – Turkey (%)

	2003	2004	2005
Over GNP	0.2	0.7	2.5
Total Credit	1.8	3.5	10.2
Interest Rates (Public Banks)	42.9	34.0	26.8
Interest Rates (Private Banks)	36.0	27.9	24.1
Interest Rates (Foreign Banks)	26.8	21.1	17.2
Interest Rates (Investment Banks)	24.4	29.5	25.0
Maturity (Months)	32.8	33.4	58.8
Interest Rates (Demand Deposits)	28.0	22.8	20.4

Source: The Central Bank of Turkey, and Authors' own calculations

Table 3

COUNTIES COVERED IN THE DATA SET

A.AYRANCI	ÇANKAYA	KAVAKLIDERE	SIHHIYE
AYDINLIKEVLER	ÇAYYOLU	KEÇIÖREN	TANDOGAN
BAGLAR CAD.	ÇUKURCA	KIZILAY	ÜMITKÖY
BAHÇELIEVLER	DIKMEN	KONUTKENT	YENIMAHALLE
BALGAT	ELVANKENT	KÜÇÜKESAT	YILDIZ
BATIKENT	EMEK	MESRUTIYET CAD.	Y.AYRANCI
BEYSUKENT	ERYAMAN	NENEHATUNCAD.	
BILKENT	GAZIOSMANPASA	ORAN	
B.ESAT	KARUM	RESIT GALIP CAD.	

[28] http://www.bddk.org.tr/turkce/yayinlarveraporlar/gunluk/gunluk/gunlukrapor.htm

Table 4
Average Real Estate Prices and Rents
(Ankara, YTL)

	Sale Price	Real % Growth[2]	Rent Per month	Real % Growth	Price/Rent[3]
2000 – Jan	39,652		239		
	(16,605)[1]		(115)		13.7
2001 – Jan	60,940		322		
	(37,847)	7	(189)	-1	15.7
2002 – Jan	87,411		367		
	(39,148)	-12	(148)	-34	20.7
2003 – Jan	76,136		357		
	(27,122)	-31	(106)	-23	17.8
2004 – Jan	86,742		487		
	(31,027)	-2	(224)	18	14.8
2005 – Jan	113,514		540		
	(35,661)	20	(142)	1	17.5
2005 – Feb	116,447		545		
	(39,304)		(173)		17.8
2005 – Mar	124,211		582		
	(44,974)		(176)		17.8
2005 – Apr	122,898		559		
	(47,114)		(158)		18.3
2005 – May	131,515		580		
	(41,283)		(159)		18.9
2005 – Jun	129,231		594		
	(41,393)		(163)		18.1
Real Increase[4]		-14.8		-35.1	

1 Figures in parenthesis are standard deviation.
2 Discounted with 1994 based CPI.
3 Sale price to annual rent ratio.
4 The total of net growth for the years 2000 – 2004.

Table 5
Average Real Estate Prices and Rents
(Ankara, US Dollars)

	Sale Price	Nominal % Growth	Rent Per month	Nominal % Growth	Price/Rent[2]
2000 – Jan	70,702		427		
	(28586)[1]		(170)		13.7
2001 – Jan	89,658		474		
	(55,683)	27	(239)	11	15.7
2002 – Jan	66,042		280		
	(28,488)	-26	(113)	-44	20.7
2003 – Jan	46,328		217		
	(16,503)	-30	(65)	-18	17.8
2004 – Jan	64,567		363		
	(23,095)	39	(167)	67	14.8
2005 – Jan	84,972		404		
	(26,694)	32	(106)	11	17.5
2005 – Feb	90,642		424		
	(30,594)		(134)		17.8
2005 – Mar	91,824		430		
	(33,248)		(130)		17.8
2005 – Apr	88,346		402		
	(33,868)		(114)		18.3
2005 – May	96,596		426		
	(30,322)		(117)		18.9
2005 – Jun	96,434		443		
	(30,888)		(122)		18.1
Nominal Increase[3]		20		-6	

1 Figures in parenthesis are standard deviation.
2 Sale price to annual rent ratio.
3 The total of net growth for the years 2000 – 2004.

Table 6

International Comparison of Price-to-Rent Ratio and Real Estate Credit Base

	Mortgage Loans/ GDP	Price-to-Rent Ratio Growth*
Netherlands	99.9	11.5
United Kingdom	63.8	45.0
United States	63.7	20.0
Australia	57.3	59.1
Germany	54.3	-10.0
Ireland	45.0	31.8
Canada	42.8	34.3
Spain	42.1	54.2
Japan	36.4	-18.5
France	24.8	35.0
Italy	13.3	27.7
Turkey	**2.5	26.8
AVERAGE	**45.3**	**26.4**

Source: OECD Economic Outlook, IMF World Economic Outlook, Author's own calculations.
* Growth rate from 2000 to 2004.
** Real Estate Credits/GDP, 2005

Table 7

Variables as of 2005 for Affordable Payments

Saving Stock	14,664
Financial Wealth*	5,537
Consumption per capita**	4,126
GDP per capita	6,701
E(α), YTL Upper bound	10,300
Real Estate Credit Maturity (years)***	4.8
Interest Rate (%)****	18.2
Maturity and interest rate consistent with upper bound	30 years, 12.1
E(α), YTL, 4.8 years maturity	14,700

* Stock Market Wealth + M3
** We exclude the rent payments by assuming that the purchased house is used for owner occupancy.
*** In a speech given by Ersin Ozince, Nov 17, Istanbul
**** Average of all banks (annual compound)

Table 8
Correlation between Real Estate Prices and Rents
(Ankara, 32 Districts)

	$Corr(\mathrm{Re}nt, \mathrm{Pr}ice)$
2000 – Jan	0.84
	(0.10)
2001 – Jan	0.39
	(0.16)
2002 – Jan	0.84
	(0.09)
2003 – Jan	0.82
	(0.10)
2004 – Jan	0.74
	(0.12)
2005 – Jan	0.78
	(0.11)
2005 – Feb	0.81
	(0.10)
2005 – Mar	0.84
	(0.09)
2005 – Apr	0.74
	(0.11)
2005 – May	0.85
	(0.09)
2005 – Jun	0.87
	(0.08)

* Figures in parenthesis are standard deviations.

Table 9a

Real Estate and Stock Market Wealth Effect on Consumption
Sample 1990Q1 – 2005Q5

	(CT/YD)t	(CD/YD)t	(CSD/YD)t	(CS/YD)t
constant	0.64*	0.144553*	0.102969*	0.069326*
	(0.01)	(0.006702)	(0.102969)	(0.000747)
REWt-1	0.21*	-0.308168*	0.128204*	0.007072
	(0.06)	(0.055817)	(0.128204)	(0.007942)
SMWt-1	-0.002	0.031105*	-0.004475	0.001288
	(0.01)	(0.011727)	(-0.004475)	(0.002228)
R2	0.17	0.39	0.27	0.02
# of obs.	63	63	63	63

Seasonally adjusted series tramo/seats
* indicates significance at 1 percent.

Table 9b
Real Estate and Stock Market Wealth Effect on Consumption
Sample 1990Q1 – 2005Q5
(inclusive of crises dummies)

	(CT/YD)t	(CD/YD)t	(CSD/YD)t	(CS/YD)t
constant	0.64*	0.15*	0.104036*	0.069840*
	(0.01)	(0.006971)	(0.002871)	(0.000732)
REWt-1	0.19*	-0.30*	0.126044*	0.002422
	(0.06)	(0.055558)	(0.022984)	(0.007900)
SMWt-1	-0.01	0.03*	-0.005565	0.000382
	(0.01)	(0.011650)	(0.006511)	(0.002288)
D94	0.01*	-0.02*	-0.003273	0.003330***
	(0.004)	(0.006205)	(0.003019)	(0.002014)
D01	-0.02*	-0.01*	-0.009070*	-0.002649*
	(0.006)	(0.003815)	(0.002274)	(0.000793)
R2	0.21	0.45	0.30	0.12
# of obs.	63	63	63	63

Seasonally adjusted series tramo/seats
* indicates significance at 1 percent.

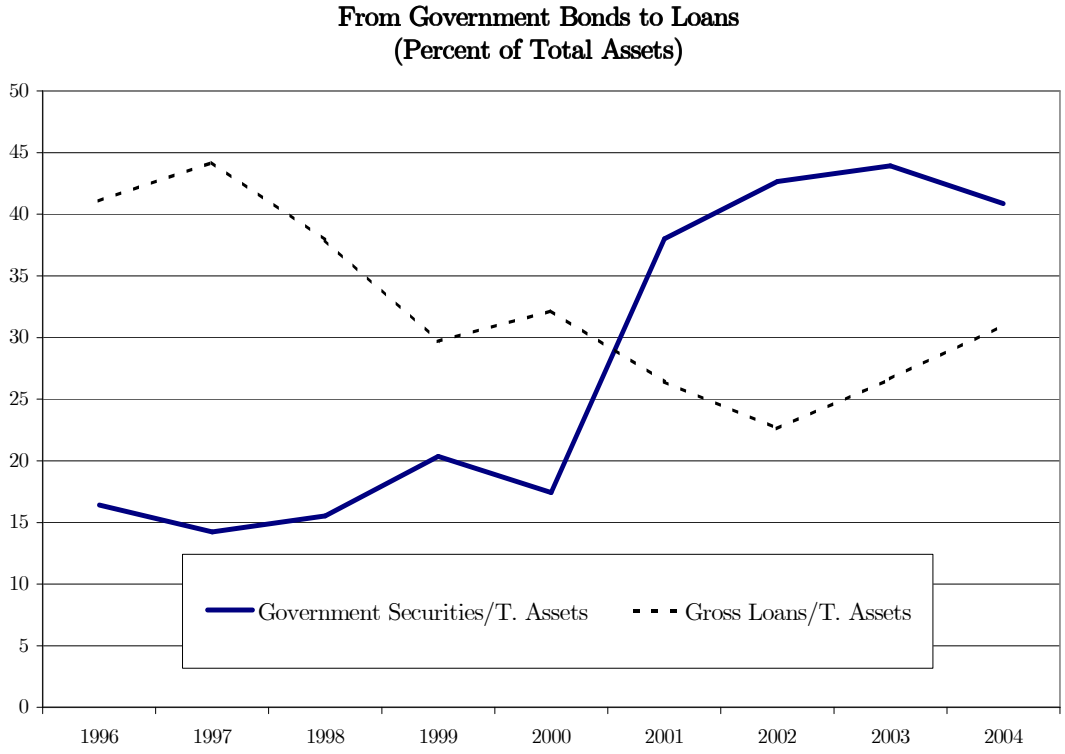
Table 10

Home Ownership
Percentage of Population*

TURKEY	71.95
US	43.60
GERMANY	56.22
ITALY	80.00
SPAIN	82.90
NETHERLANDS	53.00
IRELAND	76.92
JAPAN	79.26
UK	70.00
CANADA	65.20
AUSTRALIA	70.00

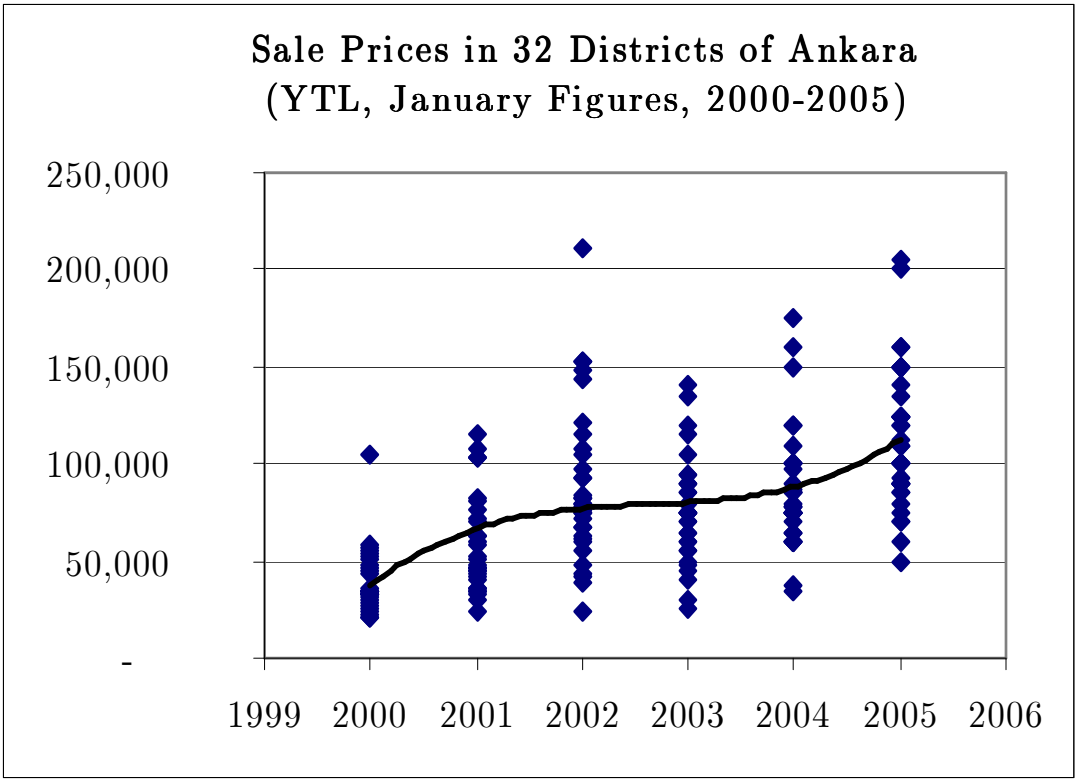
* Total of Urban and Rural
Source: Terrones, M, (2004), "Three Current Policy Issues"
World Economic Outlook, IMF. pp. 71-89 and TURKIYE ISTATISTIK YILLIGI, 2004, P.369

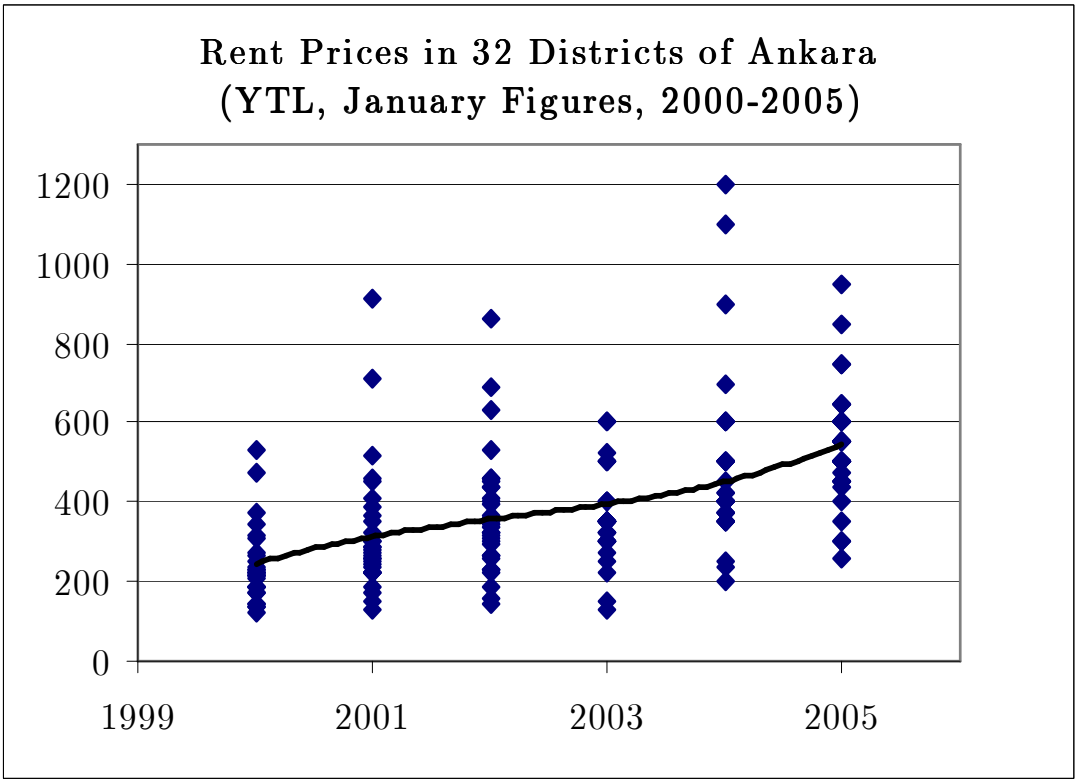
Graph 1



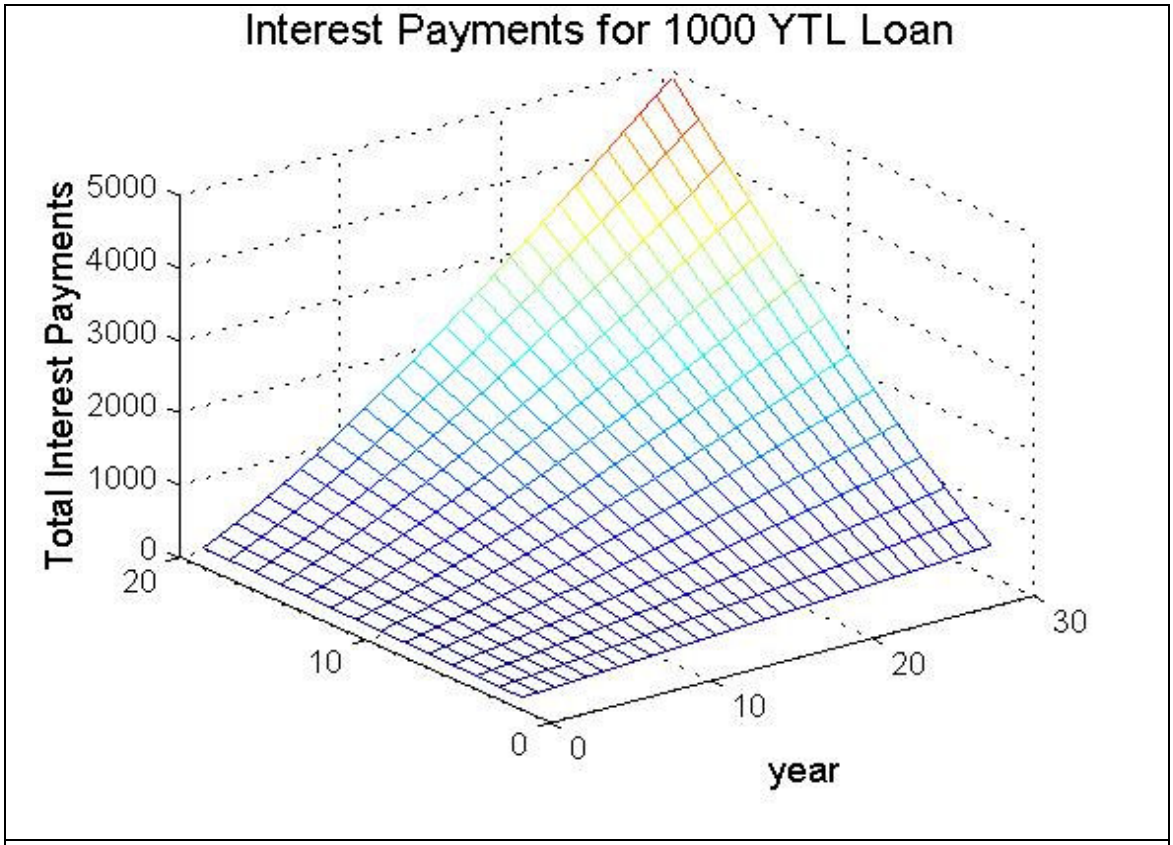
Source: Kaplan, Ozmen and Yalcin (2006)

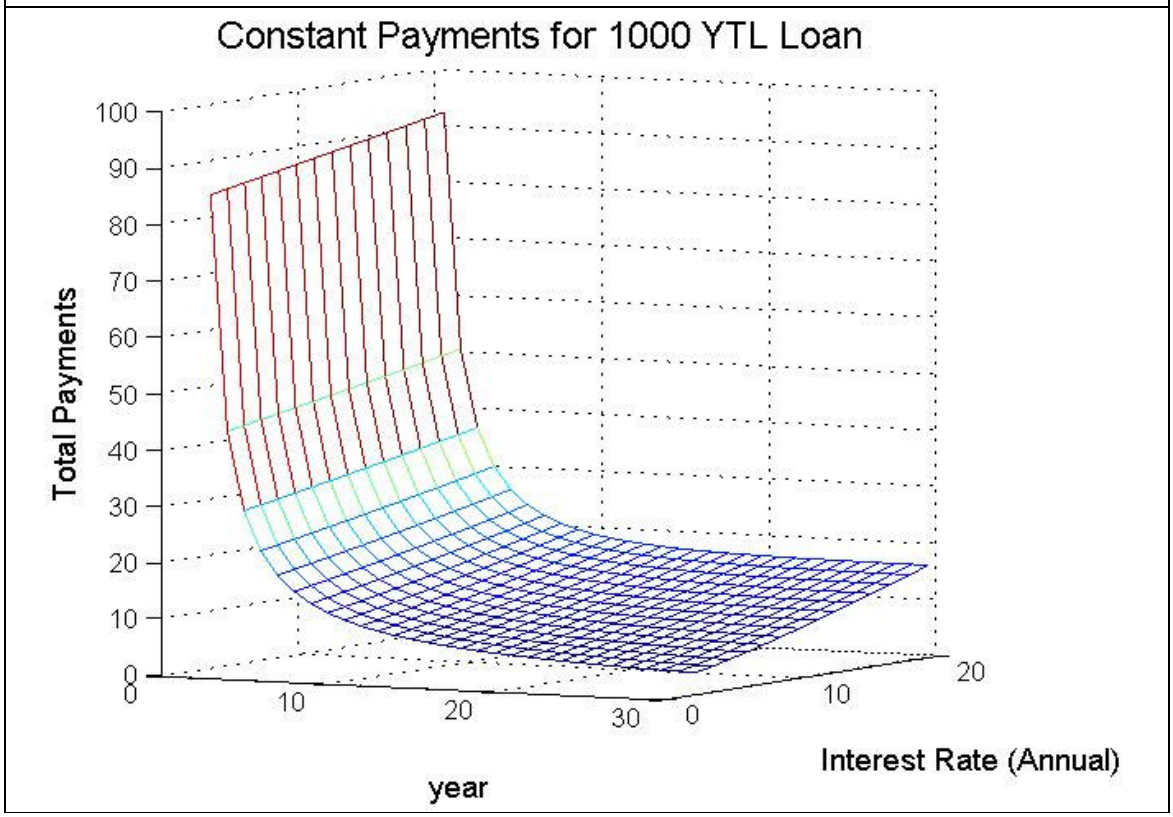
Graph 2


Sale Prices in 32 Districts of Ankara
(YTL, January Figures, 2000-2005)
250,000
200,000
150,000
100,000
50,000
-
1999
2000
2001
2002
2003
2004
2005
2006

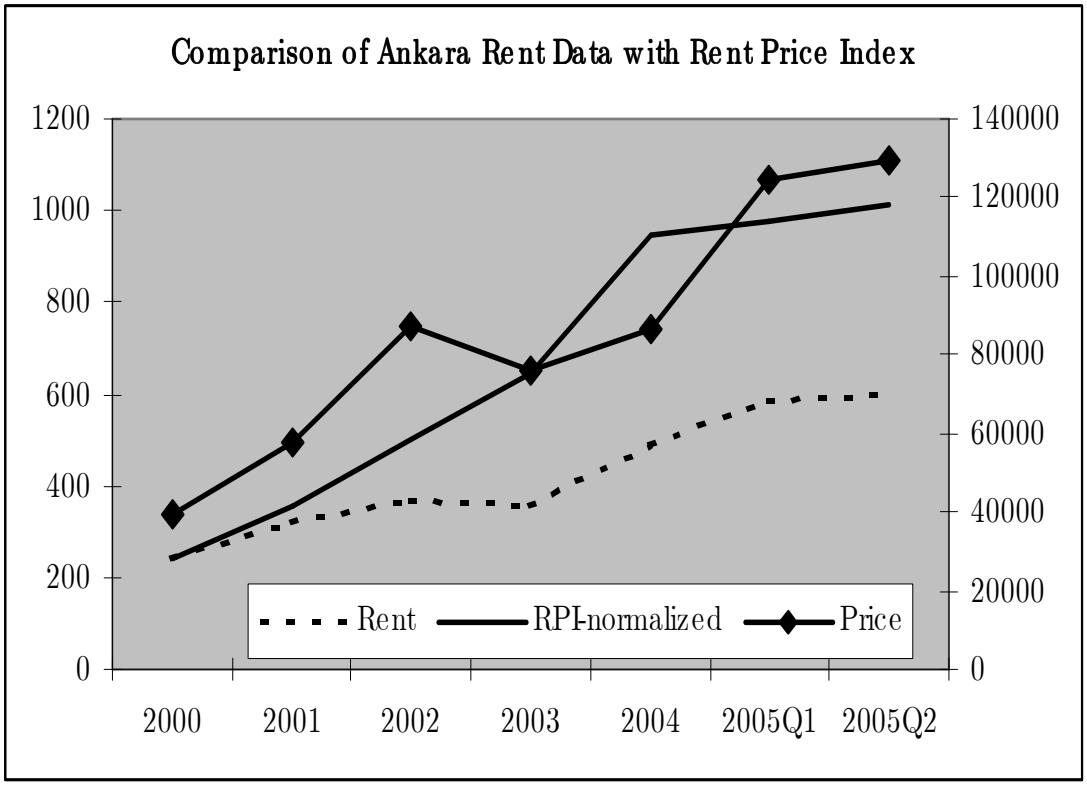

Rent Prices in 32 Districts of Ankara
(YTL, January Figures, 2000-2005)
1200
1000
800
600
400
200
0
1999
2001
2003
2005

Graph 3


Interest Payments for 1000 YTL Loan
Total Interest Payments
5000
4000
3000
2000
1000
0
20
10
0
0
10
20
30
year


Constant Payments for 1000 YTL Loan
Total Payments
100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
year
0
10
20
Interest Rate (Annual)

Graph 4


Comparison of Ankara Rent Data with Rent Price Index
1200
1000
800
600
400
200
0
140000
120000
100000
80000
60000
40000
20000
0
Rent
RPI-normalized
Price
2000
2001
2002
2003
2004
2005Q1
2005Q2