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A new housing finance model for the base of the pyramid: The case of Turkey

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There is no solid housing finance model that will solve the shelter needs of low-income household groups who do not have adequate capital to buy houses in developing countries and work properly during an economic crisis. To this end, the purpose of this paper is to propose a new housing finance model that will function even during a financial or an economic crisis for the base of the pyramid (low-income households) in developing countries. A scenario analysis is conducted based on the current inflation and interest rates in Turkey in order to test the housing finance model. It is found in the simulations that the model works properly for low-income households in Turkey during a financial or an economic crisis.

Key words: Mortgage, housing finance, low-income households, economic crisis, financial risks.

INTRODUCTION

Mortgage loans are an important prospect for developing countries, because this influential financial instrument may create many positive externalities for these economies. Quality of housing, infrastructure, urbanization, higher living standards, poverty alleviation, higher economic growth and higher employment rates in the housing construction sector (Erbaş and Nothaft, 2005) are some of these positive externalities for the developing countries. Moreover, if such countries bring their legal rights and credit information systems up to the developed country average, this is expected to create a 20% (of GDP) increase in the size of emerging economies' housing finance systems. Thus, this type of huge increase in the GDP may close the gap between housing finance in developed and developing economies by almost a half (Warnock and Warnock, 2007). Due to these important advantages, the introduction and maintenance of mortgage markets in developing countries is very important for their social and economic development.

Establishing mortgage markets in developing countries

is especially important for the low-income groups (that is, borrowers), who do not have adequate capital to buy their homes. For example, mortgage markets for the low- and middle-income groups in the countries of Middle East and North Africa (MENA) region are not adequate for two main reasons. First, a large portion of households may be perceived as high credit risk by lenders. Secondly, low-income households are unable to afford a minimum down payment (Erbaş and Nothaft, 2005). In other words, there is an affordability problem in MENA countries due to poorly developed mortgage markets for the low and middle-income segments (Sanders, 2005).

A mortgage market without securitization does not make sense for the financial institutions because securitization increases the availability of funds for the borrowers in the mortgage lending system and decreases some of the risks of financial institutions. There are two important conditions for a successful introduction of mortgage securities for investors (that is, lenders) in developing countries. First, it requires significant government support to develop the proper legal and regulatory infrastructure for mortgage security issuance in emerging markets. Second, there must be market demand for mortgage securities from the financial institutions (Chiquer et al., 2004).

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The pros (e.g., responding to the sheltering needs of the low-income households) and cons (e.g., financial risks) of mortgage loans in developing countries will be discussed in the following subsections by concentrating on the case of Turkey. As a result, a new housing finance model will be proposed to reduce risks related to the constitution of a mortgage market that will serve the base of the pyramid (that is, low-income households).

Financial risks related with mortgage markets in developing countries

The definitions and implications of the major financial risks related with mortgage markets will be very useful for the introduction and maintenance of a new housing finance model in developing countries. Therefore, definitions and implications of five major risks related with the mortgage markets will be introduced in this section. Credit risk is the major potential obstacle to the creation of mortgage capital markets in emerging economies. Loan amount to property value (LTV) ratio, payment-to-income ratio and annual mortgage payment to the borrower's annual income ratio can all be used to measure the credit risk (that is, the risk of default). When house prices constantly increase, the values of the houses increase relative to the loans used to buy them. Thus, an increase in the house prices leads to lower LTV ratios in the balance sheets of financial institutions. This cycle decreases the financial risk of financial institutions and allows them to lend more money to households. When there are lower borrowing constraints or lower down payment requirements in a country, the house prices in this type of country become more sensitive to the aggregate income shocks (Almeida et al., 2006). This is especially true when the demand for the houses is higher than the housing stock or supply in an economy. A sudden decline in housing prices reduces a household's ability to respond to local labor market shocks. Thus, the probability of credit risk increases for the financial institutions as house prices decrease (that is, when the LTV ratio increases).

When there is short-term elasticity in the supply of housing stock in an economy, then house price bubbles will be less likely over long periods. Hence, LTV ratios will be less leveraged and more realistic. Lack of house price bubbles means a very low level of credit risk for the financial institutions. If a time lag between housing demand and supply can be created, then price bubbles are expected to vanish in the long run.

Liquidity risk is the second important risk for the introduction and maintenance of a new housing finance model in a developing country. Liquidity risk is related to the mismatch between long-term mortgage loans and short-term deposits. Additionally, mortgage loans have long-term maturities and do not easily trade in secondary markets. Governments can improve liquidity of mortgage

loans (that is, decrease liquidity risk) by accepting mortgage securities as collateral at the discount window (Chiquier et al., 2004; Jaffe and Renaud, 1996). The lack of liquidity in the mortgage market may lead to fire sales, which continue until the bankruptcy of the financial institutions, as occurred in the case of the subprime mortgage loan crisis in the U.S. Because of these bankruptcies, society in general may also be faced with negative externalities such as unemployment.

The third major risk is the interest rate risk to which households may be exposed in developing countries. Making long-term fixed rate mortgage loans funded by short-term deposits exposes financial institutions (that is, lenders) to interest rate risk. This risk can be controlled by using adjustable rate mortgages (ARMs), but these instruments only displace the interest rate risk to borrowers (Chiquier et al., 2004; Jaffe and Renaud, 1996).

Interest rate risk is especially relevant for the developing countries that prefer to use adjustable rate mortgages (ARMs) or similar mortgage loan contracts. Some less experienced households may not be aware of the volatility of interest payments on ARMs (Bank for International Settlement, 2006) and fail to pay back their mortgage loans when the interest rates begin to increase, as in the case of subprime mortgage loans in the U.S. Since establishing and maintaining a secondary mortgage market is very difficult in a developing country, financial institutions prefer to transfer the interest rate risk to households via ARMs. As a result, households (that is, borrowers) in developing countries may also be exposed to interest rate risk, especially during a financial crisis or an economic crisis that triggers unaffordable interest payments for the mortgage loans.

There is a fourth risk related with the establishment of a mortgage market in a developing country, the currency risk. Currency risk can be a major problem for developing countries because of capital outflows, which was the case in most of the developing countries during the global financial crisis (GFC). For example, when hedge funds in U.S. were not able to obtain financial aid from the government during the financial crisis, lenders of these financial institutions have demanded their funds due to the illiquidity in the financial markets in 2008. Hence, these financial institutions have sold most their liquid financial assets in the developing countries to respond to the demands of their lenders. Because of these capital outflows in developing countries, currency risk has prevailed as a major problem for both the markets and the financial institutions in these economies.

The fifth risk factor is systematic risk. Systematic risk cannot be controlled nor predicted by the financial institutions. The four aforementioned risks affect each other and create systematic risk. For example, when the asset price bubble in the Mexican real estate market burst in 1994, delinquency rates (that is, credit risk for the financial institutions) rose from 3.3% in 1993 to 33.7% in 1996 due to the transfer of interest rate risk to the borrowers

via dual-indexed mortgages (Pickering, 2000), which is a type of ARM. Another example is the financial crisis in Argentina in 2001. Major currency devaluation (that is, realization of currency risk for households) in this country has caused low-income households to default on their mortgage loans (Sanders, 2005). Systematic risk was realized in both of these financial crises at the end.

Implications of subprime mortgage market crisis in the US for developing countries

The subprime mortgage market services the borrowers who have low credit scores and lower than average incomes (Tashman, 2007). In other words, the subprime mortgage market is based on the low-income households. The recent subprime mortgage market crisis has two important implications for the developing countries. If even a developed country such as the U.S. can have a crisis in its mortgage market due to liquidity and credit risks, developing countries should be very careful in the constitution of a mortgage market. Thus, the first implication is establishing and maintaining a housing finance model in developing countries for a long time is very difficult. Although financial institutions in the U.S. managed the credit and interest rate risks by securitizing them in a secondary mortgage market, they could not get rid of liquidity, operational and reputation risks via this securitization. Since most of the subprime loans were ARMs, the default rates sharply increased in 2007 (Krinsman, 2007).

The lower borrowing constraints (that is, higher LTV ratios) in terms of risk layering in the subprime mortgage market, due to intense competition among financial institutions, increased the delinquency rates as a result of house price deceleration and increase in mortgage rates in the U.S. (Bernanke, 2007). Therefore, for subprime borrowing, low-income households are exposed to interest rate risk and financial institutions are exposed to liquidity and credit risks. As a result, governments of developing countries should be very careful in monitoring financial institutions in managing their risks.

The second implication of the subprime mortgage market crisis in the U.S. is the spillover effect of this crisis to the other countries in the world. Since approximately 20% of the outstanding stock of mortgage securities was owned by non-U.S. entities in 2006 (Bank for International Settlement, 2006), the risk of contagion from the U.S. to global financial markets increased. In summary, there is a need for government participation in housing finance to offset or reallocate some of the risks that arose due to the private sector innovations in the housing finance sector (Buckley and Kalarickal, 2006).

RESEARCH METHODOLOGY

The main purpose of this paper is to solve shelter needs of low-income households by considering all of the risk factors (credit,

liquidity, interest rate, currency and systematic risks). A new housing finance model is developed in order to achieve this goal. The financial model is a hybrid form of four financial instruments (pension funds, mortgage loans, leasing contracts and forward contracts). There are six major stakeholders (government, households, financial institutions, investors, building contractors and suppliers) in the conceptual model. After forming the conceptual model about housing finance, a mathematical model is developed. Scenario analysis is used as a research method in order to see the impact of a substantial change in inflation and interest rates on the housing finance model. First of all, the impact of inflation and interest rates on the contributions of three stakeholders (low-income households, government and financial institutions) to the saving pool of the model is calculated. Second, the impact of an economic shock in terms of inflation and interest rates on the mortgage payments of low-income households is tested. The recent data (e.g. inflation, mortgage rates, cost of a house per square meter for the low-income household) about Turkey is used in order to test the housing finance model by using scenario analysis. These stress tests showed us that the housing finance model works properly for the low-income households even during the economic shocks. The details of the conceptual and mathematical model will be explained in the following sections of the paper.

The new housing finance model for the base of the pyramid in Turkey

Today, GFC has been transformed into global economic crisis (GEC). Most developing countries face economic recession problems. At present, inflation is not a problem for developing countries due to the recession problems in these economies. Eventually, the GEC will end. In other words, the boom cycle will restart in the coming years. When this happens, inflation will be a major problem for the developing economies due the increase in oil prices and consumption. Inflation may expose all of the related stakeholders in developing countries to the five risks (credit, liquidity, interest rate, currency and systematic risks), directly or indirectly. The purpose of this paper is to present a new housing finance model that tries to balance the risks and returns of related parties. The most important purpose of this paper is to solve shelter needs of low-income households by considering all of the risk factors.

In order to develop a housing finance model, the related parties as well as their contribution to the model, are presented in Figure 1. This new housing finance model, based on the economic conditions of developing countries such as Turkey, is a hybrid form of four financial instruments (pension funds, mortgage loans, leasing contracts and forward contracts). There are six major stakeholders (government, households, financial institutions, investors, building contractors and suppliers) in the model. As can be seen in Figure 1, there are 15 steps for the brief explanation of the housing finance model. In the first step of the model, an individual of a low-income household applies to a bank (that is, financial institution) to purchase a house subsidized by the government. The household begins to make small monthly payment amounts to the bank. In the second step, when the sum of these monthly payments reaches 50% of the house

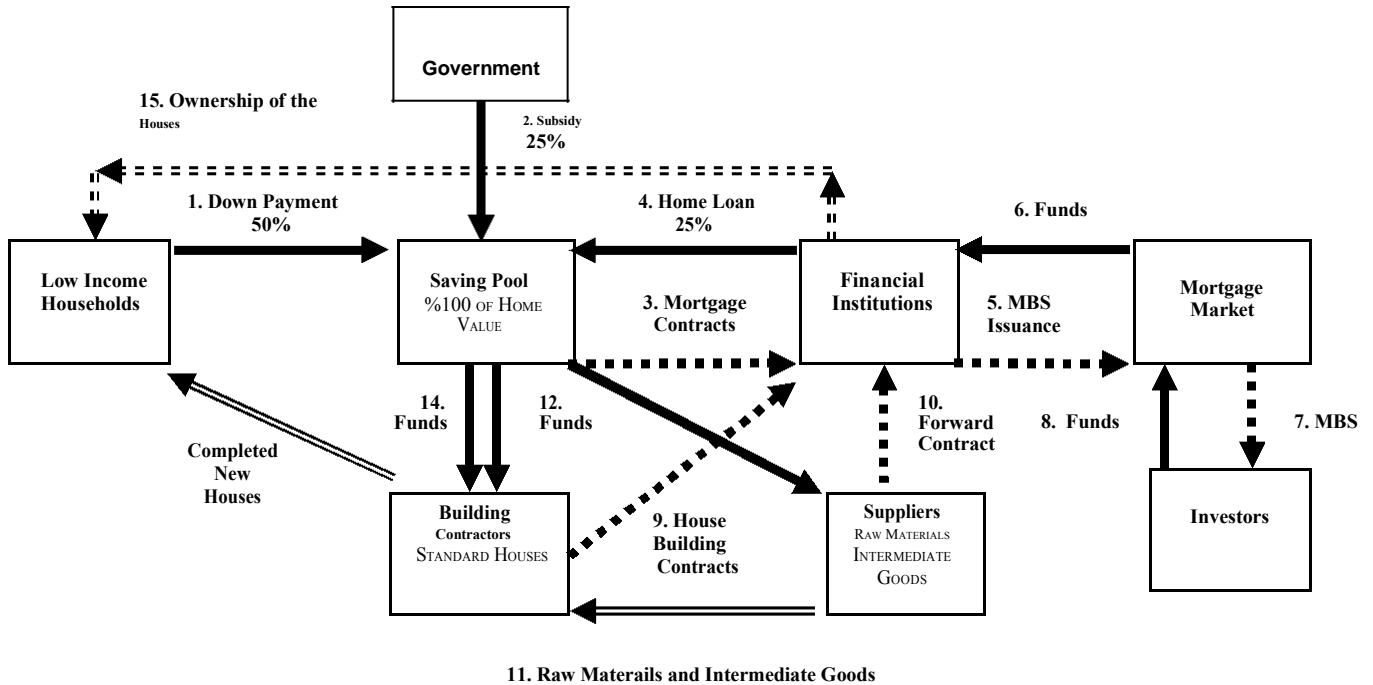


Figure 1. A new housing finance model for Turkey.

value in the future (e.g., after 6 years), the government supplies 25% of the total future cost of the house. In the third step of the model, the bank makes a mortgage contract with the low-income household. In the fourth step, the bank supplies the remainder of the future cost of the house as a mortgage loan to the household (that is, 25%).

Thus, the LTV ratio is 25%. The bank categorizes households by their waiting time (e.g., 6, 7, 8 years, etc.) and by the size (80, 90 m², etc.) of house demands from the households. In the fifth step, the bank issues mortgage-backed securities (MBS) guaranteed by the government in the primary mortgage market that will be fulfilled by the category of households after, for example, 6 years of monthly payments as the 50% of the total cost of the house, serving as the down payment. The waiting time such as 6 years will create flexibility on the demand side for the houses and there will be a balance between supply and demand in the long run. This will not create leverage for the LTV ratios. Thus, there will be no house price bubbles in the economy due to an excess demand from the low-income households. A bank cannot issue an MBS unless 50% of the total cost of the house is not reached in the saving pool during a specific time period (e.g., 6 years). In the next year, the same bank can issue MBS in the primary mortgage market for savings that have just been completed, by the category of households after 7 years of monthly payments, corresponding to 50% of the total cost of the houses as down payments. In the sixth step of the housing finance model, investors buy these categorized MBS, which are guaranteed by the

government in the primary mortgage market. Therefore, the bank does not take any credit risk because it sells mortgage loans in the primary mortgage market. During the seventh and eighth steps of the housing finance model, it will be very easy for the investors to buy the MBS in the primary market and sell it in the secondary market because the credit risk of these securities is almost non-existent due to the very low LTV ratio (25%) and government guarantee.

There are two more stakeholders (suppliers and building contractors), which are on the production side of the housing finance model. In other words, these two stakeholders receive the financial funds generated by the four stakeholders (government, households, financial institutions and investors) in the saving pool. During the ninth step of the model, the bank makes forward contracts with the building contractors by auctioning off the manufacturing of standard houses (that is of the same quality) in different sizes (e.g., 80, 90 m², etc.); these houses are for low-income households that have made monthly payments under specific conditions, e.g., 6 years and reached 50% of the future house cost. After making a contract with the building contractors, the bank makes forward contracts with the suppliers by auctioning off supplying raw materials and intermediate goods to the building contractors during the process of house production. This is the tenth step in the model. During the eleventh step, suppliers provide the raw materials and intermediate goods to the building contractors during the time periods (e.g., every three months) specified in the forward contracts.

Table 1. The contribution of the stakeholders to personal saving pool (Scenario analysis).

Inf. (%)	APR (%)	EAR (%)	n	MP (\$)	PCH (\$)	TFCH (\$)	FVGS (\$) (25%)	FVS (\$) (50%)	FVML (\$) (25%)
6	12	12.68	6	50	6720	10472	2618	5236	2618
10	16	17.23	6	48	6720	13080	3270	6540	3270
14	20	21.94	6	59	6720	16208	4052	8104	4052
18	24	26.82	6	63	6720	19928	4982	9964	4982

During the twelfth step of the model, as the building contractors get the raw materials and intermediate goods from the suppliers, the bank will pay them out of funds from the saving pool that are specified in the forward contracts. This part of the housing finance system functions as leasing contracts. In other words, building contractors cannot get funds to buy the goods (that is, raw materials and intermediate goods) directly as in the process of leasing contracts. During the twelfth step in the model, the bank only supplies cash each month for the wages of the employees of the building contractors that are calculated and specified in the forward contracts. After the completion of the houses within a certain period of time (e.g., 1 year), these new homes will be given to the low-income households, but the ownership of this real estate remains with the bank as collateral in the thirteenth step of the model. In the fourteenth step, the bank will give the building contractors a specific amount of commission (e.g., 10%) for producing the houses by the standards specified in the forward contracts. Finally, when the mortgage payments to the bank are completed, the ownership of the houses passes to the low-income households in the fifteenth step.

As can be seen in Table 1, a scenario analysis is conducted in order to test the housing finance model in terms of the contributions of three stakeholders (low-income households, government and financial institutions) to the saving pool. The related variables in Table 1 are calculated based on the following formulae.

$$FCH = PCH * (1 + \pi)^N$$

$$PMBC = FCH * 0.10$$

$$TFCH = PCH * (1 + \pi)^N + PMBC$$

$$FVA = \frac{1 + \frac{I}{12}^N - 1}{\frac{I}{12}}$$

$$FVS = DP * (1 + i)^N + FVA * MP$$

$$FVGS = TFCH * 0.25$$

$$FVML = TFCH * 0.25$$

Where, FCH, is future cost of the house. It is the total cost of the house n years later. n is the duration for reaching 50% of the total future cost of the house. PCH is

present cost of the house. The present cost of a house is calculated for an 80-square-meter house. The cost per square meter is estimated to be 84 USD. The 1.49 is used as the \$/TL parity for all of the calculations. All the figures are converted from local currency to dollars to make the calculations understandable. Although all figures are shown in USD rather than TL, low-income households will make the payments in domestic currency (TL) in the housing finance model. Since the government is estimated to supply the land as a subsidy for the low-income households in Turkey, the cost of the land is not included in this calculation. Since there are almost no financial costs for the building contractors, these costs are also excluded from the calculations. π represents expected inflation. PMBC is profit margin of the building contractors. TFCH is total future cost of the house n years later (e.g., 6 years). FVA represents Future value of annuity, (fixed monthly payments). i is Annual percentage rate. It is an un compounded interest rate. FVS is future savings of the households. Contribution of the low-income households to the total cost of the house n years later. DP represents the down payment that will be made by the households in the beginning. Although down payment is zero for the low-income group, any down payment amount will decrease the duration for having a house. MP, monthly payments of the low-income households that are accumulated in the savings pool. FVGS is the future value of government subsidies, which is %25 TFCH. Finally, FVML represents the future value of the house, which is also %25 of TFCH. These loans will be given n years later to the low-income households by a financial institution.

The current inflation is about 8% and annual mortgage rate is about 14% in Turkey, as of June 2010. A scenario analysis based on these inflation and interest rates is conducted, in order to see the impact of a future financial or economic crisis in Turkey. The purpose of this scenario analysis is to see how a crisis would change the monthly payments of the low-income households in our housing finance model. As can be seen in Table 1, when the annual percentage rate (APR) and effective annual rate (EAR) increases as a result of an economic crisis in Turkey, the financial contributions of households to their individual saving pools are not significantly affected. In order to see the impact of an economic crisis on the monthly payments of low-income households, simulations are conducted based on inflation and APR.

Table 2. The features of a mortgage loan for a duration of six years (Scenario analysis).

Inf.(%)	IF	APR (%)	PVAF	FVML (\$)	NMP (\$)	RMP(\$)	n
6	1.42	10.20	53.69	2618	49	34	6
10	1.77	13.60	49.04	3270	67	38	6
14	2.19	17.00	44.95	4052	90	41	6
18	2.70	20.40	41.35	4982	121	45	6

As a result of the changes in the scenario analysis, the monthly payments of the households only increased from 50 to 63 dollars. Since the minimum wage in Turkey is about 490 dollars in 2010, low-income households are still expected to be able to make this monthly contribution to their saving pools. Since households are the lenders in the first phase of the housing finance model, an increase in the interest rates due to an economic crisis does not create a substantial increase in the interest risk of the households. For example, low-income households have the flexibility to extend the duration of their waiting to be eligible for a mortgage loan. Thus, if they do not want to increase their monthly payments from 50 to 63 dollars, then they can instead increase the duration of their waiting (e.g., 7 years rather than 6 years) in order to qualify for a mortgage loan (that is, reach the 50% level in the saving pool) in the first phase of the model. As a result, immunization to the financial crisis is created via the new housing finance model.

The advantages of the housing finance model for the low-income households in developing countries

Low-income households have four important obstacles to owning houses in developing countries. First, these households do not have enough income to pay the down payment. Second, monthly payments are too high. Third, they are always vulnerable to economic crisis. Fourth, the prices of the houses are too high for this income group. Low-income households do not have sufficient income to buy their own houses (that is, they cannot make a down payment of 20% or more to buy a house) via mortgage loans in Turkey. This is the first obstacle. If a personal saving pool, as in the case of pension funds, for each low-income household can be created, these savings can be used as a down payment for the houses. As can be seen in Figure 1, the down payment for future home value is very high (50%). The rationale behind this number is to minimize the credit risk of the financial institutions, to allow them to easily securitize these loans in the mortgage market.

People save money in pension funds for a certain time period. These savings are accumulated in a saving pool and then invested into financial assets, such as government bonds. Similarly, the low-income households will save money in a saving pool, as in the case of

pension funds, in order to use these savings as the down payment on the house. One of the features of a pension fund is its flexibility. A person has a right to change its mind after a certain time period and take the money that is accumulated in his or her saving pool rather than waiting until the end. Similarly, an individual should be able to do the same thing in the housing finance model because there is a high possibility that he or she can lose his or her job during an economic crisis. Thus, he or she should have the flexibility to withdraw his/her money from the saving pool as in the case of pension funds or to stop making monthly payments for a certain period of time. Cessation of making monthly payments until an individual finds a new job will increase the waiting time by several years to qualify for a house, but he or she will not lose his or her money in the saving pool. Thus, low-income households are immunized via this housing finance model. In other words, low-income households will not be exposed to any interest rate risk during a financial crisis due to this flexibility in the model.

As can be seen in Table 2, a scenario analysis is conducted in order to test the housing finance model regarding the monthly mortgage payments of low-income households based on the increases in inflation and interest rates. The formulas for the related variables in Table 2 are shown.

$$IF = (1+\pi)^N$$

$$PVAF = \frac{1 + \frac{I^N}{12} - 1}{\frac{i^*}{12} * 1 + \frac{i^*}{12}^N}$$

$$NMP = \frac{FVML}{PVAF}$$

$$RMP = \frac{NMP}{IF}$$

Where IF, represents inflation impact factor. It is used for the calculation of real monthly payments. PVAF is present value of annuity factor. When mortgage loans that will be given in the future are divided by the PVAF is monthly payments will be calculated. i^* is Tax deducted annual percentage rate. Taxes are deducted from the

annual interest rates (i) of the mortgage loans for subsidy purposes. The tax is taken as 15%. NMP is nominal monthly mortgage loan payments that will be made n years later to the bank. Finally, RMP is real monthly mortgage payments of the low-income households that are equal to today's payments. This calculation is based on the inflation impact factor.

The second obstacle is that monthly payments are too high for the low-income households because prices of houses are very high for this income group. Since low-income households are lenders in the model, they are not required to make high monthly payments to their saving pools. As can be seen in Tables 1 and 2, the monthly payments can be easily paid by low-income households when compared with the minimum wage (490 USD) in Turkey in 2010.

The third obstacle is the probability of an economic crisis. Since low-income households do not have large amounts in savings, it is more likely that this income group will be the first one to be affected by a shock to the economy. It is more likely that this income group will default in paying their mortgage loans during a crisis for different reasons (e.g., because of being exposed to interest rate or currency risks or being laid off due to the economic crisis). Our new housing finance model tries to overcome this important obstacle for the low-income households.

The fourth factor is the cost of the houses. As can be seen in Table 1, the present value of a house is very low when compared with the houses for the low-income households in Turkey. For example, the real price per square meter of floor area, deflated with the consumer price index, is estimated to be approximately 84 USD in Turkey in 2008 (Akin, 2008). Therefore, the approximate cost of an eighty square meters house is calculated as 6,720 USD in our housing finance model. When the sales prices of the houses for the low-income households were examined on the website of Housing Development Administration (TOKI), it was found that the lowest house price for the low-income households in the lowest income regions (east and southeast regions) of Turkey is about 28,000 USD. This cost is four times higher than the cost in our model. This is a reasonable result because land prices and financial costs are excluded in our housing finance model. In other words, land is given as a subsidy by the government.

There has been a dramatic increase in the total number of households in Turkey since 1960. The total number of households has increased from 5 million in 1960 to 15 million in 2005. While the highest income group owns 56% of all property wealth, the lowest income group owns only 5% (Akin, 2008). 75% of the households do not pay rent in Turkey for different reasons (e.g., 68% stay in their own houses, 5% of the households do not own a house but do not pay rent, 2% of the households stay in lodgments) (Eryigit, 2008). Thus, most of the households without ownership of houses are low-income households.

Based on these data, the number of households that do not own their houses is about 3,750,000 ($0.25 \times 15,000,000 = 3,750,000$) in Turkey. Since the average size of the households is estimated to be 4.5 in 2005 (Akin, 2008), then there are approximately 15,000,000 low-income individuals who do not own their houses in Turkey.

According to the United Nations' human settlement country profile report about Turkey in 2004, 9 million people were living in "Gecekondu," which is the Turkish version of squatter housing seen in every developing country, in 1995. As a result, the lack of sufficient housing and uneven income distribution create migration and social inequality problems in Turkey. Thus, our new housing finance model is developed to solve the housing problem of the low-income households by considering other stakeholders (financial institutions, government, investors) in the financial system.

Conclusion

The most important job of a government is to satisfy the social needs of citizens in a country. Housing needs of the low-income households are the most important ones in a country because shelter needs are very important for human well being. Thus, it is expected that governments in developing countries will have the opportunity to satisfy this important need via this new housing finance model. Another job of governments is to have balanced growth in their countries. Since governments in developing countries are expected to use this model as a tool to prevent unbalanced growth among the regions of their countries, the citizens with the lowest income are anticipated not to migrate to the wealthiest cities in their countries. Thus, this model is expected to help developing countries solve their internal migration problems. Another important job of a government is to create suitable market conditions for its citizens, allowing most citizens to have jobs to pay for their basic needs such as housing.

Thus, this new housing finance model is expected to create new jobs for the citizens of developing countries. As a result, this housing finance model for the low-income households is expected to supply quality of housing, infrastructure, higher living standards, poverty alleviation, higher economic growth, higher employment rates and social equality for the low-income households in developing countries. A new housing finance model is developed for the low-income households in Turkey in order to achieve these objectives. The model developed for Turkey is expected to be used by other developing countries with inadequate national funds for providing shelter for the base of the pyramid.

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