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Housing Finance in Peru:

What is Holding it Back?

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Abstract[1]

Housing for most Peruvians is improving but is still grossly inadequate. Nonetheless, public housing finance policies mainly involve programs that subsidize middle-income families and banks that lend to them. Research summarized in this paper indicates that financing will not be the main obstacle to improving housing conditions in Peru and that public sector efforts would be better aimed at dealing with issues where significant externalities and institutional restrictions limit market development. Thus, public sector efforts and funds could temporarily support the development of: i) cheaper construction techniques and materials, ii) lower-cost credit technologies for low-income housing credits and iii) increasing the availability of adequately enabled land for large-scale low-income housing projects.

JEL classifications: G21, G28, H81, R31, R38
Keywords: Peru, Housing, Housing finance, Financial sector, Access to credit, Market failures, Public Policy, Policy adequacy

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1. Introduction

This paper first presents a brief survey of the limited number of studies on housing finance in Peru. It then moves on to processing disperse existing data to establish the main characteristics of the Peruvian housing stock, the state and functioning of the residential construction sector and urban housing supply and demand.

We then use this data and information gathered through numerous interviews with leading market participants to identify the main problems affecting urban housing supply and demand. We also use this data to describe and analyze the situation and dynamics of housing finance in Peru. We examine both the dominant private sector institutions and the relevant public sector ones, discuss their roles in the market, and reach conclusions regarding the favorable perspectives for the development of housing finance and the challenges that still exist.

The limited public policy initiatives regarding housing finance are then discussed with some thoughts are presented on the main issues where public policy would likely be most effective in terms of improving housing conditions.

Given the concentration of public sector resources on facilitating access to housing finance, our empirical work attempts to measure the impact of housing credit on welfare. We find that the effects are positive—as expected—but are very small, and we discuss the implications of these findings. We also gather data on the main cost components of housing construction and discuss the possibilities of reductions in these costs.

Finally we summarize the conclusions from our research with the aim of identifying possible areas where public policy could improve housing conditions.

2. Brief Survey of Previous Studies Conducted on Peru

There are a limited number of studies on the Peruvian housing market and even fewer on housing financing. Most studies focus on Metropolitan Lima within three main lines of research: structural reforms, supply and demand of the housing market and mortgage credit.

The Instituto Peruano de Economía, or IPE (León, 2000), identified public policy reforms that were still pending after the implementation of the first and second-generation economic reforms of the 1990s. One of the issues covered was the housing market. After a review of the sector's regulatory framework, one of the main problems identified was excessive regulation of the construction sector, which inhibited private investment and thus the sector's development.

Following the same line, IPE (2002) described the government's housing programs and its efforts to formalize private property through the Organismo de Formalización de la Propiedad Informal (COFOPRI) land titling program. The paper argued that COFOPRI contributed to solving the problem of informal property by securing property, allowing inheritance, suppressing conflicts, encouraging investment and improving access to credit. Field and Torero (2004) prepared another study on the relationship of land titling to access to credit and concluded that there is no evidence that the existence of legal property rights allowed improved access to formal credit. Furthermore, McKechnie (2005) found similar results examining whether property rights reforms increased access to credit in urban or rural areas. The results showed that in Peru property rights reform alone was not enough to consistently increase access to formal credit.

A parallel line of study attempted to quantify housing supply and demand and the financing of the housing sector. Fondo MiVivienda (FMV, 2006), undertook an analysis of housing financing sources over the 2001-2005 period; it also conducted a housing supply survey, formulated a methodology and estimated housing demand by middle-income families. Likewise, Valdivia (2009) prepared a characterization of middle income housing demand. It describes, both qualitatively and quantitatively, the main characteristics of potential buyers and based on these descriptions it suggests guidelines for suppliers and financial institutions to tackle demand from this sector. Also, Cámara Peruana de Construcción (CAPECO, "Peruvian Chamber of Construction" 1996-2009) annually publishes its estimates of the supply and demand for housing in Metropolitan Lima and includes important information on the market for new construction. The report has information and estimates on supply and demand for various types of buildings (housing, commercial centers, offices, among others). The estimates are based on a survey of households and their satisfaction with and need for housing. The study also presents information on sources of housing financing in Metropolitan Lima. In addition, Instituto Invertir (2009) performed a cluster analysis of the Peruvian housing market and identified seven segments among poor families based on a previous survey conducted by Ipsos-Apoyo in 2007. The main conclusion of the study was that there is a high market concentration in Lima and that improved housing supply requires new business models and differentiated market strategies.

Finally, regarding research that focuses on mortgage credit, Guzmán (2004) applied models used in other Latin American countries to find the determinants of access to mortgage credit in Peru and also to recommend policy actions. The policy recommendations included

securitization of mortgage portfolios to capture necessary long-term resources and improved targeting of housing programs towards lower income sectors. Barco et al. (2009) indicate that although in recent years there has been a remarkable growth of mortgage credit in Peru, its size relative to GDP is still small (3.3 percent) compared with other countries in the region. They also point out that in countries with more developed mortgage markets, mortgage-backed securities have played an important role in the financing of housing construction by allowing the capital market (pension funds, insurance companies, etc.) to participate in mortgage financing. They recommend using the covered bond model, in which financial institutions issue securities backed by a pool of standardized mortgages and the credit risk remains in the balance sheet of the bank. The paper points out that this model is currently used by most European countries and that the main advantages of covered bonds are that they: i) allow a better fit in terms of the operations of financial intermediaries, ii) contribute to the diversity and depth of local capital markets by providing securities accessible to institutional investors, iii) create a new tool that could be used as collateral in central bank monetary operations, and iv) promote housing finance.

According to Morris (2009), mortgage lending in Peru is growing strongly based on economic stability in the country; however, the housing deficit remains high due to insufficient supply, which is concentrated in upper income sectors. The paper stresses that for the development of the mortgage credit market, mortgage instruments and the capital market should begin to tackle the problem of housing supply for low-income segments of the population. To do this it is necessary to work with municipalities on the availability of urban land. According to the paper, it is necessary to address the imbalance between supply and demand of housing (mainly in the lower income sectors), promote greater competition in the mortgage market, develop the capital market in order to facilitate access by financial institutions to long-term financing—which would increase the volume of credit and its conditions—make adjustments in the direct subsidy programs to avoid their current regressive nature and generate government housing programs that provide housing solutions for lower income groups.

3. Housing Sector Overview

3.1 Characteristics of the Housing Stock, Ownership and Financing

This section aims to establish the facts regarding the housing stock, the ownership structure and the housing finance mechanisms available in Peru. We make extensive use of the latest annual Encuesta Nacional de Hogares (ENAHO, "National Household Survey" 2009) which is carried out at a national level in both urban and rural areas. Table 1 presents a summary of key housing sector statistics by income quintile.

Table 1. Characteristics of the Housing Stock, Ownership and Financing, 2009
(as a percentage of total houses)

	Income quintile*					Total
	I	II	III	IV	V	
% of independent houses	90%	87%	87%	87%	80%	85%
% of owned houses	77%	71%	68%	74%	77%	74%
% of houses with predominantly concrete roof	7%	18%	32%	47%	72%	35%
% of houses with predominantly dirt floor	75%	52%	34%	18%	7%	37%
% of houses with predominantly brick wall	11%	29%	46%	63%	83%	46%
% of houses with no bedroms	33%	20%	14%	6%	2%	15%
% of houses with access to:						
Public water network	43%	58%	71%	80%	91%	69%
Public sanitation network	21%	43%	59%	74%	89%	57%
Public electricity network	61%	77%	87%	94%	98%	83%
% of houses with no homeownership title	56%	46%	36%	25%	17%	36%
% of construction, expansion and improvement of new houses	13%	17%	16%	18%	19%	16%
% of construction, expansion and improvement of new houses financed with credit	3%	8%	13%	19%	24%	14%

*Quintile I includes the poorest 20 percent of households and Quintile V includes the richest 20 percent of households.
Source: ENAHO 2009.

As of 2009, most Peruvians (of all levels of income) live in independent housing units, which they own and acquired with their own resources. Living in apartment buildings is becoming more common, but is still rare among the lower income quintiles (2 percent for the lowest quintile, or QI) and less so among higher income ones (15 percent for the highest quintile, or QV). Ownership is uniformly high at around 70 percent or higher for all income levels, but property titles increase with income. Less than 20 percent of Peruvians rent their housing units (although the figure has been increasing in the past years) with renting being especially rare in QI.

Despite the fact that there have been significant improvements over the past few years, much of the housing stock is of poor quality and has very poor services, especially among the lower income quintiles. In 2009, one quarter of QI housing units had only one room, one third

had no bedroom, three-quarters had dirt floors and mud walls, 60 percent were not connected to the public water supply, 80 percent were not connected to a public sewage system and 40 percent were not connected to the electricity network. While housing quality and services improve substantially with income, serious deficiencies are still present for many families in higher income quintiles. For example, over one third of Q3 and almost one fourth of Q4 housing units had predominantly dirt floors and similar percentages had no connection to the public water supply.

Ownership is high because most families resort to gradual construction of their houses over a number of years using their own or relatives' resources. This is reflected in that approximately one sixth of all housing units underwent construction, expansion or modification in 2009. The vast majority of these activities are informal (estimated at over 70 percent in Lima and probably more in the rest of the country), especially in the lower income quintiles. This also explains the scarcity of property titles, especially since the land where the construction takes place has generally not been formally acquired and is often not registered. Of those families that invested in their homes in the last year, only 14 percent accessed credit of some kind, with 59 percent of that credit provided by the private banking system (mostly, but not necessarily, as mortgage credit), and only 7 percent provided by public housing finance programs. This last figure increases significantly with income, with over 80 percent of all beneficiaries of public housing finance programs being in the top three income quintiles.

In order to show trends in the housing sector, Table 2 presents the percentage variation between 2003 and 2009 in the same key housing sector statistics presented in Table 1.

Table 2. Trends in the Main Characteristics of Housing Stock, Ownership and Financing, 2003 vs. 2009
(as variations, in percentage points)

	Income quintile*					Total
	I	II	III	IV	V	
% of independent houses	0%	1%	2%	1%	-4%	-1%
% of owned houses	-6%	-8%	-7%	-2%	-2%	-5%
% of houses with predominantly concrete roof	1%	6%	8%	5%	0%	4%
% of houses with predominantly dirt floor	-6%	-11%	-9%	-3%	0%	-6%
% of houses with predominantly brick wall	2%	6%	7%	3%	-1%	3%
% of houses with no bedroms	12%	6%	6%	3%	1%	6%
% of houses with access to:						
Public water network	7%	8%	9%	0%	-2%	4%
Public sanitation network	7%	14%	11%	2%	-2%	6%
Public electricity network	24%	18%	10%	3%	-1%	11%
% of houses with no homeownership title	31%	27%	19%	-7%	-5%	13%
% of construction, expansion and improvement of new houses	5%	8%	6%	6%	7%	6%
% of construction, expansion and improvement of new houses financed with credit	-1%	5%	1%	2%	8%	3%

*Quintile I includes the poorest 20 percent of households, and Quintile V includes the richest 20 percent of households.
Source: ENAHO 2009.

In summary, the housing sector shows improvement years in housing quality and availability of financing, but both areas remain poor overall. There has also been a decrease in ownership (as rentals gain importance) and in ownership titles. We believe the latter, however, may reflect more accurate responses to the survey instead of an actual deterioration in ownership titles among lower income families.

3.2 Housing Supply and Demand

The Cámara Peruana de Construcción (CAPECO "Peruvian Chamber of Construction") has reliable formal construction figures available only for Lima.[2] In 2009, formal housing supply in Lima, a city with a population over 8 million, amounted to only 18,000 units (well above the average 14,000 units of the previous five years), of which 16,000 were apartments. Over 60 percent of this supply was composed of units with a price of over US $60,000, and the average unit had an area of 100 square meters. These figures are consistent with the 23,000 mortgage credits disbursed nationwide by the financial system in 2009, with an average mortgage credit equivalent to US $58,000. Market participants estimate total formal national housing supply at

[2] "The Urban Building Market in Metropolitan Lima." This annual study presents a detailed analysis of housing supply and demand in Metropolitan Lima; a region which represents about 40 percent of the country's housing market.

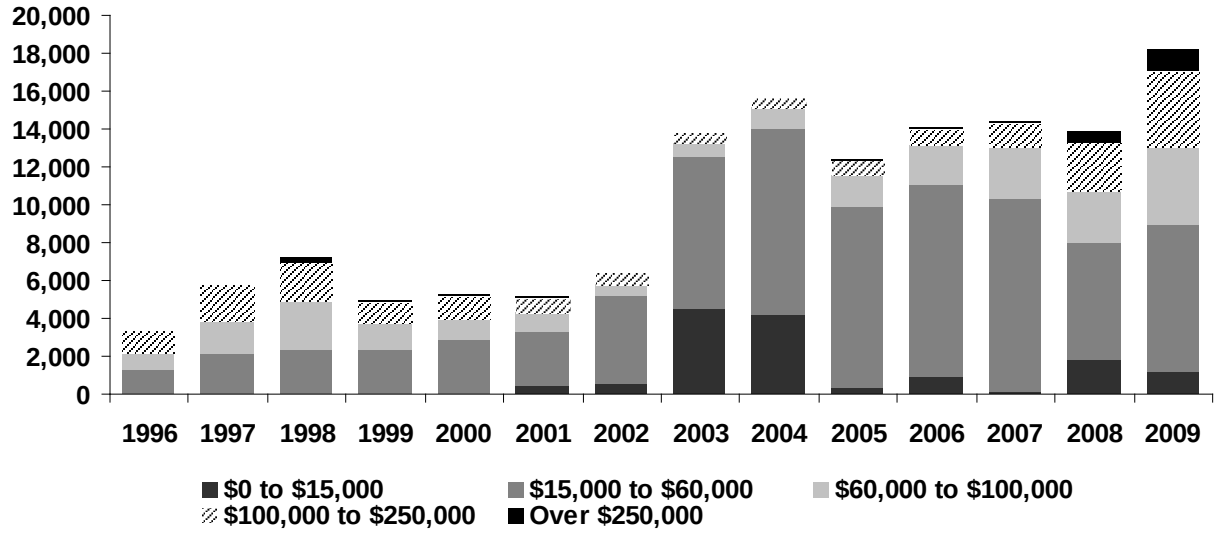
under 30,000 units for 2009. Table 3 details formal housing supply in Lima in 2009, and Figure 1 presents the evolution of formal housing supply in Lima (by price range) since 1996.

Table 3. Housing Supply According to Type and Construction Status, 2009
(Units and square meters)

	Apartments		Houses		Total Housing	
	Units	m2	Units	m2	Units	m2
Supply	**16,221**	**1,665,337**	**1,938**	**131,586**	**18,159**	**1,796,923**
Immediate Supply	15,573	1,600,921	1,934	130,066	17,507	1,730,987
In construction and for sale	14,440	1,487,373	1,926	128,090	16,366	1,615,463
Finished and for sale	1,133	113,548	8	1,976	1,141	115,524
Future Supply	648	64,416	4	1,520	652	65,936
In construction	637	63,447	4	1,520	641	64,967
Finished	11	969	-	-	11	969

Source: CAPECO.

Figure 1. Housing Supply by Price, 1996-2009
(Units)



Source: CAPECO.

Table 3 illustrates a characteristic of the housing market that will be explained further in Section 4.2: housing construction occurs mostly after the unit has been acquired and financing has been secured by the final owner. Hence, there are very few housing units that are "finished and for sale." Note also that the proportion of apartments being built formally is much higher than their share of the housing stock.

In Figure 1, in addition to the overall growth in supply, note the increase in middle and lower-income housing supply that occurs in 2003-2004 and the trend towards higher-priced units in 2008-2009.

To compare the supply of housing by price level with the corresponding demand, we carried out an exercise. Using income distribution figures from ENAHO and current (historically favorable) mortgage market financing conditions, we calculated housing affordability figures for Peruvian households in 2009. We estimate that even with favorable financing conditions only 47 percent of the urban population can afford a housing unit priced at US $20,000 and only 67 percent can afford a housing unit priced at US $10,000.[3] Likewise, only 5 percent of urban households can afford to service the average bank mortgage issued in 2009. Table 4 presents affordability estimates per income quintile, based on average household income and for the specified financing conditions.

Table 4. Value of Affordable Housing per Urban Income Quintile, 2009
(US dollars)

	I	II	III	IV	V
Average monthly income	138	330	524	835	2,029
Implied affordable house value	3,849	9,206	18,651	29,683	72,183
Conditions					
Maximum monthly payment as % of income	25%	25%	30%	30%	30%
Effective annual interest rate	11%	11%	10%	10%	10%
Down-payment	10%	10%	10%	10%	10%
Years	20	20	20	20	20

Source: ENAHO, Superintendency of Banking and Insurance, private banks.

The data shows that low income is a serious restriction to accessing adequate housing. CAPECO estimates that effective demand for housing units in Lima (the number of households willing and able to pay for additional housing) is close to 300,000, of which over 95 percent of the demand is for units under US $60,000 in price. The disparity between formal housing supply and effective demand explains the preponderance of informal housing construction. The figures for the last two population and housing censuses indicate that on average net 140,000 housing units per year were built in the urban areas of the country between 1993 and 2007, with Lima accounting for approximately 50,000 units per year. While population pressures on housing are

[3] The figures would be worse if we included the rural population, but the information we have available pertains to urban areas and hence we did our estimates for the urban population.

diminishing, income pressures are likely compensating for this fall, which indicates that the census figures are likely to be a reasonable approximation of current trends in the housing market.

3.3 Obstacles to Housing Supply and Demand

Construction companies report no serious problems with obtaining financing for as many housing units as they can handle. In contrast, obtaining construction licenses and dealing with extortion attempts by pseudo-unions are significant problems, since they delay and increase the cost of construction. In obtaining construction licenses, the major problems originate from the complexity of the municipal procedures required and the delays in obtaining utility services. These restrictions limit the formal supply of housing and have become important bottlenecks for the industry. According to the World Bank (2010), obtaining a municipal license takes over 75 days, and obtaining approval of service from utility companies takes three months.

All market participants agree that the two most serious problems that limit increases in formal (low income) housing supply are: i) the lack of adequately zoned land (especially in Lima), and ii) the difficulty in obtaining water supply for new developments. Most municipal governments practice poor urban planning, including inadequate zoning restrictions that result in severe (and unrealistic) limitations on population density. Likewise, the state-owned water supply companies (mostly owned by municipal governments) are poorly run and, as evidenced by the data on access to water and sewage systems, have insufficient funds to provide adequate water and sanitation, especially on the desert coast where the majority of the Peruvian population lives.

This leads to an absence of enabled land for the large scale developments that are needed to supply low priced housing units. The problem is especially serious because large tracts of land that could be available for urban expansion often exist but are not properly zoned and thus not available for formal construction. Informal construction, though, ignores zoning requirements because they are rarely adequately enforced.[4] Hence, the potentially available lands are usually informally developed, often invaded by squatters led by professional "land invaders." This informal development leads to poorly planned low-density, low-income neighborhoods with inadequate services. The scarcity of water results in squatters invading land (both public and

[4] The same holds true for population density limitations, which are not enforced when violated by numerous informal constructions which have no municipal authorization.

private) when there is an expectation of future water supply. Since squatters are often eventually recognized as de facto owners of the land they invade, water availability can yield tremendous profits and political dividends, both of which give rise to corruption and political patronage.

In regards to limitations on the demand side of the market, the main issue is affordability, as discussed in Section 3.2. The low income of most households makes it very difficult, if not impossible, to supply adequate housing given standard land and construction costs. Both insufficient income and housing costs can likely be improved by public policies and private enterprise, although such policies go beyond housing finance proper. Housing costs appear to be particularly responsive to improvement because construction materials and processes in Peru have seen little change in decades. It would appear that new materials and processes can substantially reduce housing costs, especially in the benign climate of the coast, which concentrates the majority of the population. However, most builders have not focused their attention on these possibilities because of the large externalities and scale economy issues involved and also because it has been a seller's market that has created few incentives for this type of innovation. Construction companies perceive resistance to new materials from homeowners and are aware of the costs of overcoming this resistance and of training a critical mass of workers in the new techniques and processes; however, no company has so far taken up the challenge.

The expectation of continued strong economic growth indicates that family income should also continue growing. ENAHO data indicates that real household income for the second, third and fourth income quintiles grew by over 50 percent between 2003 and 2009, with QI income growing by 44 percent. Hence, favorable economic trends should gradually significantly alleviate the affordability constraint. However, this will remain a major issue for a large number of Peruvian families in the foreseeable future. Note that our housing affordability estimates assume availability of favorable financing and thus show that even if such financing is available the real restriction is low income. Without reducing housing costs the only way to improve affordability at present is through substantial subsidies, which are a different issue than providing financing.

3.4 The Supply Side: Main Components of Construction Costs

According to interviews with leading constructors and developers and with CAPECO, construction costs (which include materials, equipment and labor costs) represent between 55

percent and 70 percent of total formal housing cost, as shown in the table below. This range is explained mainly by differences in the relative cost of the land, cost of urban enabling and the impact of the type of soil on the cost of foundations. Materials and equipment typically account for approximately 40 percent to 50 percent of the total cost of a housing unit. Housing structures' main materials cost are cement/concrete, bricks and steel bars and, on a per square meter basis, these costs are similar for most housing units.[5] Differences in materials costs arise mostly from the quality of the unit's interiors, which can vary substantially according to the price of the house. The volatility of the prices of some basic construction materials (particularly steel) has had serious effects on the profitability of construction companies, especially because they tend to have important levels of pre sales with a fixed price. Over the past decade, the average annual increase in construction materials cost has been 4.4 percent, well above the 2.6 percent average inflation for the period.

Table 5. Total Cost of a Housing Unit by Component
(as percentage of total)

Item	Percentage
Construction costs	**55 - 70**
Materials and equipment	40 - 50
Labor	15 - 20
Land and urban enabling	**20 - 30**
Urban enabling	**10 - 15**
Other	**5 - 8**
Design (engineering)	2 - 4
Finance	1 - 2
Sales, administrative and legal	1 - 2
Licenses	1

Source: Authors' interviews with construction companies.

Labor costs represent between 15 percent and 20 percent of the final price of a housing unit. The Ministry of Labor compiles information on monthly wages and salaries in the construction sector. Even though information is only available until April 2009, there is clearly a positive trend in these costs, which have substantially outpaced inflation over the past five or six years. On average, between 2003 and 2009, monthly salaries have increased at an annual rate of 6.6 percent, while day wages increased 5.8 percent per year. On April 2009 (the last available figure),

[5] This is true regardless of the final house price. The main potential difference in the cost of structures derives from soil quality, and is especially relevant given the risk of earthquakes.

the average monthly wage was US $1,078 (including managers, architects, engineers, etc.) in metropolitan Lima and the average salary was US $16 per day for day workers. Construction companies often have to deal with extortion attempts by corrupt construction labor "unions." The costs associated with the extortion or the ones resulting from violence often also generate significant monetary and non-monetary costs that may increase labor-related construction costs from 10 to 25 percent.

According to the information compiled from the construction companies and validated by CAPECO, land and urban enabling represents between 20 and 30 percent of the final price of the housing unit. This figure has tended to increase, especially in Lima, as land prices have increased significantly during recent years. According to CAPECO, while in 2001 the minimum price per square meter of land used in formal constructions in Lima was US $18 and the maximum, US $618; the corresponding prices were US $27 and US $1,412 in 2009. The average price per square meter of land used in formal construction rose from US $141 to US $500 in the same period (although this partly reflects the trend towards more upscale housing).[6] Current price levels and land availability issues make it very difficult for developers to construct dwellings for lower-income households. For example, developers interviewed pointed out that they could no longer afford to build projects financed by the government's Techo Propio program in metropolitan Lima because the high prices of land and urban enabling would lead projects to exceed the program's maximum budget per housing unit of approximately US $18,700. Additionally, large expanses of land are necessary in order to obtain economies of scale and develop low-cost housing projects and, due to the problems discussed in previous sections, there is at present almost no availability of large plots of properly zoned land on which to develop mid or low-income housing projects in metropolitan Lima and in several other major cities.

CAPECO gathers information about average areas and prices per square meter and of land offered in metropolitan Lima by district. During 2009, only eight of 44 districts in metropolitan Lima had an average price below US $100 per m^2 (the cost adequate to develop MiVivienda projects according to developers) and in three of them the average available area is below 200 m^2 which would leave only five of 44 districts available for middle income developments according to this information. The land price limit for Techo Propio projects is estimated at approximately

[6] A recent Central Bank study indicates that although house and land prices have increased significantly, price to rent indicators and affordability indicators show no significant increase. The report concludes that there is no indication of an asset bubble in land and housing prices.

US $50 per m^2, and only one district of 44 in Lima is viable for these projects according to the information collected by CAPECO.

All market participants agree that urban enabling represents one of the most important bottlenecks in the sector due mainly to two reasons. First, zoning limitations and poor urban planning on the part of municipal governments restrict the use of available land and both encourage informality and inefficient and costly urban development. Second, housing development is limited, and the costs of enabling substantially increased because of the chronic scarcity of water and sewage services that result from poorly operated government-owned companies and from very poor water planning and water use regulation. The seriousness of this issue is increased due to the fact that the vast majority of the population is concentrated in the mostly desert and narrow coastal region. Note that most of the water and sewage companies are controlled by the municipal governments, except for Servicio de Agua Potable y Alcantarillado de Lima (SEDAPAL), which is controlled by the Ministry of Housing. Therefore, with the partial exception of Lima, the main restrictions to increased housing supply stem from the actions or inactions of municipal governments.

Discussion of the obstacles created by municipal governments tends to focus on the delays and costs of obtaining construction licenses, which are serious as discussed previously. However, from a longer term and more strategic perspective, the more serious obstacles are inadequate urban planning, zoning and the lack of water and sewage facilities. Even though municipalities have to follow guidelines and regulations in order to give construction authorizations, each one has different interpretations which cause uncertainty and delays for construction companies. Architects' commissions from municipalities interpret the Reglamento Nacional de Edificaciones ("National Regulations for Edifications") differently and often with no technical fundamentals. As previously indicated difficulties and delays with basic public services (or their sheer absence) increase costs considerably and are additional major obstacles to the housing supply.

An issue that arose from the numerous meetings with constructors, developers and bankers is that construction techniques, processes and materials have not changed nor have been innovated significantly in many years.[7] Questions regarding the importance, viability, or processes of new materials are met with skepticism as very limited information is provided.

[7] The only major innovation was the use of poured concrete structures, which allows economies of scale, reduces labor costs and improves performance.

Although we managed to identify a small number of pilot programs that appeared to be successful in reducing costs significantly, none of the major players had any significant plans or expectations regarding any such programs.

Although there are operators who have reportedly used new techniques and materials to great advantage in comparable markets (we are aware of Ecuadorian, Chilean and Colombian firms who appear to be interested in undertaking projects),[8] the lack of effort in this field so far may allow room for significant improvements. As we have indicated above, the reduction of construction costs would have a major impact on housing affordability and the objective appears possible in a country where even the formal housing supply for the lowest income is based on concrete, steel and bricks. It is likely that new techniques or materials would require a critical mass of users to justify the investment in labor training and market re-education that would be necessary to implement them. If indeed there is room for such improvement, we believe there may be a role for public policy in initiating changes—which likely face coordination failures, free rider problems and barriers to entry and would result in significant positive externalities. This is an issue which deserves more attention from analysts and policymakers.

4. Housing Finance System

4.1 Current State of the Private Housing Finance System

4.1.1 Financial Institutions

As of June 2010, the financial system had 139,000 mortgage credits outstanding, equivalent to US $5.0 billion, and representing only 12.5 percent of total financial system credit. Some 90 percent of mortgage credits are granted by traditional (private) commercial banks ("multiple banks" in Peruvian regulatory terms),[9] with four banks accounting for over 80 percent of commercial bank loans. This high concentration has been a characteristic of the Peruvian banking system in rcent decades. Nevertheless, competition for mortgages among the large banks appears to be intense and, as indicated below, banks are undergoing a learning process to adapt their

[8] For example, we understand that Ecuador's Mutualista Pichincha and Acción Comunitaria del Perú (ACP), the owner of MiBanco (the most successful MFI), are developing a project to construct low-income housing with new materials. If the project reduces capital costs significantly it would improve MiBanco's ability to compete with larger banks in the financing of large housing projects.

[9] Commercial banks in Peru can engage in most financial services either directly or through subsidiaries, hence the term "multiple banks."

credit technologies to the needs of the low-income and informal segments of the mortgage market.

Other financial institutions, including Micro Finance Institutions (MFIs), which have fared well in other credit markets, have a small participation in the mortgage market because of their lack of competitive advantages, including funding limitations. These institutions could have a more important role in the housing credit development for lower income segments of the population, where family income is often harder to demonstrate due to informality. Traditional banks cannot properly attend to this segment because their conventional credit technology (which is largely collateral based) is not prepared to deal with small credits to informal businesses and consumers. Instead, MFIs have developed credit technologies that allow them to service the needs of these potential clients (at very high interest rates to cover higher operating costs) and unleashed a credit boom which has drawn international attention. Larger banks have tended to copy part of the credit technology developed by MFIs (and have simply bought up some successful MFIs) and have gained market share in some segments traditionally dominated by MFIs; however, the process of adapting their credit technology is far from complete.

MFIs can offer limited services, due to capital and infrastructure requirements by the supervisory authorities, and generally work at local scale at the beginning of their operations. The more successful institutions have expanded to regional and even national level and are increasing their range of services. Although traditionally microfinance has been associated with micro business and consumer credits, which tend to be more common credits for lower income families, over the years MFIs have diversified their portfolio and now include some mortgage and commercial credits as well. Mortgage credits are still a small line of business for MFIs due to the fact that a proper mortgage credit requires a number of formal conditions that, if met, would generally position the client to receive cheaper traditional banking credit. In addition, MFIs funding is generally short term and more expensive; hence, they cannot compete with banks in more formal longer term credit. Note also that strong competition in mortgage financing in recent years has made it a relatively low margin business and MFIs can expect to obtain higher returns in their traditional markets.[10] At present, many MFIs are attempting to increase their mortgage operations by making use of the government's MiVivienda fund resources—but they are limited by restrictions on FMV exposure relative to MFI capital—by the limited funding of FMV in

[10] Note that MiBanco offers housing credit without mortgage at interest rates close to those of consumer credits.

general and by their lack of other competitive advantages in granting mortgage credits. Thus, their role could be to develop housing finance for lower-income households.

4.1.2 Securitizers

Securitizers of mortgage portfolios have played an important role in the region in recent years, but in Peru they have not had a significant development. As will be further explained below, the dominant large banks have had little interest in using securitization for various reasons, including excess liquidity that creates no pressure to sell assets.

The case of small financial institutions is different, as they often do have liquidity and funding problems. Yet securitization has not been used by them because they do not have the required scale (sufficient volume of mortgages) to reduce the risk of the instrument. This problem is made worse by the lack of uniform standards for mortgage credits, which also makes credit pooling difficult in Peru. In Peru, there have only been two cases of securitization of mortgage credits which totaled US $60 million.

Currently in Peru, MiVivienda credits do not form part of the small amount of mortgage securitized instruments because of two issues related with the structure of the fund legally complicate the operation: the subsidy provided by the “Good Payer Bond” and loan insurance against client default. In addition, the mortgages have no standardized origination, which makes packaging them difficult. Although there are ways in which these issues could be resolved, there has been no agreement on how it would be done and little interest by the banks to do it. Securitizations have also had difficulties because the transactions are new and they face complex legal, tax and accounting issues which have yet to be fully resolved. In addition, securitizations that involve more than one financial institution encounter serious limitations in information systems because banks’ internal registries and software are not compatible.

4.1.3 Mortgage Management Entities (EAH)

Mortgage Management Entities (EAH) are specialized subsidiaries of insurance companies that allow the insurance companies to participate in the mortgage market; there is only one such entity, Incasa, to date. The funding of Incasa comes from selling their mortgages to their affiliated insurance company, which allows them to offer 30-year fixed-rate loans. The difference with respect to a mortgage department in a bank is that they function as an investment portfolio, as they originate and structure loans and pass them on. They do not pool loans because they do

not have a significant amount of loans nor time to analyze the payment and defaults. Instead they sell loans individually using individual Negotiable Certificates of Mortgage Loans (TCHN), which are asset backed, endorsable and can be easily executed (although this has not been relevant so far). In addition to selling the loan and profiting from its origination, the EAH charges a fee for administration and collection, which remains its responsibility.

4.2 Evolution of the Private Housing Finance System

Housing finance almost disappeared in Peru during the financial repression and high inflation of the 1970s and 1980s and was eliminated by the hyperinflation and chaos of 1988 to 1990. During the 1990s, financial liberalization and economic stability led to a gradual recovery in overall credit (from very depressed levels) but mortgage financing lagged and remained very small until the turn of the century. Today, housing finance has grown at a rapid pace but remains underdeveloped and concentrated in the higher income groups of the population. While the absolute amount of mortgage credits in soles has more than tripled between 2001 and 2009, this increase has been mostly in line with overall credit growth mortgage credit. Mortgage credits as a proportion of total financial system credit, have shown a small upward trend during the period, fluctuating between 9 percent and 12 percent. Thus, while in absolute terms the housing finance system has expanded considerably, its relative importance within financial institutions portfolios has not changed significantly, as Peru was (and largely remains) substantially under-banked for most types of credit.

Regarding the currency used for mortgage loans by the Peruvian financial system, in the past, and as with most types of credit, there was a clear predominance of U.S. dollars mortgage credit. The dollarization of the financial system arose from the hyperinflation period that Peru went through between 1988 and 1990, which made the general population lose faith in national currency as a safe asset, and made the U.S. dollar the main currency for credits, debts, savings and contracts in general, especially longer-term ones. In 2001, most financial institutions granted between 95 and 100 percent of their mortgage credits in foreign currency, the only exception being the Cajas Rurales (CRACs) which granted 52 percent of their (tiny) mortgage credits in national currency (soles). The system as a whole granted only 5 percent of mortgage credits in soles.

The economic growth and stability that Peru has gone through during the last decade, however, has significantly strengthened the sol and the public's trust in the national currency. Also, the central bank has encouraged credits in soles by establishing lower reserve requirements for deposits in soles than in dollars.

Thus, the predominant currency for mortgage credits gradually changed from foreign currency to local currency. While the stock of U.S. dollar mortgage credits as of June 2010 stood at 58 percent in U.S. dollars, credits in soles have shown a growing trend which in the near term should shift the balance towards a majority of national currency credits. In the 12 months to June 2010, over 60 percent of new mortgage credits were in local currency.

There has also been a change regarding mortgage rates in local and foreign currency, which used to be significantly different. Over the course of the past decade, especially since 2006 when the growth in the mortgage market led banks to grant an increasing amount of credits in local currency to reduce their clients' exchange rate risk, rates in dollars and in soles have tended to fall (especially in soles) and to equalize. In general, rates have stabilized near 10 percent and are likely to remain close to that level in the near future since gains from economies of scale and credit technology improvements are likely to be largely offset by interest rates recovering moderately from historically low levels.

The quality of the mortgage portfolio has been quite good throughout recent years with a slight deterioration from the end of 2008 to the first half of 2009, but delinquencies have begun improving since the second half of 2009. The average delinquency rate was below 1 percent as of June 2010; however, these rates vary according to the type of financial institution. Note that since much of the market is new, the majority of credits have been granted recently in a period of strong economic growth. Therefore, current mortgage credits have not yet been stress tested. Nevertheless, the limited size of the market has likely allowed financial institutions to "cherry pick" their mortgage clients. Because of these practices, it is likely that the quality of the portfolio is higher than it would eventually be (ceteris paribus) as the mortgage market expands and credits mature.

Housing finance in Peru is somewhat unusual. Housing construction is usually financed by the end buyer, who obtains a bank mortgage on a "future good" (the housing unit which is to be built) and on the land on which it is to be built. The money from the mortgage loan is actually disbursed by the bank to the builder, usually in tranches in accordance with guidelines established

regarding advances in the construction process. The builder guarantees the construction to the bank (and the land is mortgaged) but ultimately the owner incurs part of the risk of construction. Once construction is completed, the mortgages are adjusted to the existing units and the builder's responsibility disappears. Builders rarely finance housing construction; rather they reach agreements with banks to have a first option to grant mortgages for the units to be constructed. Thus, those banks with the largest capacity to issue mortgages use it to "capture" the financing of the large scale housing projects, effectively tying up and having a first option on mortgage loan applications for the projects.

5. Description and Analysis of Public Policy Initiatives

5.1 Introduction and Background

In Peru, public policy on housing and housing finance has been mostly the result of isolated efforts by various public sector entities with narrow objectives. Although various public sector institutions provide housing finance, most of their activities are very small and have no impact on the market. There is very little, if any, coordination of programs and neither clear definition or implementation of overall public policy nor of meaningful objectives. Public sector policies deliberately aimed at housing finance are essentially limited to subsidy programs which, because of their limited resources and lack of targeting, offer substantial government resources to a small number of lucky and mostly middle and upper income families. To be fair, part of the reason for the lack of public sector financing for lower income households is the absence of supply of lower income housing, for the various reasons mentioned in previous sections. It is simply impossible to finance something which does not exist.

The main public sector program is the MiVivienda Fund (FMV). FMV provides private financial institutions with credit guarantees and cheap funds for housing credits meeting certain requirements and also offers subsidies to the beneficiaries both through the MiVivienda[11] credit and the Techo Propio[12] program. Although it was supposedly set up to help lower-income

[11] MiVivienda credit (in local currency) finances the acquisition of homes valued between 14 UIT (approx. US $17,500) and 50 UIT (approx. US $63,000). There is a direct economic incentive given to those MiVivienda debtors who fulfill their monthly payments (Good Payer Bond–BPP) for six months in a row. This subsidy cannot exceed a S/. 12,500 limit (approximately US$4,600).

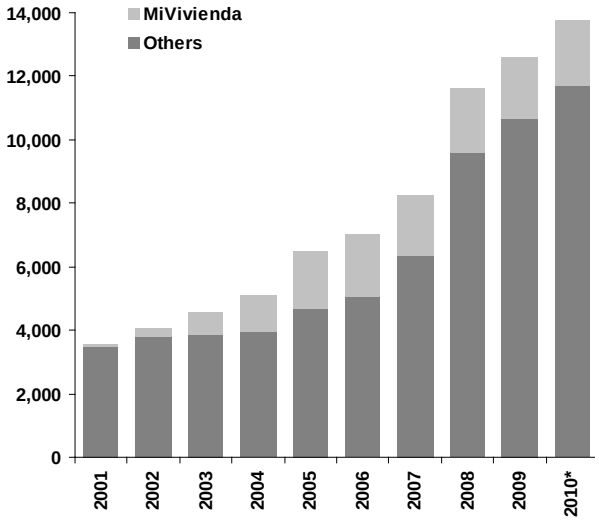
[12] The Techo Propio program aims at lower income families (not individuals) with a monthly family income below 0.45 UIT (approximately US $575) and which are able to obtain the minimum savings to access the program. The Techo Propio subsidy program (Family Housing Bond–BFH) is available for new property acquisition, construction on already-owned land and property improvement. The amount of BFH varies according to program: i) for

families, the income requirements for accessing the funds (especially MiVivienda credit) mean that the programs benefit mainly middle to high-income families. The poor focalization of the FMV programs is confirmed by the data provided by ENAHO and our own affordability calculations (see Section 3.2), which show these programs benefit mostly the richer income quintiles. Moreover, the data indicate that these programs' reach has been random at best, defined mainly by the nature and geographical distribution of housing supply rather than by attempts at targeting in terms of income level.

In their initial phase, from 2002 to 2004, the cheap financing and credit guarantees offered by the FMV programs together with the subsidies to beneficiaries, led banks to use the funds for mortgage loans to income groups that previously not received them. The data indicates and market participants agree that FMV was an important contributor to increasing housing credit and thus increasing housing supply during its early period when it was most active. As was noted in Section 3.2 (Figure 1), the supply of lower-priced housing units increased dramatically in 2003 and 2004, largely due to the effect of FMV programs. As shown in Figures 2 and 3 below, FMV credits were increasingly important in the market during the first half of the past decade, reaching a maximum of 28 percent of all mortgage credits. Hence, FMV funds jumpstarted housing financing for middle to lower-income families, which was an important contribution to the development of the market. However, once the private sector discovered the middle to lower-income housing finance market, it developed alternative funding mechanisms. Consequently, when the original funding of the FMV ran out in 2005, its importance decreased markedly. Its role is currently marginal as FMV credits have stagnated and the market continued growing. By June 2010 FMV-funded credit represented only 15 percent of total mortgage credit, despite renewed funding.

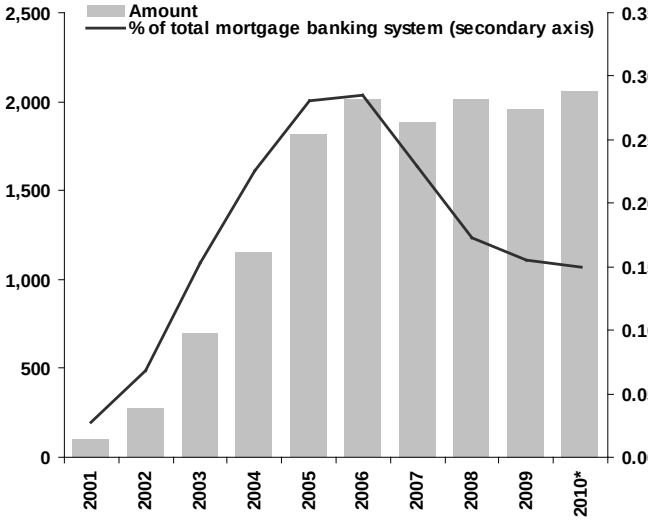
acquisition of a new dwelling it varies from 3 to 5 UIT (US $3,800 to US $ 6,300) depending on the dwelling's value; ii) for construction on own land it is 4.7 UIT (US $6,000); and iii) 1.9 UIT (US $2,400) for dwelling improvement.

Figure 2. Banking System Mortgage Credits MiVivienda and Others
(millions of soles, 2001-2010)*



*June 2010
Source: Superintendency of Banking and Insurance.

Figure 3. Commercial Banks: MiVivienda Credit Stock
(million soles and percentage of total mortgages, 2001-2010)*



*June 2010
Source: Superintendency of Banking and Insurance.

Other relevant public sector initiatives are the resources made available to Banco de Materiales and the favorable tax regulations that affect housing transactions. In addition, there are public policy efforts, such as property titling initiatives and support for the operation of credit bureaus that have a deliberate although indirect impact on housing finance. Banco de Materiales directly provides beneficiaries with loans for the acquisition of construction materials as a means of stimulating construction and reducing the housing deficit. It is a smaller program than FMV, although it has been operating since 1982. Though the number of credits and the total amount financed have grown considerably during the last four years, it is still quite small and disbursed loans for the equivalent of only US $65 million as of 2009.

There are other publicly owned small, non-financial institutions that participate in housing finance but have no significant impact in the market. Corporación Financiera de Desarrollo (COFIDE), which is a second tier bank financed by the state, funnels its resources exclusively through private financial institutions regulated by the Superintendency of Banking and Insurance (SBS) in order to complement the private sector's effort in mid to long-term financing. This institution manages the MiVivienda trusts and also has two small mortgage programs with a loan portfolio of US $29.5 million as of 2010.

Second, there are four housing funds aimed at military and police personnel's families (Army Housing Fund–FOVIME, Navy Housing Fund–FOVIMAR, Air Force Housing Fund–FOVIMFAP and Police Housing Fund–FOVIPOL). Giving preference to disabled personnel and relatives, these programs were created in 1987[13] with the objective of reducing housing problem for active and retired military personnel. Although information is limited, they are small and also have almost no impact on the market.

Finally, Banco de la Nación (BN), which is the representative of the state in financial transactions, both national and internationally, has recently announced programs to offer cheap mortgage credit to public sector employees; however, we understand that the mortgage credit announcements are mainly for political showcasing and the resources involved are minimal, reportedly less than US $1 million as of December 2009.

5.2 Housing Finance: The Road Ahead

Bank residential mortgages were formerly directed almost exclusively to families in the upper 10 percent of incomes; a large part of bank residential mortgages still are. However, the experience that banks obtained original mortgages financed by the MiVivienda Fund in the first half of the past decade has led them to gradually develop the systems needed to finance lower-cost housing for a growing customer base. This learning curve is similar to the one experienced by banks when, attracted by the profitability of MFIs, they began offering consumer credit to middle and lower income families and loans to small businesses. The consensus among market participants is that while banks are still developing expertise in mortgage credits for lower income housing, the process has clearly started and is likely to continue and expand at a rapid pace for a number of years. Hence, the limits to housing finance would eventually be mostly set by affordability issues (family income and unit cost restrictions) and not by banking system practices or conditions. At present, formal housing supply is so constrained that firms face no significant problem obtaining bank financing for housing projects; all market participants expect double-digit growth in mortgage credits for the foreseeable future. As indicated previously, competition in this market appears to be intense.

Annual effective interest rates on mortgage credits funded by private financial institutions currently lie between 8 percent and 11 percent and have averaged a stable 10 percent over the

[13] Law N°24686.

past year. Well over 90 percent of mortgage credits have fixed interest rates, and the standard term for new credits is 20 years, although up to 30 years is available. An increasing majority of new credits are granted in local currency. Given funding and operating costs, it is unlikely that rates can move much lower in the near future (which also indicates intense competition). Despite competition, down-payment requirements have remained in the 10 percent to 20 percent range and tend to increase with house price. Mortgage loan delinquencies are low for all segments. As of June 2010, past due mortgage loans accounted for less than 1 percent of the portfolio.

Large banks are running a considerable risk due to the term mismatch between their funding and their mortgage loans, especially since the great majority of loans are granted at fixed rates. However, their excess liquidity and current historically low short-term rates have led banks to acknowledge that the risk of funding rates exceeding mortgage loan rates is low, and they have decided to profit from the yield curve. Of course this attitude is due in part to the relative size small of their mortgage portfolios, but as their size increases and short-term rates return to more normal levels (as has begun to occur over the past year), both regulators and banks recognize that they will either have to improve their funding sources or securitize their mortgage portfolios. Banks also face a cultural challenge; there is an internal lack of incentive to sell portfolios because bank executives are typically rewarded according to outstanding balances of credits and not according to amount or number of credits originated. For all these reasons, banks retain the mortgages they issue. However, there do not appear to be any serious long term obstacles for banks eventually obtaining sufficient reasonably priced long term funding for mortgage credit, including through securitization. In short, from the financial system's perspective, the outlook for expanded access to adequate housing finance is good.

Given the favorable outlook for housing finance, the main long-term restrictions on expanded access to housing finance would appear to be poverty and house prices/housing costs, as discussed above. Growing income should significantly expand the market for housing finance, especially in the low-income segment, and this should be considered when designing policies aimed at improving access to housing.

Because of liberal financial regulation, favorable overall macroeconomic conditions and the relatively competitive nature of the housing finance market, it appears that private financial institutions are developing the means and know-how necessary to offer adequate financing to most families who can afford buying a home. The main limitation to increased access to housing

financing,[14] from the banks' perspective, would thus be related to the informal origin of family income, which makes verification of income difficult (and expensive) and tends to make income very volatile, thus reducing creditworthiness. Hence, public housing finance policy should be focused not on financing itself—since it appears to be a problem that is largely resolving itself[15]—but rather to improving the conditions that would allow families to actually use accessible finance.

The main restrictions to families being able to use housing finance appear to be lack of supply of appropriately priced (low-income) housing units, poverty (which limits borrowing capacity) and informality (which tends to reduce creditworthiness). We believe lack of supply and thus poor urban housing market development can best be tackled by: i) improvements in urban planning and regulations affecting construction standards and construction licenses, which are currently the responsibility of local governments; ii) increased government urban enabling programs (especially investments in water and sanitation); and iii) achieving a reduction in housing unit costs through improvements in construction materials and processes.

Income is of course a macro issue, but the relevant policies to be considered here are those aimed at reducing poverty and, more specifically, appropriately focused and funded housing subsidy programs that do not amount to a lottery. Note, however, that our previous analysis indicates that public resources aimed at improving housing affordability could likely be best used in urban enabling programs and in assuring the appropriate use of inexpensive land. Finally, regarding informality, policies aimed at reducing it (on the family income side) are beyond the scope of this study, but it appears that financial institutions have room for improving their credit technology so as to minimize the effect that informality has on creditworthiness. It is possible that temporary public funding and/or credit risk protection schemes (perhaps focused on MFIs) can be useful in pushing the "frontier" of mortgage credit towards lower income segments, much as the FMV originally did. The externalities involved with all research and development issues apply equally to the development of credit technologies and, given that patent-type restrictions are not an option, the use of public resources to achieve similar results would appear justified.

[14] By access to credit we refer here to the ability to obtain credit in the amount that is sustainable by family income.
[15] However, see below for possible improvements in the way credit technology deals with the costs of informality.

6. Analytical Model and Results: Impact Evaluation on Welfare

Housing finance policy in Peru has been centered on the subsidies (to banks and end users) given by MiVivienda Fund with the intention of promoting access to housing credit.[16] If the objective of the policy is to improve access to credit; we can infer that said access should improve welfare beyond the effect of simply receiving a subsidy. In general, public policies aimed at promoting housing finance are predicated on the reasonable assumption that access to financial system housing credit improves welfare.[17] While basic economic principles indicate that this should be true, since expanding the choice set for inter-temporal consumption should yield some improvement in welfare, the extent of this improvement is not clear. Hence, it is worth examining if the improvements in welfare justify the public resources invested in these policies. This is especially true in a country with substantial poverty, income inequality and limited fiscal resources.

There is very little empirical work on the degree to which housing credit improves welfare and we propose to contribute to this field with Peruvian data. Thus, the question that we will answer in this section is: does credit granted for Housing Construction, Expansion and Improvement (CEI) impact welfare proxies? We will use impact evaluation techniques to determine whether housing CEI credit affects household's welfare, approximated by total income, expenditures, expenditures related to housing and a quality of dwelling index. The effect on welfare cannot be simply measured by the difference between welfare indicators, as there may be other factors different from housing CEI credit (such as macroeconomic growth), that affect the outcomes.

Hence, to ensure methodological rigor, an impact evaluation must estimate the counterfactual scenario, that is, what would have happened to the household with housing CEI credit, if this credit never happened? Thus, the methodology allows us to isolate the effect of external factors, different from the housing CEI credit that could affect welfare.

We have chosen to use Propensity Score Matching for our impact evaluation. We first contrast the impact on those households who received CEI credit with the rest of the population.

[16] The main achievement of these programs was to prove to financial institutions, developers and constructors that there was unsatisfied demand for housing credit in middle and lower-income families and that this demand could be attended profitably.

[17] Since financing is provided for the acquisition of housing (as opposed to support for renting) there is also the implied assumption that house ownership (as opposed to housing conditions in general) improves welfare, but we will not consider this issue.

The effect is calculated as the difference in average values of the treated and comparison groups.[18]

Welfare is approximated with the following outcome variables: income and expenditure per household, expenditures on household maintenance and a housing quality index. The quality of dwelling index has been calculated with Principal Components Analysis (PCA) using housing characteristics such as predominant materials of floors, roofs and walls, access to water, access to sewage and access to electricity. The index used the first principal component, which accounts for 41.7 percent of the total variance.

Table 6 shows the results of the regression where the dependent variable is access to housing CEI credit and discarding all the non significant explanatory variables. The results appear consistent with expected results. Access to credit is positively related with the number of household members, the ownership of assets, the employment status of the head of the household and the perception of improvement in the living standard of the family. On the other hand, access to credit is negatively related with poverty.

[18] It is relevant to mention that although this evaluation uses the National Household Survey (ENAHO) data, which surveys over 20,000 households throughout the country, there is a limitation with the credit data because the number of families who have received credit is small in relation with the total number of families surveyed. As an example, only 0.4 percent of all households and only 0.6 percent of urban households received mortgage credit in 2009. The ENAHO includes all sources of credit for Housing Construction, Expansion or Improvement (CEI), which considerably increases the credit being considered, but the number of beneficiary households is still small. However, the credit information obtained is valid and useful for analysis because the size of the credit sample (532 in the lowest case) is sufficient to be considered statistically representative.

Table 6. Regression Results: Population

Dependent variable: access to credit		
Number of house members	**1.089347**	**
	[0.29]	
	(3.80)	
Poor	**-0.9945614**	**
	[0.30]	
	(3.27)	
Tv	**1.095297**	**
	[0.31]	
	(3.58)	
Cable	**1.159468**	**
	[0.44]	
	(2.66)	
Employment status	**1.460936**	*
	[0.73]	
	(2.00)	
Improvement in living standards	**0.9230904**	**
	[0.26]	
	(3.49)	
Constant	**-7.237248**	**
	[0.75]	
	(-9.60)	
Observations	8,580	
Pseudo R2	0.111	
Prob > chi2	0.000	

Standard errors in brackets and z-statistics in parentheses.
*Statistically significant at the 95% confidence level.
**Statistically significant at the 99% confidence level.

Using the results shown in Table 6, we proceeded with the impact evaluation using propensity score matching. The results, shown in Table 7, indicate that the measured impact of CEI credit versus no credit is (as expected) positive for all the chosen welfare proxy variables and also statistically significant for all of them. However, the significance of the results lies in the fact that the impact for all the welfare proxy variables is quite small, ranging from 0.8 percent to 2.3 percent.

Table 7. Impact Results: Population
(as percentage)
Use of credit vs no use of credit

Total sample	**Impact (%)**	
Annual income per household	1.23%	*
Annual monetary income per household	1.31%	*
Annual expenditure per household	1.21%	*
Annual expenditure on household maintenance	2.29%	*
Quality of dwelling index	0.80%	*

* Statistically significant at the 95% confidence level.

We also attempted to contrast the impact on households who received housing CEI credit only with those households who did not receive housing CEI credit but carried out housing CEI activities. Table 8 shows the regression results obtained, which appear to be consistent. The access to credit is positively related with the possession of adequate housing, the ownership of actives, the access to services and the reception of a pension. Alternatively, access to credit is negatively related with access to social programs. Also, the results show that if the credit candidate is married or living with a partner there is a positive relation with the access to credit.

Table 9 below summarizes the results of the impact evaluation using propensity score matching for the more limited sample of families who carried out housing CEI activities. The results were not statistically significant at an appropriate confidence level, although the impact estimations were larger than with the population at large.

Table 8. Regression Results: Families that Carried Out CEI Activities

Dependent variable: access to credit		
Man	**-1.134547**	**
	[0.19]	
	(-6.06)	
Adequate housing	**0.5462693**	*
	[0.26]	
	(2.06)	
Married or conv	**1.041494**	**
	[0.19]	
	(5.58)	
Tv	**1.102453**	**
	[0.23]	
	(4.78)	
Electricity	**1.083688**	**
	[0.29]	
	(3.69)	
Sanitation	**0.3985323**	**
	[0.14]	
	(2.91)	
Pension	**0.616164**	**
	[0.13]	
	(4.87)	
Access to social program	-0.3240513	*
	[0.13]	
	(-2.53)	
Constant	-4.450	**
	[0.42]	
	(-10.5)	
Observations	3,711	
Pseudo R2	0.113	
Prob > chi2	0.000	

Standard errors in brackets and z-statistics in parenthesis.
*Statistically significant at 95% confidence level
**Statistically significant at 99% confidence level

Table 9. Impact Results: Families that Carried Out CEI activities
(as percentage)

Use of credit vs no use of credit	
Families that constructed, expanded or improved	**Impact (%)**
Annual income per household	7.09%
Annual monetary income per household	5.28%
Annual expenditure per household	3.71%
Annual expenditure on household maintenance	11.19%
Quality of dwelling index	3.99%

If the effect of CEI credit on welfare is as limited as our statistically significant data indicate, public resources could likely be as or more effective if reallocated to other objectives, such as to promoting urban enabling or specifically to promoting access to water and sewage systems and/or to promoting the large scale projects that are needed to supply affordable housing units for lower income households and/or to provide resources for programs that support the development of new credit technologies for lower-income housing finance.

7. Conclusions

The data analyzed as part of this research indicate that although housing conditions for most Peruvians have improved significantly over the past decade, they are still grossly inadequate. Housing quality and housing demand are restricted by low income and housing costs. To illustrate, even if favorable housing financing conditions were available for all households, less than half could afford a home that costs US $20,000, and one third of households could not afford a home worth only US $10,000. Ongoing rapid growth in household income should help to gradually alleviate this problem, but it will remain a major issue for the foreseeable future.

The absence of formal low-income housing supply results in most housing supply being informal, with the majority of households gradually building up their homes over a number of years. Informality and an associated lack of urban planning increases costs and results in poorer outcomes when compared to adequately planned and developed housing. Market participants agree that the main obstacles to increased formal low income housing supply are poor urban planning and zoning policies, which restrict the availability of adequate land, and absence of adequate water and sewage services from publicly owned (mostly municipal) utilities.

The availability and affordability of housing financing has improved substantially over the past years, but only 130,000 home mortgage loans existed at the end of 2009 in a country

with 4.8 million urban households. Given the present favorable market and regulatory conditions, the private financial system appears to be rapidly developing the capacity to provide housing finance for the majority of the urban population that can afford a house. Although it appears that further development of credit technology is necessary to allow adequate servicing of lower-income households, especially those whose income depends mostly on informal activities, it also appears that this is an ongoing process and an area in which public policy could actively contribute to improve access to housing finance. Securitization of mortgages is barely beginning to appear, although we see no significant obstacles to the market developing as needed over the medium term. In short, housing finance no longer appears to be a major obstacle to improved housing conditions.

Commercial banks account for over 90 percent of all mortgages due to their competitive advantages over MFIs and other institutions. They are likely to continue dominating the market (where competition appears intense) unless MFIs develop new funding sources and credit technologies to better service low income informal households. These also appear to be areas in which public policy could actively contribute to improving access to housing finance.

Public sector policies in the housing sector are centered on limited programs providing: i) subsidies for a lucky small number of mostly middle to upper income families, and ii) cheap funding and credit guarantees for the private banks that grant the subsidized loans. While these programs played an important role in convincing private banks to begin offering mortgages to middle-income groups in the first half of the past decade, their limited funding and market developments since then have made them relatively unimportant today.

Our analytical model is aimed at measuring the impact of housing credit on welfare proxies, using the propensity score matching technique. Our results indicate that credit has a very small, although statistically significant, positive impact on welfare as we measured it. If this result is valid, we believe additional consideration should be given to the idea of investing large amounts of public resources on subsidized housing finance, as this may not be the most efficient way to improve the true target variable, which is improved housing conditions and not increased home ownership per se. We also estimated the main cost components of housing construction, from which it is apparent that progress in reducing housing costs depended mostly on: i) improving the availability of adequate land on which to build the large scale projects that allow economies of scale, ii) developing lower-cost building techniques and materials and iii)

improving the availability of water and sewage services. These also appear to be areas in which public policy could actively contribute to improving housing conditions.

To summarize, our research on housing finance in Peru concludes that the housing finance market is operating relatively efficiently and is developing the mechanisms needed to provide access to finance to those who can afford a home. Therefore, housing finance is not one of the main restrictions to improved housing conditions in Peru. The main restrictions to improved housing conditions are obstacles to increased low-income housing supply. In other words, there are mechanisms through which low-income families can access housing finance but there are no houses for them to finance. Our various policy recommendations are not related with financing, which would otherwise be the central issue of this paper, because financing is not the problem.

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