Inter-American Development Bank

Argentina's Residential Real Estate Sector:

A Magnet for Savings amidst Mistrust in Traditional Investment Vehicles

Juan J. Cruces

Department of Research and Chief Economist

TECHNICAL NOTE Nº IDB-TN-911

March 2016

Argentina's Residential Real Estate Sector:

A Magnet for Savings amidst Mistrust in Traditional Investment Vehicles

Juan J. Cruces

Universidad Torcuato Di Tella

March 2016

Inter-American Development Bank

Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library

Cruces, Juan José, 1966-
Argentina's residential real estate sector: a magnet for savings amidst mistrust in traditional investment vehicles / Juan J. Cruces.
p. cm. — (IDB Technical Note ; 911)
Includes bibliographic references.
1.Housing—Argentina. 2. Savings accounts—Argentina. 3. Welfare economics—Argentina I. Inter-American Development Bank. Department of Research and Chief Economist. II. Title. III. Series.
IDB-TN-911

Abstract[*]

This paper measures the flow of funds into the real estate sector for the city of Buenos Aires since 1992 and compares it to traditional savings instruments. For each dollar that went into the city's real estate from 1992 until 2000, about six dollars went into deposits in the national banking system. From 2003 until 2012, for each dollar that went into real estate, only 99 cents went to bank deposits. While the 2010 census reports a vacancy rate of 24 percent for the city, analysis of a micro data set on individual house electricity consumption suggests that the rate is only about 6 percent, in line with international standards. Increased supply, however, has resulted in a dramatic reduction of real rental values and rental yields. The paper concludes by estimating the welfare loss from allocating society's scarce capital to such a low-return activity, which is interpreted as a lower bound of the flow cost of mistrust in traditional savings instruments.

JEL classifications: D14, D23, O16
Keywords: Savings, Financial crises, Property rights and public trust, Housing and tenancy

[*] This technical note was written as a background paper for the Inter-American Development Bank's 2016 Development in the Americas report. I thank Victoria Lacasa for excellent research assistantship and Edenor for kindly providing me with electricity consumption records. Fernando Giménez and John Dunn Smith also provided valuable assistance. I thank Eduardo Cavallo, Nicolás Merener and Tomás Serebrisky for valuable comments. The usual disclaimer applies.

Executive Summary

Throughout the debt defaults, high inflation, and profuse government intervention that stressed its economy over the last 40 years, Argentina was able to create and treasure an institution that has respected investor property rights under all circumstances: its residential real estate sector.

Respecting investor property rights in this market has not been the historical norm. The period from 1942 to 1976 was plagued by laws and regulations that favored tenants at the expense of landlords, with the consequence that the real estate market was destroyed (Borka, 2004). However, since the reform of the rental law in 1976, and the amendments to it after the return of democracy in 1983, the rights of owners have been largely respected, regardless of the political or ideological affiliation of the administration in office. Given the privileged status of the real estate contract vis-à-vis the laws and the courts compared to other investment vehicles, and the small scale of the minimum investment needed to enter the market, this contract has solved the problems arising from the risk of government intervention and from conflicts of interest arising from the separation between ownership and control—the quintessential problem of traditional investment vehicles.

Against this backdrop, after the severe banking, monetary and government debt crisis of 2001—in which many contracts were rewritten and dollar-peg clauses were abrogated—Argentines massively channeled their savings towards real estate investments. While this was especially favored by the low exchange rate during 2002-2005, the inflow of funds into the sector continued for several years after this initial head start.

In short, when it comes to saving, Argentines buy U.S. dollars and store them at home—and far away from banks! When they have piled up enough dollars, they swap them for an apartment and offer it in the rental market. Residential real estate has been the most trustworthy and generalized investment vehicle used by middle and upper-middle class families over the last 40 years. In fact, families make lifelong consumption plans relying on future rental income—something that they do not normally do on the basis of coupon payments of government bonds or equity dividend streams.

As shown in Figure 3, from 1992 to 2000 time deposits at banks rose by an average $7.6 billion per year, while from 2003 until 2012 they rose by an average of $2.2 billion per year, a 70 percent reduction. These figures compare with an increase of 78 percent in new savings channeled to real estate: $1.3 billion per year during the first period compared to $2.3 billion

during the second period (all figures are in constant 2014 dollars). During the first period, for each dollar that went to real estate, about six dollars went to new time deposits. During the second period, for each dollar that went to real estate, only 99 cents went to new time deposits. Furthermore, it is noteworthy that flows into real estate only pertain to the City of Buenos Aires (CABA), while the increase in time deposits represents the whole banking sector of the country. In spite of this, money flows into real estate in Buenos Aires were about the same as those into the whole time deposit banking market of the country.

Figure 4 confirms these features with more aggregate data: according to national accounts, from 1992 until 2001 money flows into CABA real estate were about 8.4 percent of CABA private sector savings, while they rose to 13.3 percent in the 2003-2013 period, a 57 percent increase in the ratio.

It is noteworthy that, since the end of Convertibility in 2001, new buildings have acquired some store of value characteristics that are typical of money; in particular, new houses are now smaller and more luxurious. These are akin to the divisibility and the low risk properties of money. Figure 6 shows that an average of 44 percent of new houses were studio or one-bedroom apartments from 1995 until 2001, while that figure rose to 66 percent from 2003 to 2012. Finally, Figure 7 shows that an average of 27 percent of new houses were luxurious from 1995 until 2001, while that average rose to 41 percent from 2003 until 2012.

In the decade from 2003 to 2012 the CABA real estate market had to absorb 27 percent more square meters than in the decade from 1992 to 2001 (14.2 million square meters compared to 11.2, as shown in Figure 5). How did the market react (see Figure 8)? Did the new houses remain vacant, as would be the case if landlords were fearful of future unfavorable changes in rental laws and therefore chose to leave their newly acquired houses vacant? Or did they remain vacant because rental prices did not fall to accommodate the new supply even though landlords wanted to offer their new houses in the rental market? Or did rental rates adjust so that the market would clear, directing the new supply to a productive use?

The data in the 2010 census are alarming: 24 percent of houses in CABA are vacant! This contrasts with an average vacancy rate of about 7 percent for major cities worldwide, and it is much higher than the 15 percent vacancy rate for Buenos Aires in the 2001 census.

To verify this possibility, we independently computed the vacancy rate using electricity consumption records for each residential customer since 2003. The data are for Edenor, the power distribution company that covers the northern area of Buenos Aires (see Appendix Figure A.2). This is the part of the city in which one would expect the "real estate as saving vehicle" effect to be most prevalent. In sharp contrast to the census figures, Figure 10 shows that using our more refined and higher-quality data give a vacancy rate that is around global average values—if not lower.

Perhaps the vacancy rate around 6 percent is an average of the large stock of old houses that are mostly occupied, and the relatively small stock (see Appendix Table A.1) of new houses that are largely vacant and used as a store of value by investors. Hence, we next compute vacancy rates by house age groups. To help understand how we divided by age, Figure 9 shows the speed at which new houses are occupied: 10 percent of houses are occupied as soon as the electricity meter is installed and 50 percent within the first quarter; about 93 percent of new houses are no longer vacant by their first birthday. So, by the time a house is one year old, it has the average vacancy rate of the whole stock of houses, and frictional vacancy has ended by this time.

Figure 11 analyzes whether vacancy rates differ by house age group. It shows that all houses aged more than one year display strikingly similar vacancy rates, in the neighborhood of 5 percent. The only group that has a high vacancy rate—around 25 percent—is that of houses less than one year old (which we classify as Newborns). As suggested by Figure 9, this is a frictional type of vacancy. In a nutshell, the market has not responded to the new supply by increasing the vacancy rate.

Have rental rates changed at all given the increase in the new supply of houses since 2003? Figure 13 shows in the left scale the ratio of the chapter of the consumer price index (CPI), capturing housing rent divided by the general level of the CPI. The series is normalized so that the average ratio is 1 from 1992 until 2001. During the 2002 crisis, rents fell to about 0.75 compared to what they were in the previous decade. From that point on they improved to about 0.8 during 2008 and 2009 but kept falling thereafter. As of September 2015, the average ratio among the three private providers of CPI estimates is 0.56, and it is 0.62 using data from the national statistical office. This means that rents have fallen by about 40 percent in real terms

compared to their average value during 1992-2001. In summary, the real cost of renting a house is much lower than it used to be in Buenos Aires.

Figure 14 provides an alternative measure of real rents. In this case, they are compared to the purchase price of houses, and hence the number is akin to an internal rate of return from purchasing the house, offering it in the rental market for 10 years at going market rates, and then selling it at the end at the same price at which the house was purchased. This net yield computation takes into account all monetary transactions costs associated with the endeavor and is computed by Reporte Inmobiliario, a leading consultancy. Net rental rates fell from an average of 7.1 percent from 1992 to 2001 to an average of 2.9 percent from 2003 to 2012. At the end of the sample, the net rental yield is 1.5 percent per annum. It is noteworthy that this fall in yield is not exclusive to the Buenos Aires market, and it has also taken place in major cities worldwide, in part as a result of the abnormally low interest rates of the major reserve currencies.

Be that as it may, the bottom line is that the market has reacted to the increase in supply by lowering rental rates and maintaining vacancy rates that are close to their worldwide averages.

During the period from 2003 until 2012, a total of $22.6 billion flowed to the Buenos Aires real estate sector (see Figure 5). Table 1 closes the paper by estimating the current annual opportunity cost of these funds earning about 1.5 percent per annum. The welfare loss from the money sunk in real estate is between $0.8 and $3 billion dollars per year. The higher end of this range amounts to a loss of 0.6 percent of national GDP per year. And this is only considering the money that flowed into the real estate sector of the Ciudad Autónoma de Buenos Aires, which accounts for about one-fourth of national GDP.

In a country in which savings are badly needed, both to finance the government and for investments in infrastructure and in plant and equipment, it would seem paradoxical to find a flight to quality effect through which substantial amounts of capital found refuge in the real estate sector and are parked at a yield lower than that of the 10-year U.S. Treasury Bond. While this can be optimal from the investor's standpoint, it seems socially wasteful. The market failure that gives rise to this externality is mistrust in traditional investment vehicles compared to the security afforded to investors by the real estate sector.

Our findings illustrate a case in which when investors begin to be protected, even following decades of neglect, a few years later they reward the new environment with massive

amounts of investments and demand very low compensation. This has been true even in a country like Argentina, where there is generalized mistrust given historically recurrent episodes of minority investor confiscation in different asset classes—including, of course, real estate during a large part of the twentieth century. The lesson is simple and has been stressed time and again: when institutions care for investor rights, capital is abundant.

1. Introduction

Throughout the debt defaults, high inflation, and extensive government intervention that stressed its economy over the last 40 years, Argentina was able to create and treasure an institution that has respected investor property rights under all circumstances: its residential real estate sector.

Respecting investor property rights in this market has not been the historical norm. The period from 1942 to 1976 was plagued by laws and regulations that favored tenants at the expense of landlords, with the consequence that the real estate market was destroyed (Borka, 2004). However, since the reform of the rental law in 1976, and the amendments to it after the return of democracy in 1983, the rights of owners have been largely respected, regardless of the political or ideological affiliation of the administrations in office. Given the privileged status of the real estate contract vis-à-vis the laws and the courts compared to other investment vehicles, and the small scale of the minimum investment needed to enter the market, this contract has solved the problems arising from the risk of government intervention and from conflicts of interest arising from the separation between ownership and control—the quintessential problem of traditional investment vehicles.

Against this backdrop, after the severe banking, monetary and government debt crisis of 2001—in which many contracts were rewritten and dollar peg clauses were abrogated—Argentines massively channeled their savings towards real estate investments. While this was especially favored by the low exchange rate during 2002-2005, the inflow of funds into the sector continued for several years after this initial head start.

In short, when it comes to saving, Argentines buy U.S. dollars and store them at home—and far away from banks! When they have piled up enough dollars, they swap them for an apartment and offer it in the rental market. Residential real estate has been the most trustworthy and generalized investment vehicle used by middle and upper-middle class families over the last 40 years. In fact, families make lifelong consumption plans relying on future rental income—something that they do not normally do counting on the basis of coupon payments of government bonds or equity dividend streams.

In this paper, we compute the amount of savings that was channeled to the real estate sector in the Ciudad Autónoma de Buenos Aires (CABA) from 1992 to 2014. We compare this with the amount of savings channeled to the typical investment vehicle used by families

worldwide: bank time deposits. We also compare it with savings figures from the national accounts.

Comparing the periods 1992-2001 and 2003-2014, we find that there has been a substantial increase in savings channeled to the real estate sector, both in absolute terms and compared to other forms of saving.

Our findings illustrate a case in which when investors begin to be protected, even following decades of neglect, within a few years they reward the new environment with massive amounts of investments and demand very low compensation. This has been true even in a country like Argentina, where there is generalized mistrust given historically recurrent episodes of minority investor confiscation in different asset classes—including, of course, real estate during a large part of the twentieth century. The lesson is simple: capital is abundant when the institutions are right.

With the important increase in construction, it could be possible that the new capital allocated to the real estate sector is sitting idle: this would be the case if landlords were fearful of future unfavorable changes in rental laws and therefore chose to leave their newly acquired houses vacant instead. This possibility is underscored by the 2010 census, which reports that 24 percent of houses in CABA are not occupied. This figure contrasts with an average vacancy of about 7 percent for major cities worldwide, and it is much higher than the 15 percent vacancy rate for Buenos Aires in the 2001 census. Moreover, comparing the two censuses, similar increases in the vacancy rate are also present in other major Argentine cities that also recently attracted massive amounts of real estate investment.

To verify this possibility, we independently computed the vacancy rate using electricity consumption records for each residential customer since 2003. The data cover the area of Buenos Aires in which one would expect the “real estate as saving vehicle” effect to be most prevalent. Contrary to the census figures, we find that the vacancy rate is around global average values. However, we find that the market has reacted to the increase in supply by lowering rental rates; towards the end of the sample net rental yields hover around 1.5 percent per year.

In a country in which savings are badly needed, both to finance the government and for investments in infrastructure and in plant and equipment, it would seem paradoxical to find a flight to quality effect through which substantial amounts of capital found refuge in the real estate sector and are parked at a yield lower than that of the 10-year U.S. Treasury Bond. While

this can be optimal from the investor's standpoint, it seems socially wasteful. The market failure that gives rise to this externality is the mistrust in traditional investment vehicles compared to the security afforded to investors by the real estate sector. The paper concludes by estimating the implicit welfare loss of this failure.

The rest of the paper is organized as follows. Section 2 lists the sources of data. Section 3 describes the estimation of the amount of savings channeled to the real estate sector and puts this amount in context by comparing it with the flow of funds channeled to other investment vehicles. Before closing the section, we analyze certain characteristics of new construction that are consistent with their being targeted to an investor clientele as opposed to a future resident market. Section 4 reports the findings of the study of vacancy rates using electricity consumption, showing that the vacancy of new units is a frictional phenomenon, and estimates the welfare loss associated with the noted externality. Section 5 concludes.

2. Data Sources and Assembly

For new construction, the base series are the applications for new buildings and expansions of residential construction filed each year with the City of Buenos Aires. CABA (2014: 23) provides such data for 1990-2011, while CABA (2015) provides them for 1995-2014. From this latter source we add up the columns for single-house and multi-house construction and disregard "other," which relates to commercial and industrial construction and is typically about 40 percent the size of residential construction. For most of the overlapping years, the difference between the two series is less than 5 percent. Only in 2010 is there a substantial difference between the two series (35 percent smaller in the older series), and we take the more recent source to be more accurate. Of the total area implied in the permits, an average of about 86 percent represents construction of new homes, while 14 percent represents expansions of existing houses.

We define the construction series as the applications series lagged by two years. This is because the process of filing an application is quite cumbersome and expensive, so developers only file an application once they are almost certain that they will actually execute the project. The two-year lag is based on the standard average time from the beginning of construction until finished housing units are ready to be sold in the primary market. Our assumption that all applications for new construction are eventually put on the primary market could potentially bias

upward the estimate of actual construction.[1] However, since the focus of our analysis is the comparison of how much savings went into construction during the 1990s compared to the 2000s, such potential upward bias should not affect these intertemporal comparisons so long as the failure rate of applications has been constant over time.

In regard to real estate prices, the prices of new real estate are our own compilation of several series. Our original chaining of such series is expressed in current U.S. dollars per square meter of new apartments, and those series pertain to the northern corridor of the City of Buenos Aires. The first series were published by Giménez Zapiola, a major real estate agent in Buenos Aires, and cover the period from August 1976 to September, 2000. From then until February 2012, we use the index of prices of new apartments in the northern corridor of the city published by Instituto de Economía of Universidad Argentina de la Empresa (UADE). Since this is an index number, we apply the monthly rate of change to the last price available from Giménez Zapiola to obtain a price in dollars per square meter. Unfortunately, the series by UADE, which used to be published every month on a regular basis, was interrupted in 2012. From that point on, we chain our price series to a compilation of prices published by Reporte Inmobiliario, a leading Argentine real estate consultancy, which every quarter publishes the price per square meter of new apartments in each of several neighborhoods of Buenos Aires. We take an equally weighted average of the percentage price change in different neighborhoods in the northern corridor of the city (i.e., Belgrano C., Belgrano R., Núñez, Palermo, and Recoleta), which showed maximum correlation with the UADE index in the period for which both series were available. Once we have the quarterly average percentage change, we impute the monthly geometric average change to each month within the quarter. We then chain these monthly percentage changes to the series that we carry since 1976. The good news is that the resulting absolute level of prices from this whole process is quite similar to the average price level shown by Reporte Inmobilario.

We perform three further changes to these series before using them. First, the series pertain to asking prices and are mainly taken from newspaper advertisements, so they ignore the reductions that typically take place in the bargaining process. Also, the series are for the most

[1] Since 2012 the survey has also provided an estimate of square meters actually built every quarter (Metros cuadrados efectivamente construidos, Encuesta de Seguimiento de Obra de la CABA.). Three comments are in order. First, those series are only available for the last three years in our sample, so they are not suitable for an intertemporal comparison spanning one quarter of a century. Second, this is a survey, not a census like the series that we use. Third, the series report the new meters built in one year in buildings under construction, which are not necessarily the new meters that are offered in the primary market.

expensive neighborhoods of the city. We therefore reduced the prices described above by 25 percent, attempting to obtain representative actual sale prices for the whole city.[2] Finally, since we are comparing investments in real estate that took place over almost a quarter of a century, we convert our prices expressed in current dollars to constant 2014 prices using the U.S. consumer price index published by the U.S. Bureau of Labor Statistics. The result of this process is the series depicted in Figure 1.

To estimate time deposits held at banks, we use the stock of time deposits held at banks by private sector residents in both local and foreign currency as of December of each year. The new time deposits raised by banks within a year are the first difference of the original series. The data are compiled by the Monetary Statistics Department of the Central Bank of Argentina. The series are expressed in current dollars using the free market exchange rate (which after the exchange restrictions put in place in late 2011 is the bond swap rate known as "contado con liquidación en el exterior" taken from Reuters Eikon). Again, we convert these series to constant 2014 dollars.

Data on gross national private sector savings are taken directly from the World Economic Outlook 2015 database, which provides them in current dollars. We adjusted them to constant 2014 dollars as we did with the other series.

To calculate City of Buenos Aires gross private sector savings we scaled the national private sector savings by the share of City GDP to National GDP. To this end, for the period from 1993 until 2009, we used the Geographic Gross Product measured at producer prices (in pesos at 1993 prices) from the Department of Census and Statistics of the CABA. Since these series end in 2009, we chained Geographic Gross Product with the growth rate of the Geographic Gross Product measured at market prices from the same source. For National GDP we used the Gross Domestic Product at factor cost (in constant 1993 pesos), which we took from DATAFIEL (series code 5C212).

Construction permits corresponding to studio or one-bedroom apartments and permits corresponding to luxurious houses are both from the Department of Census and Statistics of the CABA. Luxurious is the sum of the categories Lujosa and Suntuosa.

[2] Shiller (2008: 14) correctly criticizes using real estate prices series that are based on asking prices advertised in newspapers and proposes to use repeat-sales series instead. Attempting to reconstruct such a series for Buenos Aires is beyond the scope of this project—if not altogether impossible given data issues.

Census data are from Instituto Nacional de Estadísticas y Censos (INDEC, 1991, 2001, and 2010). Vacancy rates for Buenos Aires from this source are complemented with those from Instituto de Vivienda de la Ciudad (2014).

Electricity consumption records were obtained from the power distribution company Edenor (see Section 4 for details). The monthly rental price and the rental yield series for the sample apartment in Barrio Norte district are from Reporte Inmobiliario (2014). This source provides gross rental yield data as of 1980, but net rental yield data are available only as of 2001. In order to impute net rental yields for the 1991-2000 period, we deducted from the gross for those years the median gap between gross and net rental yield for 2001-2014.

The consumer price index (CPI) and the housing rent component of the CPI were obtained from INDEC and from three private sources after the intervention of the national statistical office in early 2007. The private providers for the rental rate series are Orlando J. Ferreres y Asociados and FIEL (since 2007), and a third private provider which asked to remain confidential (since 2008). The private providers for the General CPI after the intervention are O.J. Ferreres, IPC-Congreso and the anonymous provider.

3. Estimating the Volume of Savings Channeled to the Real Estate Sector since 1992

3.1 Motivation

The 2001-2002 crisis, with the government bond default and the freeze and later "pesification" of bank deposits, heightened Argentines' awareness of the substantial risks implied by personal investment instruments that they thought were safe.

In part as a reaction to this fact, informal evidence suggests that over the next decade Argentines shunned traditional investment vehicles and instead parked their savings in real estate, an asset class whose property rights have been respected in Argentina since 1976. This situation stands in sharp contrast to the period from 1942 to 1976, in which there were several regulations that set maximum prices, minimum duration terms and other limitations on private contracting that in general implied benefiting tenants at the expense of partially confiscating the rights of landlords (Borka, 2004).

The purpose of this section is to estimate the volume of savings actually channeled each year to the real estate sector of the City of Buenos Aires and to benchmark such savings to

money flows to banks and to saving rates from the national accounts. The section concludes by highlighting how the type of new constructions has shifted over time towards characteristics that are typical of store of value assets.

3.2 Methodology

We measure the amount of savings that were channeled to the real estate sector in a given year as the product of construction finished in that year times the average price of new apartments in that same year:

$$Savings\ channeled\ to\ real\ estate_t = m^2\ of\ new\ construction\ finished_t \times Price\ per\ m^2{}_t$$

The idea is that when developers finish a building they sell it in the market, and this is the amount of new funds channeled to the real estate sector. Given the typical two-year delay in building apartments, we assume that construction solicitations made in year *t*-2 become new construction finished and put on the market in year *t*.

We do not take into account secondary market transactions (sales of used houses) because those imply an inflow of funds into the sector performed by the buyer, but also a simultaneous outflow of funds from the sector that is performed by the seller. The only truly new savings directed to the sector are primary market transactions. All monetary figures are in constant dollars of 2014.

3.3 Results

Figure 1 shows the total square meters of construction for which permit applications were made each year from 1990 to 2014. As explained in Section 2, the actual finished construction that was put on the market each year is the solicited series lagged by two years. During the period 1992-2001 the construction of an average of 1.12 million square meters was finished each year and presumably put on the real estate market. This contrasts with an average of 1.42 million squares meters during 2003-2012, a 27 percent increase.[3]

[3] Although we have data available until 2014, the Buenos Aires real estate market has been in a severe recession since 2013. Hence, we prefer to focus on the 2003-2012 period in which the market was very active. Also, this interval lasts the same number of years as the 1992-2001 cycle, which facilitates the comparison of aggregate amounts across time.

The figure also shows the price level in constant dollars of 2014 (measured on the right axis). During the first decade, the average price was 1,139 dollars per square meter, while it was 1,483 during the second decade, for a 30 percent increase.

Figure 2 shows the flow of savings to the real estate sector for each year from 1992 to 2014. The increase across decades is striking: from 1992 until 2001, an average $1.3 billion flowed to the real estate sector each year, while from 2003 until 2012 that figure was $2.3 billion—almost 80 percent higher.[4]

Figure 3 benchmarks this substantial increase with the 70 percent reduction of time deposits at banks that took place across the two decades. Indeed, from 1992 until 2000, time deposits at banks rose by an average of almost $7.6 billion per year, while from 2003 until 2012 they rose by an average of $2.2 billion per year, a 70 percent reduction.[5] In comparison, during the first period, for each dollar that went to real estate, about six dollars went to new time deposits. During the second period, for each dollar that went to real estate, only 99 cents went to new time deposits.

In interpreting these figures, one has to bear in mind that money flows into real estate represent only the City of Buenos Aires, while the increase in time deposits pertains to the banking sector of the whole country. As a reference, the City of Buenos Aires accounted for about one-quarter of national GDP during both periods. So, if real estate investments were distributed across the country pari passu with GDP, money flows to the sector would be $5 billion during the first decade (67 percent of new time deposits) and $9 billion during the second decade (four times the amount of new time deposits during this latter period).

These data are consistent with the conjecture that the relative attractiveness of banking vs. real estate as an outlet for family savings changed dramatically across the two decades in the sample.

[4] In the discussion of empirical findings, we focus on comparing the decade from 1992 until 2001 with that from 2003 until 2012. This is done for three reasons. First, we want two periods of equal length, so that when we sum the flow of funds by interval, we are using periods of equal length. Second, we are missing data for 2014 for a few series (e.g., national accounts data). Third, the real estate market is in a recession since 2013. Therefore, it would be inappropriate to interpret offer prices (discounted by 25 percent as we do) as true transaction prices at which the market would clear, as we implicitly do when inferring that the product of meters built times the price per square meter is the flow of funds into the sector.

[5] We exclude the year 2001 from the first decade because that was the year of the bank run at the end of Convertibility. Time deposits fell by $32 billion in 2001 and by $24 billion in 2002.

Figure 4 performs an alternative benchmarking, using data from national accounts. In this case, the blue line shows the ratio of money flows to real estate divided by national gross private sector savings and shows an increase across decades of 60 percent in the ratio. The red line uses gross private savings imputed to the City of Buenos Aires (see Section 2 for sources of information and data construction). The share of savings going to our measure of money inflows to the real estate sector went from 8.4 percent of city GDP in 1992-2001 to 13.3 percent in 2003-2012.

Figure 5 allows a closer look at the sources of the rise in money flows to real estate in the two periods. The x-axis measures the total volume of new construction in both decades: 11.2 million square meters in 1992-2001 compared to 14.2 million in the second decade, a 27 percent increase. The y-axis shows the average price during each decade, weighted by the volume built each year: it goes from $1,135 per square meter in the first decade to $1,588 in the second decade, a 40 percent increase. Compounding both factors, total inflows into the real estate sector grew by 78 percent, a result of an increase in the amount built but also of a price effect. Again, prices are in constant dollars of 2014 to clean out the potential effects of U.S. CPI inflation.

If indeed real estate investments are used as a store of value as conjectured in this paper, one should observe that new constructions acquire characteristics of other assets used to that end. Two such characteristics are divisibility and safety. We next analyze to what extent new buildings have been adapted to acquire these traits.

Figure 6 shows the share of new permits for studio or one-bedroom houses.[6] During 1995-2001, an average of 44 percent of new construction filings were for such smaller units. During 2003-2012, the average was 66 percent. In a nutshell, there was a 50 percent increase in the relative demand for such small units between the two periods.

Finally, Figure 7 shows the fraction of new permits corresponding to luxurious houses. The average ratio went from 27 percent in the first period to 41 percent in the second one. To summarize, there was a 51 increase in the demand for such fancy units across the two periods considered.

This evidence is consistent with the hypothesis that families are using real estate as an investment vehicle. Three reasons support this claim. First, anecdotal evidence indicates that the

[6] The data for Figures 6 and 7 only start in 1995, so we cannot strictly compare the two decades that we compare in the other graphs.

prices of more luxurious houses fell by a lower percentage in the 2001 crisis than those of lower-quality houses, so they have a lower downside price risk. Second, renting a more luxurious house targets a customer base that presumably has lower credit risk than the customer base for houses of lower quality. Third, investors know that, in the end, their real estate possessions will be inherited by their successors. It is natural to think that investors have more wealth than the average population and thus prefer higher-quality houses for this reason as well.

In summary, the data in Figures 6 and 7 are consistent with the demand for new construction since 2003 having a larger share of investors as opposed to future inhabitants of those houses.

Moisés Altman (2015), one of the most experienced developers in Buenos Aires, aptly summarized this situation in a column in in *La Nación*, Argentina's main intellectual newspaper: "Given that there are no mortgage loans, construction projects seem to be targeted to investors. And this group, given the negative real rate of banking time deposits, bought real estate…. Hence, the quality and comfort for living of the new houses took second stage."

4. The Market's Response to the Increased Supply: Vacancy or Rental Price Reduction (i.e., Quantity or Price Adjustment)?

4.1 Motivation and Hypotheses

In Section 3 we documented that 27 percent more squares meters were built during the decade starting in 2003 than during the decade beginning in 1992.[7] Furthermore, the number of houses grew from 1.21 million in 1991 to 1.43 million in 2010, an 18 percent rise. By contrast, the population of the city fell slightly from about 3 million in 1991 to 2.9 million in 2010 (INDEC 1991, 2010). How did the market react to the increased supply?

Figure 8 shows that home sale prices have not fallen to accommodate the new supply, but rather the contrary. So we can rule out the possibility that the increase in supply made the price of houses fall to clear the market for property sales.

If indeed families used the real estate sector as a long-term savings instrument, they would either offer the new houses in the rental market so as to generate income, or they would keep them vacant if they feared that a change in rental regulations might hurt them. So, high vacancy rates could indicate that the rental market price lacks sufficient flexibility to clear supply

[7] Average annual construction in the 12 years starting in 2003 was actually 50 percent greater than in the decade starting in 1992.

and demand (i.e., the analog of "unemployment" in labor market parlance), or it could indicate that owners do not wish to offer their units on the market (i.e., the analog of "not in the labor force").

The 2010 national census reported that 24 percent of houses in the city were vacant at the time, a total of about 340 thousand homes (INDEC, 2010: Cuadro V1-P). This prompted important politicians to advocate for levying a tax on vacant houses as a means to induce landlords to offer such houses for rent, thereby reducing rental rates and the housing deficit. The list of sponsors of this initiative included Economy Minister Axel Kicillof (*Clarín*, 2015), and two candidates for mayor of Buenos Aires: Mariano Recalde from the Peronist party (Infonews, 2015) and Claudio Lozano from one of the opposition coalitions (Unidad Popular, 2015).[8]

These high vacancy rates contrast with much smaller figures prevailing in other major cities. The vacancy rate was 10 percent in Santiago, Chile in 2012 (Instituto Nacional de Estadísticas 2013), 7 percent in Sao Paulo in 2010 (Instituto Brasileiro de Geografia e Estadística, 2010), and 8 percent in Mexico City in 2012 (Consejo Nacional de Población, 2012). In developed countries, vacancy rates are within a similar range. In London, empty homes represented 2 percent of the total dwelling stock in 2012 (Greater London Authority, 2014), while they were 5 percent in New York City (Guamer and West, 2015), 9 percent in Madrid and 11 percent in Barcelona (Alquiler Seguro, 2014).

Figure 8 illustrates the situation. Assume that the market is initially in equilibrium at point A. The increase in the stock of houses built and potentially offered in the rental market is shown by the shift to the right of the vertical blue line from q_0 to q_1.[9] If rental prices are rigid, or if owners chose to leave their new houses unoccupied, there would be an increase in vacancy and the economy would move to point B. Alternatively, there could be a fall in rental rates from p_0 to p_1 that would make the market clear at the new level of supply and the economy would move to point C.

[8] In spite of the seemingly generalized acceptance that the vacancy rate in Buenos Aires is so high, alternative sources do not validate this figure. In fact, Instituto de Vivienda de la Ciudad (2014: 2) suggests that there is a methodological problem with the national census figure. According to this other source, the vacancy rate is 24 percent if one considers vacant the houses that are presumably occupied but whose dwellers were absent when the census officer visited them. If one declares such houses occupied, then the vacancy rate is 13 percent in 2010, 15 percent in 2001 and 12 percent in 1991. Our computation of vacancy from electric consumption records will resolve the issue.

[9] If such new houses were effectively offered for rent, the blue line would be the short-term supply. But it would not have that interpretation if landlords chose to leave the new houses vacant.

The following hypotheses seem natural if we think that the economy is at a point like B:

1. In line with census data, we should also find a vacancy rate around 25 percent when measured from household electricity consumption records.[10]
2. Cross-sectional vacancy rates should be higher for newer apartments, which are the ones in which investors recently parked their money as a means of saving for the long term.
3. If houses are increasingly used as a store of value rather than purchased by the people who want to live in them, we should observe in the time-series dimension that just-built properties of later cohorts remain vacant for longer periods of time than those of earlier cohorts.

To analyze these hypotheses, this section estimates the vacancy rate from 2003 until 2014 using a high quality micro-data set of electricity consumption by house. We next present the methodology, then show the results and discuss whether vacancy is high or whether rental prices have fallen. The section ends by estimating the welfare loss that the economy is incurring from investing funds in low-return real estate assets as opposed to alternative higher-return allocations.

4.2 Methodology

We use a database provided by Edenor, with electricity consumption for each of its residential clients in the Ciudad Autónoma de Buenos Aires (CABA) in every bimester from 2003 to 2014 and the meter's installation date. According to the Energy Secretariat, the CABA has about 1.4 million residential electricity customers, of which roughly one-third are served by Edenor, while the rest are served by Edesur. As shown in Appendix Figure A.1, the sample went from about 360 thousand at the beginning to about half a million customers at the end, a 39 percent increase in 12 years (2.8 percent compound growth per year).

Appendix Figure A.2 shows the area of CABA served by Edenor. This is the most affluent and also the most densely populated part of the city. It is also the most active market for real estate transactions. If indeed real estate investments were made mostly to be held as long-term investments by their landlords (as opposed to be owned by their residents), then the area of

[10] The city is politically divided into "communes," and the census provides a breakdown of total and vacant houses by commune. The national census vacancy rate is 25 percent in the communes served by Edenor.

the city served by Edenor is precisely where one would expect the consequences discussed above to be most prevalent.

As a general rule, we declare the birth date of a dwelling to be the meter's installation date. However, in some cases of houses where the meter was installed after 2002, the first positive consumption happens before the date on which the meter was supposedly installed. In these cases, we declare the bimester of first consumption to be the dwelling's birth date.

Another case of measurement error in the original data is that of dwellings that report either zero consumption or an empty consumption record (no data) in a given bimester in spite of having substantial consumption both before and after that bimester.[11]

In the benchmark specification, a dwelling is considered vacant if it consumed less than 43 kilowatt hours (kwh) in the bimester. This number was suggested by industry specialists and is approximately the unconditional mean of the more refined cutoffs used in the robustness checks discussed below. The vacancy rate for bimester *t* is,

$$Vacancy\ rate_t = \frac{\#\ houses\ with\ consumption\ < cutoff\ in\ bimester\ t}{\#\ houses\ born\ up\ to\ and\ including\ bimester\ t}$$

After computing vacancy rates for the whole population, we repeat the calculation classifying houses in different age groups as follows. Newborns are dwellings up to one year old, Children are houses between one and up to four-years-old, Youngsters are customers between four and up to seven-years-old, and Adults are residences aged more than seven years. Appendix Table A.1 reports the number of houses in each age group at the end of each year. On average, 82 percent of Edenor customers are Adults, 8 percent are Youngsters, another 8 percent are Children and 3 percent are Newborns. On average, the area served by Edenor has each year absorbed about 12,000 new houses during the sample period.

Figure 9 shows the speed of occupation of new houses that were born after the start of our sample, and it is useful in defining the Newborn group. The figure shows the share of new houses that are occupied by a given age, measured in months along the horizontal axis. In this case, we define occupation as having a consumption level above the vacancy threshold for one full semester. The figure shows that about 10 percent of houses are occupied immediately upon birth. By month three, one-half of the new houses are already occupied, and by a full year 92

[11] As shown in Figure 10, two bimesters in the sample display acute problems of this kind: the last bimester of 2012 and the third of 2014, with vacancy rates of 31 percent and 9.1 percent, respectively.

percent of houses are occupied.[12] So, while new houses may display higher vacancy right after birth, it seems that they converge to the population mean by the time that they are one year old.

4.3 Results

4.3.1 Vacancy

Figure 10 shows the evolution of the vacancy rate for the whole population. The average vacancy in the sample is 6.3 percent. Moreover, if we exclude the two bimesters with obvious measurement error, the average vacancy drops to 5.9 percent. There is no clear tendency for vacancy to either rise or fall over the sample. These findings contrast sharply with the 25 percent vacancy figure from the census and clearly reject hypothesis 1 in Section 4.1. Moreover, the more precise vacancy rate computed here is in line with average values in other major metropolitan areas discussed above.

Perhaps the average vacancy rate is low, but it results from mixing many old houses with very low vacancy with a few newer houses with much higher vacancy. Thus, we next explicitly measure the vacancy rates for houses of different age groups. Figure 11 shows the results. Indeed, Newborn houses have an average vacancy rate of 26 percent. Given the evidence above that new houses take a full year to reach the steady-state vacancy rate, we interpret this to be a frictional (as opposed to structural) vacancy.

Houses in the other age groups display very similar vacancy rates among themselves and significantly below those of the Newborns. The average vacancy rate for Children, Youngsters and Adults is about 5.2 percent, and it is quite stable.[13] Strikingly, this figure is very similar to the vacancy rate for New York City noted above. If anything, the houses that one would expect to be used as a primary means of saving for the long-term (Children and Youngsters) have *lower* vacancy rates than Adults, not *higher*. None of the four series show a secular rising or decreasing trend. Therefore, hypothesis 2, that newer houses would have higher vacancy rates, is also clearly rejected by the data—once one takes into account the higher frictional vacancy of Newborn houses.

[12] In this figure, the 25th month adds the observations of houses that took more than two years to become occupied and those that were never occupied during the sample period.

[13] As noted above, there is severe measurement error in the original data during the last bimester of 2012 and the third bimester of 2014.

Figure 12 studies hypothesis 3, i.e., whether houses built later in the sample remain vacant for longer periods of time than houses built just after 2003. To this end, we group new houses depending on their year of birth: the first group is made of houses born in 2003 and 2004, the second group is houses born from 2005 until 2007, the third group is houses born from 2008 until 2010, the fourth group is houses born in 2011 and 2012. These partitions approximately correspond to different phases of the Argentine business cycle over the sample period. The second and third groups tally with periods in which the economy was growing strongly, while the first and fourth group match periods of more moderate growth (2011-2012) or recovery from a very deep recession (2003-2004). The figure shows that the progression of occupancy rates is notably similar for all groups. For instance, by the third month since the meter was installed, about one-half of the new houses are occupied, no matter when they were built. One year after meters were installed, between 91.6 percent and 92.8 percent of houses are occupied. In a nutshell, hypothesis 3 is also strongly rejected by the data.

To summarize, we postulated three hypotheses implied by the notion that new houses are used as long-term investment vehicles and left vacant. The close scrutiny thereof allowed by our micro-data strongly rejected all of them. Therefore, the market did not respond to the increased supply by moving from point A to B in Figure 8. The next possibility is that of a rental price adjustment (point C), which we turn to now.

4.3.2 Reduction of Rents

Figure 13 shows the ratio of the house rental price component of the consumer price index (CPI) to the CPI's general level from 1992 until 2015. The long (red) series is from the national statistical office, INDEC, and it is normalized to equal 1 from 1992 until 2001. For the 2003-2012 period, the average ratio is 0.77 according to the average of official and private figures, so real rents were about 23 percent lower during this time than in the previous decade.[14] After the intervention of INDEC in 2007 we show three measures of the ratio from alternative private providers. As of September 2015, the average ratio among these three sources is 0.56, which compares to 0.62 by INDEC. So, at the end of the sample, rents have fallen by about 40 percent in real terms compared to their average value during 1992-2001.

[14] If the underestimation of inflation by INDEC were uniform across the different components of the CPI, then it would cancel out and the ratio would still give accurate information.

The thick green line (measured on right-axis) reports the real value, in October 2014 pesos, of the monthly rent of a sample apartment in the Barrio Norte district of CABA from Reporte Inmobiliario (2014). Real rents went from a low of about 4,500 pesos in the 2002 crisis to a high of about 8,500 pesos in 2007, and they rebound to about 5,200 pesos at the end of the sample. In summary, both measures in Figure 13 show a substantial fall in real rents since 2003 compared to the previous decade.

Furthermore, Reporte Inmobiliario computes every year the expected yield to maturity in dollar terms of an investment in their sample apartment mentioned above. The computation of this yield assumes that the apartment is rented during 10 years after purchasing it, and that the sale price at the end is the same in dollar terms as the purchase price at the beginning. The estimation also accounts for all expenses and transactions costs. Figure 14 reports the evolution of both the gross rental yield and the net internal rate of return of the cash flow stream just described. The average net yield from 1992 until 2001 was 7.1 percent per annum, while from 2003 until 2012 it was 2.9 percent. For several years now, this yield has hovered around the return on 10-year U.S. Treasury bonds. It is noteworthy that this fall in yield is not exclusive to the Buenos Aires market, and it has also taken place in major cities worldwide in part as a result of the abnormally low interest rates of the major reserve currencies. Be that as it may, at the end of the sample, the net yield is 1.5 percent per year. No other asset in Argentina is valued using a discount rate so low (Cruces, 2011).

4.3.3 Welfare Loss

Having established that the market has adjusted to the increased supply via a reduction in rental rates, and not via vacancy, we next estimate the welfare loss that the economy is experiencing by allocating its scarce capital to this very low return activity. Table 1 reports the results.

During the period from 2003 until 2012, a total of $22.6 billion flowed to the real estate sector (Figure 5). This table reports the annual income that such funds would generate from now on if invested at alternative rates ranging from 5 percent to 15 percent. As shown by Campos, Serebrisky, and Suárez-Alemán (2015: 31), this is a reasonable range for investments in Argentina and in Latin America in general. The welfare loss from the money sunk in real estate during the 2003-2012 decade is between $0.8 and $3 billion dollars per year. The higher end of this range amounts to a loss of 0.6 percent of GDP per year, and this is only considering the

capital city of Buenos Aires, which accounts for about one-fourth of the country's gross domestic product.

In summary, the welfare loss from mistrust in traditional investment vehicles, which induces households to channel their savings to the real estate sector, is very substantial. In closing, we would like to emphasize that the same society that once tinkered with property rights on real estate now respects them. This respect has been coupled with a dramatic reduction in the cost of capital. This example yields a clear lesson that vast amounts of capital can be forthcoming when the institutional environment protects investor rights.

4.4 Robustness

Since electricity is used for heating and cooling, we know that consumption depends on outside temperature. It could be the case that newer houses are more electricity-intensive than older ones. Therefore, using a uniform minimum consumption cutoff for the whole sample, as we do in the benchmark specification, could introduce measurement error into estimated vacancy.

We next run two robustness checks in which we compute vacancy consumption cutoffs that vary by bimester and by age-and-bimester. To illustrate this, it is useful to inspect Appendix Figure A.3, which shows a histogram of the distribution of consumption in a typical bimester. In the first robustness check, for each bimester we declare the minimum consumption cutoff to be the level corresponding to the first trough of the histogram. In the second robustness check, we perform essentially the same exercise but we separate histograms for houses in the different age groups.

Cutoffs that vary only by bimester fluctuate between a minimum of 30 and a maximum of 58 kwh per bimester (see Appendix Figure A.4). The median value is 42 and the average is 44, hence the value of 43 in the benchmark specification. There seems to be a slightly upward trend in the series, indicating that houses have become more electricity-intensive in recent years. There is also somewhat of a cyclical pattern in the cutoffs: the hot months (November through February have a mean cutoff of 50 kwh/bimester), while the late winter months (July through August) have the lowest mean cutoff at 39.5 kwh/bimester, and the months from March to June have an intermediate level 43.5.

Appendix Figure A.5 compares the evolution over time of the vacancy rate for the whole population from the benchmark specification with the new one that uses time-varying cutoffs.

While there are minor discrepancies related to the temperature pattern just noted, by and large the two metrics provide the same information: average vacancy rates in Buenos Aires are about 6 percent in the two specifications and there are no clear upward or downward trends in the series.

Cutoffs that vary by age-and-bimester fluctuate between a minimum of 22 and a maximum of 78 kwh/bimester (see Appendix Figure A.6). Newborn houses tend to have larger cutoffs, with a median value of 54 kwh/bimester compared to 46 for Adults and 42 for the other age groups. Appendix Figure A.7 reports vacancy rates by house age group using these finer cutoffs. Again, the key findings from the benchmark specification (Figure 11) stand firm. Newborn houses are subject to frictional vacancy of about 27 percent, while the other age groups have vacancy rates around 5 percent.

The robustness checks confirm that, by and large, vacancy rates in the area served by Edenor are within the normal range for major metropolitan cities worldwide.

5. Conclusions

Argentines trust no local investment asset as a vehicle for long-term saving—except for real estate. Although this has been true for the last 30 years, this divide has become even more pronounced since the banking and government bond default crisis of 2001-2002. Indeed, property rights on real estate assets have been respected with zeal since 1976, regardless of the ideology or political party of the ruling administration. As a contextual note, those same rights had been deliberately tampered with from around 1940 until 1976.

As one would expect, the result is that during the high growth years that started after 2003, Argentines devoted a substantial fraction of their savings to real estate. New buildings in the main cities mushroomed. According to our estimations, the Ciudad Autónoma de Buenos Aires real estate sector attracted almost 23 billion dollars from 2003 to 2012, which compare to about 13 billion from 1992 until 2001. By way of comparison, new time deposits in the whole country's banking sector were 68 billion from 1992 to 2000, and only 22 billion from 2003 to 2012.

According to the 2010 census, 24 percent of houses in Buenos Aires are vacant. This has prompted leading politicians to propose a vacancy tax to induce owners to offer them on the rental market. We use a high-quality dataset of individual household electricity consumption covering one-third of the city to re-estimate the vacancy rate. We find that vacancy is only 6

percent, much in line with the international standard for large cities. However, we find that the market has adjusted to the new supply by dramatically reducing real rental rates and rental yields.

At the end of the sample, the net rental yield from investing in real estate in Buenos Aires is about 1.5 percent per year, much less than the return on U.S. Treasury bonds. We conclude by estimating the welfare loss from allocating society's scarce capital to such a low-return activity. We interpret this figure as the flow cost of mistrust in traditional savings instruments.

References*

Alquiler Seguro. 2014. “Radiografía del Mercado de Alquiler.” Madrid, Spain: Alquiler Seguro. https://www.alquilerseguro.es/Portals/0/Radiograf%C3%ADa%20del%20Mercado%20del%20Alquiler%202014.pdf

Altman, M. 2015. “El Mercado, a la Espera de un Cambio.” Buenos Aires, Argentina: *La Nación*, April 18. http://www.lanacion.com.ar/1785323-el-mercado-a-la-espera-de-un-cambio.

Borka, M. 2004. “Locación Inmobiliaria: Un Recorrido por Más de 80 Años de Emergencia.” *La Ley*, Buenos Aires, Argentina, October 5.

Campos, J., T. Serebrisky and A. Suárez-Alemán. 2015. “Time Goes by: Recent Developments on the Theory and Practice of the Discount Rate Infrastructure and Environment Sector.” Technical Note IDB-TN-861. Washington, DC, United States: Inter-American Development Bank.

Ciudad Autónoma de Buenos Aires (CABA). 2014. “2001-2011 Construcción en la Ciudad de Buenos Aires.” Secretaría de Planeamiento, Ministerio de Desarrollo Urbano. Buenos Aires, Argentina: CABA. http://www.ssplan.buenosaires.gov.ar/news/construcción_10anios.pdf.

Ciudad Autónoma de Buenos Aires (CABA). 2015. “Superficie cubierta (m²) de construcciones nuevas y ampliaciones por destino y tipo de obra. Ciudad de Buenos Aires. Años 1995/2014.” Buenos Aires, Argentina: Dirección General de Estadística y Censos. Series in the file called ED01.xls, available at: http://www.estadisticaciudad.gob.ar/eyc/>Banco de datos>Buscador>Construcción y edificación - Series históricas edificación – Desde 1995 – Total ciudad > Superficie cubierta (m²) de construcciones nuevas y ampliaciones por destino y tipo de obra.

Clarín. 2015. “Kicillof Dice que Quiere Regular los Alquileres.” Buenos Aires, Argentina: *Clarín*, July 30. http://www.ieco.clarin.com/economia/Ministro_de_Economia-Axel_Kicillof-alquileres_0_1403259686.html.

Consejo Nacional de Población. 2012. “Base de Datos Sistema Urbano Nacional.” Mexico City, Mexico: Consejo Nacional de Población. http://www.conapo.gob.mx/en/CONAPO/Catalogo_Sistema_Urbano_Nacional_2012

* Downloads are as of October 2015, with the exception of Reporte Inmobilario (2014), downloaded on January 12, 2016.

Cruces, J.J. 2011. “Hay un Sector en Argentina que Consigue Capital al Mismo Costo que el Gobierno de Estados Unidos.” Buenos Aires, Argentina: Foro Económico. http://focoeconomico.org/2011/03/02/hay-un-sector-en-argentina-que-consigue-capital-al-mismo-costo-que-el-gobierno-de-estados-unidos/

Guamer, E., and S. West. 2015. “Selected Initial Findings of the 2014 New York City Housing and Vacancy Survey.” New York, United States: New York City Department of Housing Preservation and Development. http://www1.nyc.gov/assets/hpd/downloads/pdf/2014-HVS-initial-Findings.pdf

Greater London Authority. 2014. “Housing in London 2014.” London, United Kingdom: Greater London Authority. https://www.london.gov.uk/sites/default/files/Housing%20in%20London%202014%20-%20Final_1.pdf

Instituto Brasileiro de Geografia e Estadística (IBGE). 2010. “Censo Demográfico 2010.” Brasilia, Brazil: IBGE. http://www.ibge.gov.br/home/estatistica/populacao/censo2010/tabelas_pdf/total_domicilios_sao_paulo.pdf

Instituto Nacional de Estadísticas y Censos (INDEC). 2010. “Censo Nacional de Población, Hogares y Viviendas 2010.” Buenos Aires, Argentina: INDEC. http://www.censo2010.indec.gov.ar/resultadosdefinitivos.asp. (Cuadro V1-P, not available in the main document, can be accessed at: http://www.censo2010.indec.gov.ar/CuadrosDefinitivos/V1-P_Caba.pdf.

Instituto Nacional de Estadísticas y Censos (INDEC). 2001l “Censo Nacional de Población, Hogares y Viviendas.” Buenos Aires, Argentina: INDEC.

Instituto Nacional de Estadísticas y Censos (INDEC). 1991. “Censo Nacional de Población y Viviendas.” Buenos Aires, Argentina: INDEC.

Instituto Nacional de Estadísticas (INE). 2013. “Anexos al Informe Final Comisión Externa Revisora del CENSO 2012.” Santiago, Chile: INE. Available at: http://www.ine.cl/canales/chile_estadistico/censos_poblacion_vivienda/comision_investigadora/nacional/anexos_comision_externa_revisora-comision-nacional.pdf

Infonews. 2015. “La Propuesta de Recalde para las Viviendas Vacías.” Buenos Aires, Argentina: Infonews, April 16. http://www.infonews.com/nota/194924/la-propuesta-de-recalde-para-las-viviendas-vacias.

Instituto de Vivienda de la Ciudad. 2014. “Condición de Ocupación de las Viviendas en CABA.” Buenos Aires, Argentina: CABA, Instituto de Vivienda de la Ciudad. http://www.buenosaires.gob.ar/sites/gcaba/files/viviendas_vacias_en_la_caba.pdf.

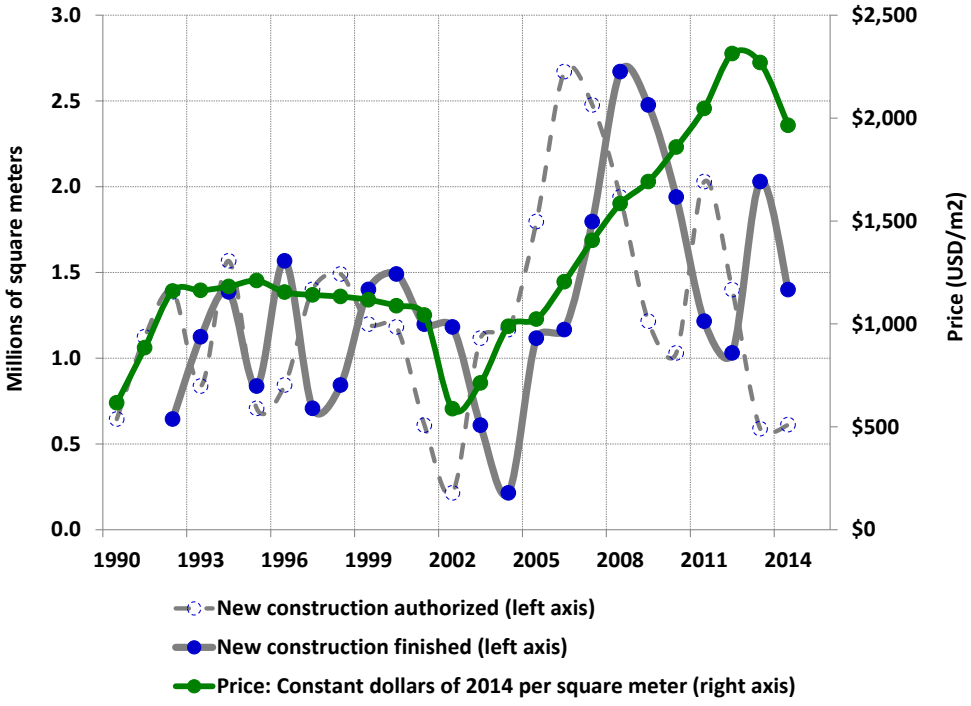
Reporte Inmobiliario. 2014. “Rentabilidad por Alquiler en Piso Histórico.” Buenos Aires, Argentina: *Reporte Inmobiliario*, November 17. Available at: http://www.reporteinmobiliario.com/nuke/article2839-rentabilidad-por-alquiler-en-piso-historico.html

Shiller, R.J. 2008. “Derivatives Markets for Home Prices.” NBER Working Paper 13962. Cambridge, United States: National Bureau of Economic Research. http://www.nber.org/papers/w13962.

Unidad Popular. 2015. “Claudio Lozano Dio una Charla en la Universidad Di Tella.” Buenos Aires, Argentina: CABA, Unidad Popular. April 22. http://www.unidadpopularcaba.org.ar/index.php/articulos/notas/2870-claudio-lozano-dio-una-charla-en-la-universidad-di-tella.

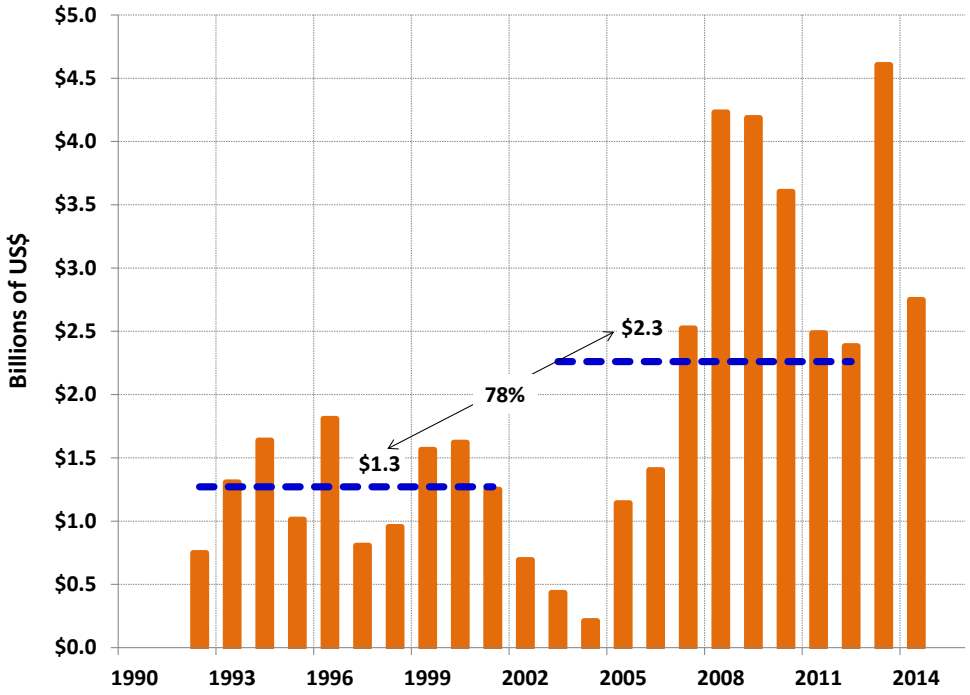
Figures and Tables

Figure 1. New Construction and Price of Real Estate



This figure shows the volume of new residential construction that was authorized by the City of Buenos Aires each year, the volume that was put on the market as finished construction each year and the average price per square meter of finished dwellings. During 1992-2001, new construction averaged 1.12 million square meters per year. During 2003-2012 that figure was 27 percent higher, 1.42 million. The increase in simple average price was slightly more important: $1,139 per square meter during the first period, compared to $1,483 during the second period, or a 30 percent increase. Prices are expressed in constant 2014 dollars.

Figure 2. Money Flows into the Real Estate Sector

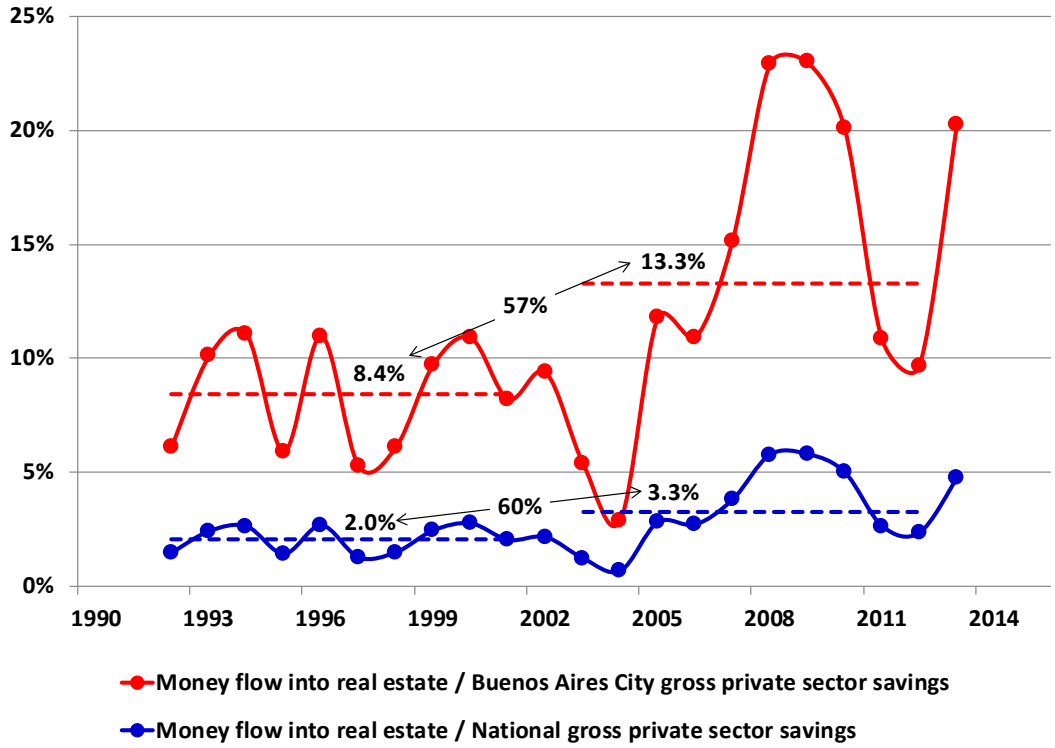


This figure shows the volume of new money channeled to the real estate sector each year, from 1992 until 2014. During 1992-2001, the average was $1.3 billion per year, while it was $2.3 during 2003-2012, an increase of 78 percent. Figures are in constant 2014 dollars.

Figure 3. Allocation of New Savings: Real Estate vs. Banks

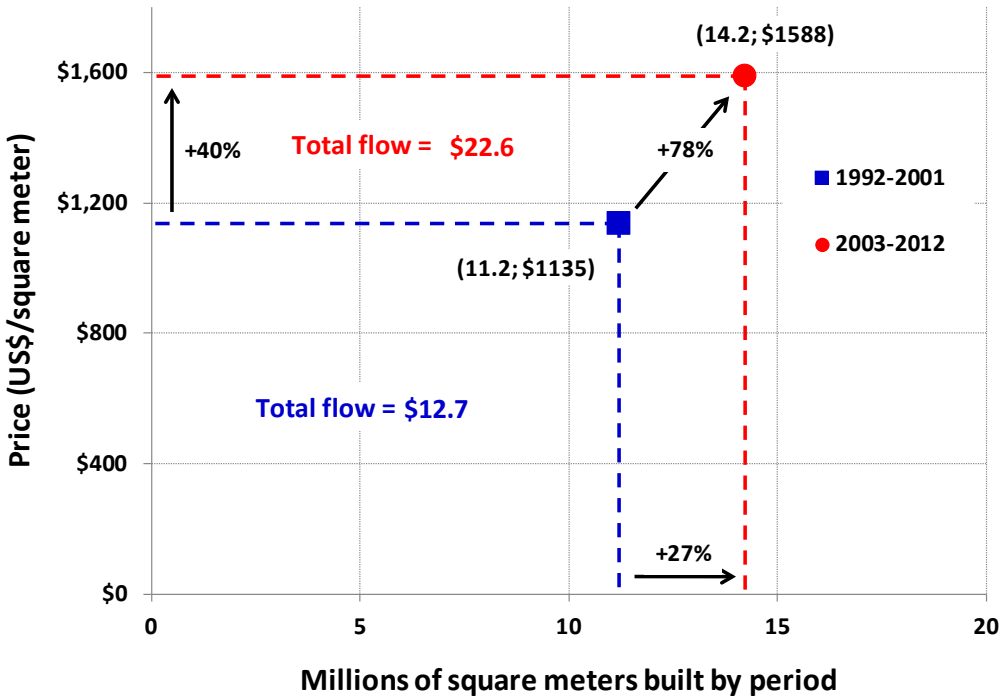
This figure compares the flow of new savings channeled to real estate with that invested in banks' time deposits. From 1992 until 2000, new time deposits at banks totaled $7.6 billion per year on average, while from 2003 until 2012 they were $2.2 billion per year, a 70 percent reduction. These figures compare with an increase of 78 percent in new savings channeled to real estate across the two periods. During the first period, for each dollar that went to real estate, about six dollars went to new time deposits. During the second period, for each dollar that went to real estate, only 99 cents went to new time deposits. Furthermore, it is noteworthy that flows into real estate only pertain to the City of Buenos Aires, while the increase in time deposits represents the whole country's banking sector. As a reference, the City of Buenos Aires accounted for about one-quarter of national GDP during both periods. All figures are in constant dollars of 2014. (Note: During the bank run of 2001 and 2002, bank time deposits shrank by $32 and $24 billion, respectively.)

Figure 4. Savings Channeled to Real Estate as a Share of City and National Savings



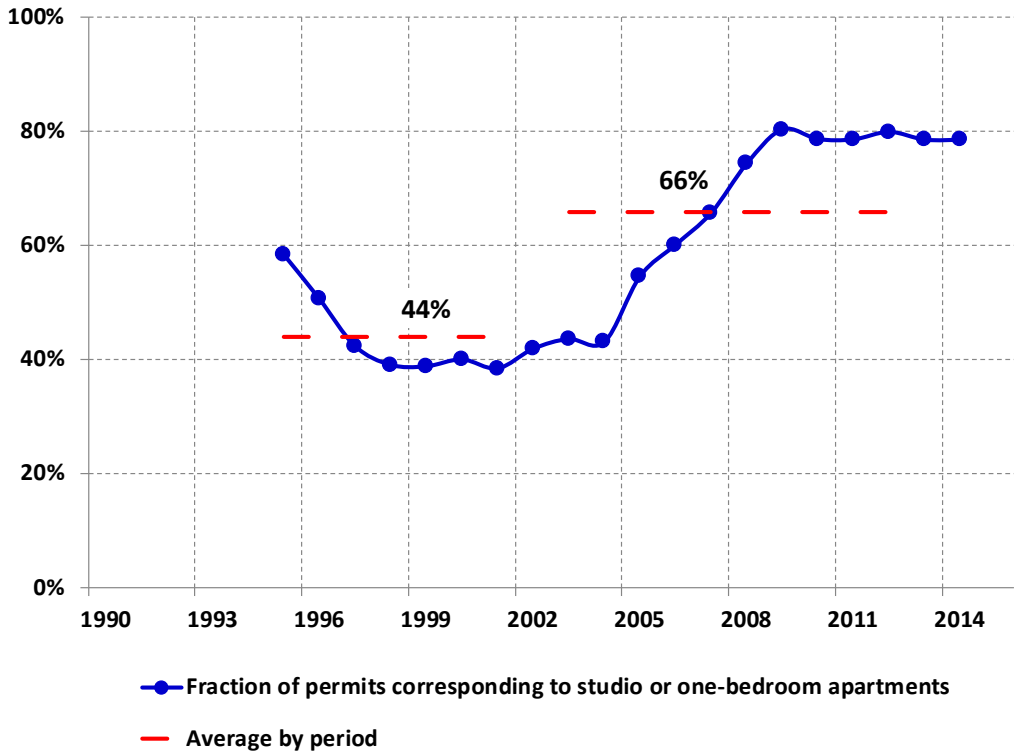
This figure shows the ratio of savings channeled to the real estate sector in the City of Buenos Aires to National private sector savings (from the national accounts) and to City private sector savings (adjusting National savings by the fraction of National GDP generated in the City). In both cases, the money flow into the real estate sector rises by about 60 percent, when comparing the period 1992-2001 with 2003-2012.

Figure 5. Sources of the Increase in Money Flows



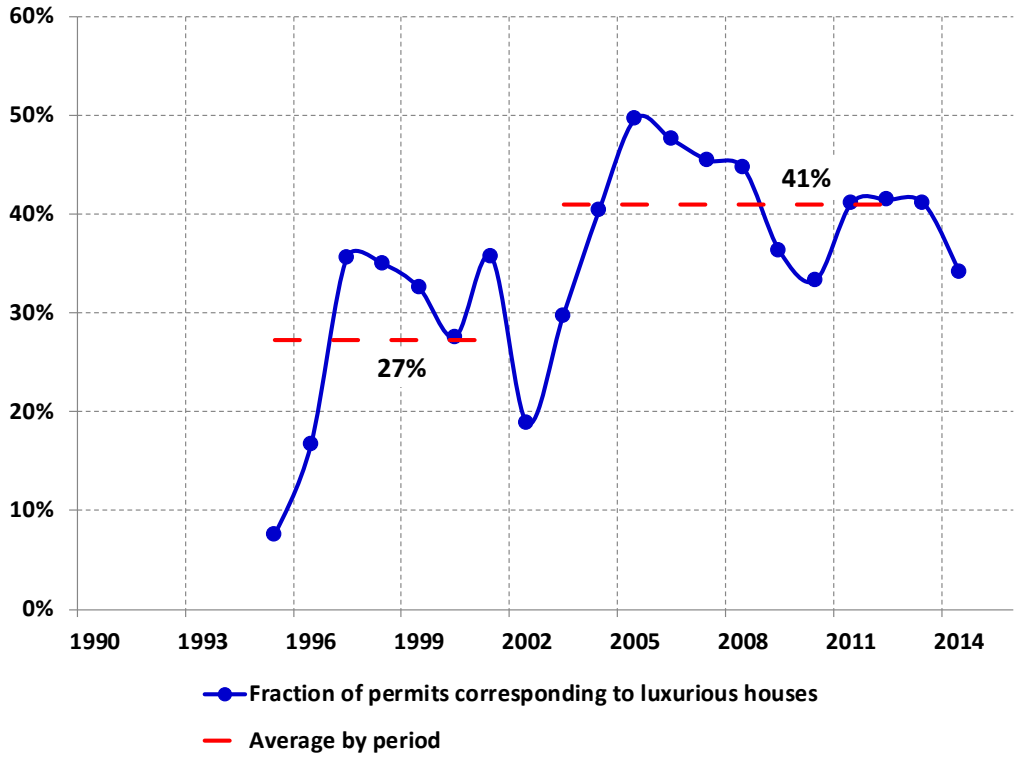
This figure shows the sources of increase in money flows to the real estate sector by comparing two decades: 1992-2001 and 2003-2012. Savings channeled to real estate amounted to $12.7 billion during the first decade and to $22.6 billion during the second decade (all amounts are in constant 2014 dollars). The 78 percent increase results from a combination of a 27 percent rise in physical construction and a 40 percent increase in real price. In this figure, the average price that we report is weighted by the amount of square meters built each year. This allows for the product of the coordinates of each rectangle to add up to the total flow in each decade from Figures 2 and 3.

Figure 6. Construction Permits for Studio or One-Bedroom Apartments



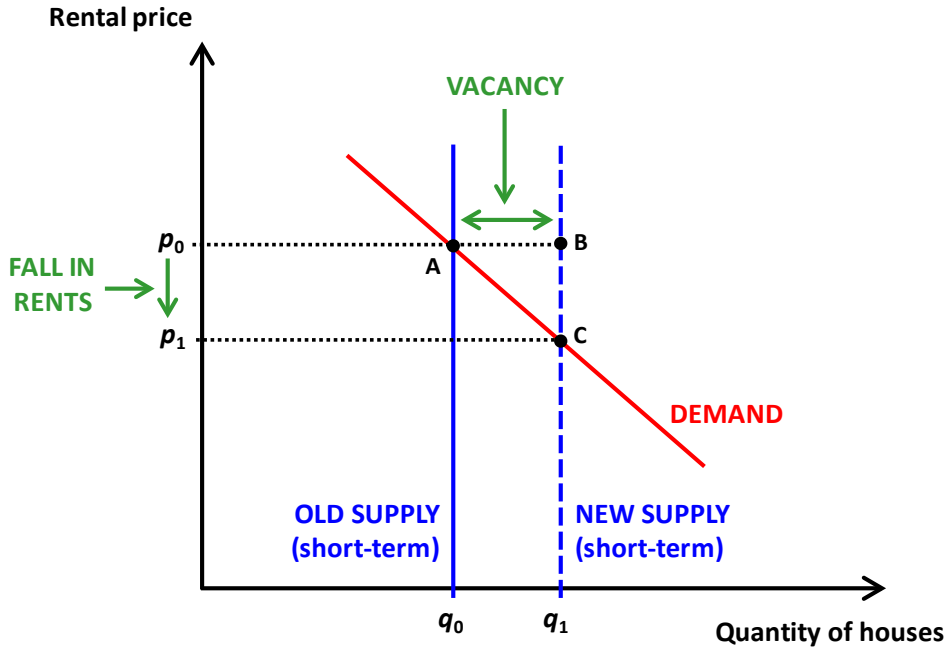
This figure shows the percentage of new home construction permits for studio or one-bedroom apartments. From 1995 until 2001, these units amounted to an average 44 percent of permits, while from 2003 until 2012 they accounted for 66 percent of permits, meaning that demand for such units rose by 50 percent across the two periods. One key characteristic of money is divisibility. In this case, since 2003 investors demanded smaller houses, which require lower minimum investment. This is consistent with the use of real estate as a store of value, a classic characteristic of money.

Figure 7. Construction Permits for Luxurious Houses



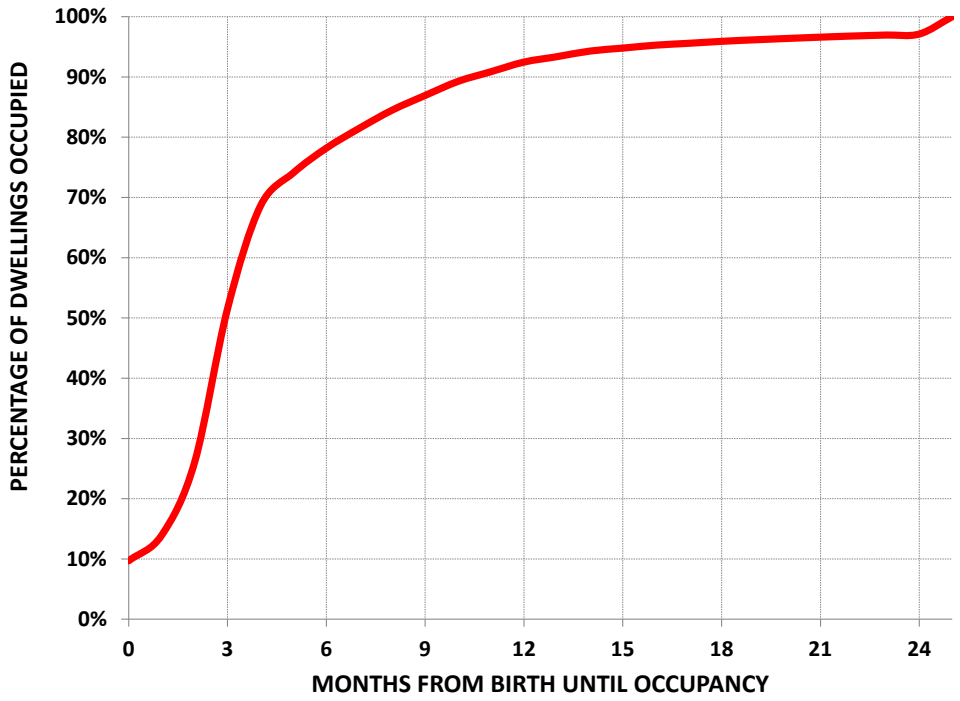
This figure shows the percentage of new home construction permits for luxurious houses. From 1995 until 2001, such houses amounted to an average of 27 percent of permits, while from 2003 until 2012 they accounted for 41 percent of permits. This is consistent with real estate being used as an investment vehicle for three reasons: i) anecdotal evidence indicates that the prices of more luxurious houses better resisted the 2001 crisis than those of lower-quality houses, ii) renting a more luxurious house targets a customer base that presumably has lower credit risk than houses of lower quality, and iii) as a last resort, investors could bequeath such houses to their heirs and thus would prefer higher-quality houses for that purpose as well. These data are consistent with the demand of new construction being dominated by investors as opposed to the future inhabitants of the houses whose construction permits were submitted to the City of Buenos Aires.

Figure 8. Possible Responses to an Increase of the Housing Stock



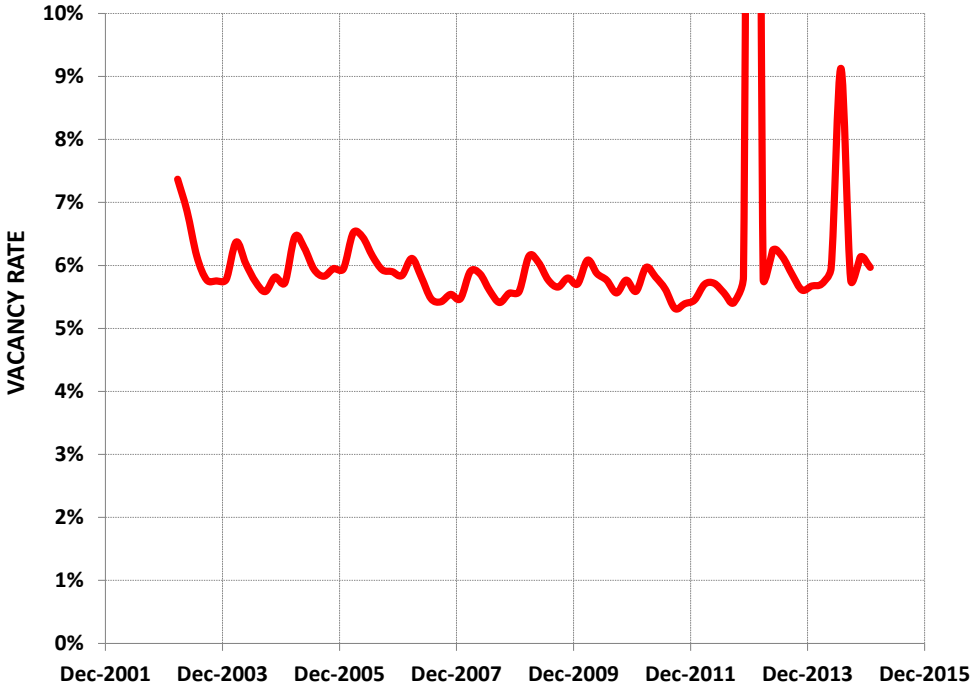
This figure is a standard supply and demand graph depicting the possible responses to the increase in the housing stock potentially offered in the rental market resulting from the increase in construction that took place since 2003 compared to the 1992-2001 period. The vertical lines represent the stock of housing offered in the rental market at a given point in time. The (red) demand function has the standard downward slope. We assume that the market is initially at the equilibrium depicted by point A. When the supply shifts outward, two possibilities arise. If prices are flexible, there will be a reduction in rental rates and the new units will become occupied, as indicated by point C. If prices are rigid, the market will not clear and there will be structural vacancy, as in point B. The 25 percent vacancy rate in the census suggests that the economy is at a point like B, in which there are vast amounts of capital sitting idle. By using individual house electricity consumption records, this study attempts to assess whether this is truly the case.

Figure 9. Speed of Occupation of New Houses
(Cumulative distribution function of age at which they are occupied for the first time)



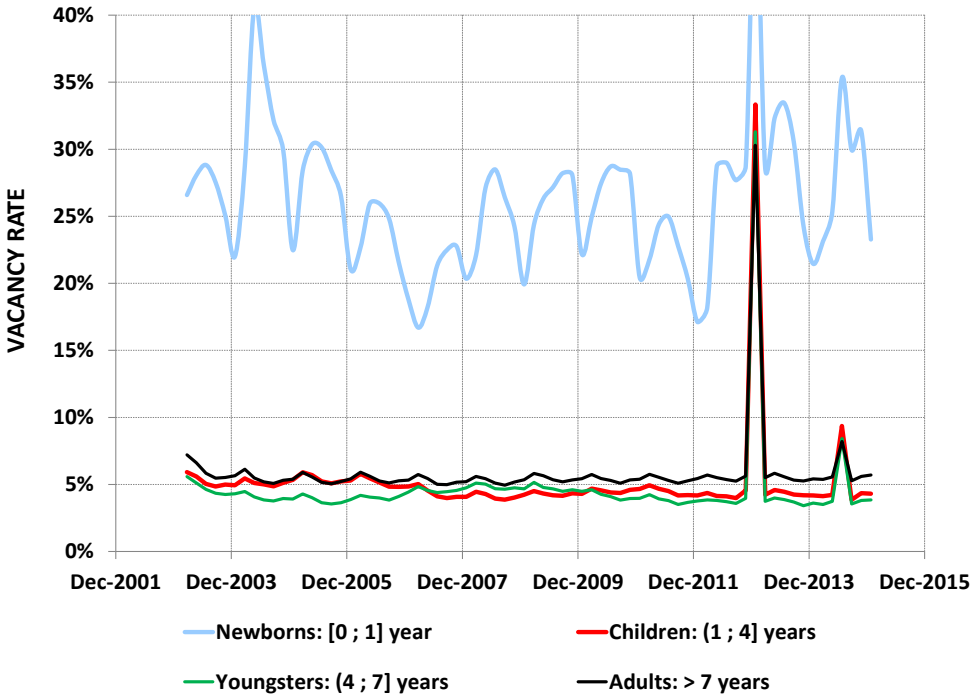
This figure reports the progression of occupation of new houses built after 2003 at each month from birth until they are two years old. The distribution is censored at month 25, so this month reports the sum of the units that were occupied after 24 months and those that were never occupied during the sample period. In this specification, we require a house's energy consumption to surpass the minimum consumption threshold during a full semester in order to classify it as occupied. Some 10 percent of houses are occupied immediately, about 50 percent are occupied within three months, and almost 80 percent are occupied by the end of the first semester. Some 93 percent of dwellings are occupied within the first year, and 97 percent are no longer vacant within two years. In this benchmark specification, the minimum consumption threshold is 43 kwh per bimester. In the robustness checks, we use varying minimum consumption thresholds but obtain very similar results.

Figure 10. Vacancy Rate per Bimester: Whole Population



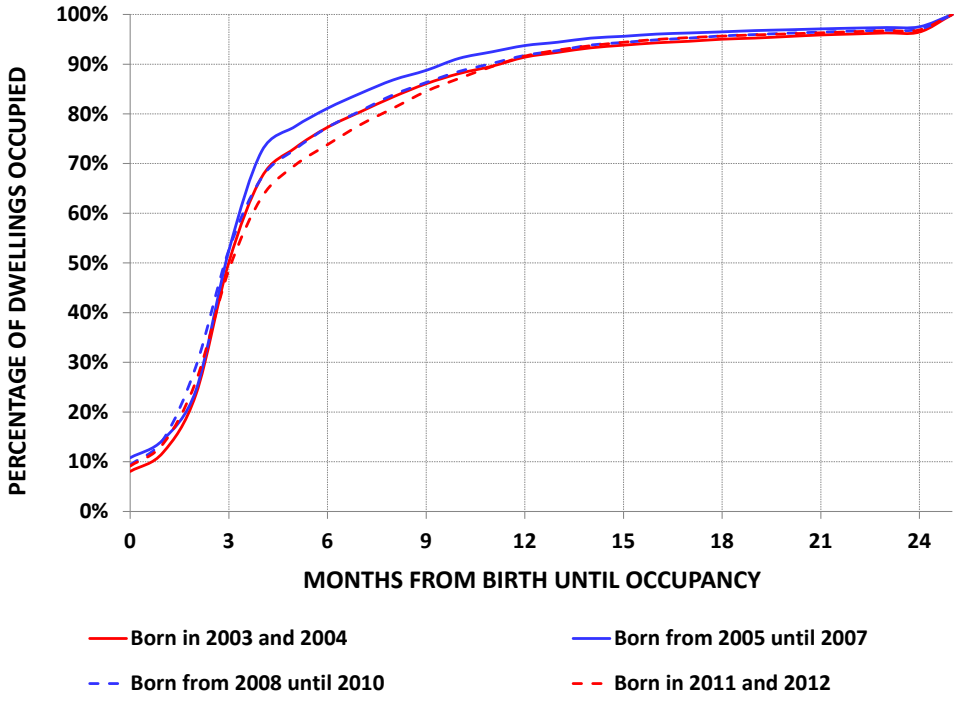
This figure shows the vacancy rate in the sample. In this benchmark specification, a dwelling is considered vacant if it consumed less than 43 kwh in the bimester. The 6 percent average vacancy contrasts sharply with the 24 percent vacancy figure from the census. (November-December 2012 and May-June 2014 are two very odd bimesters in which there appears to be pervasive measurement error; in the first case, about one-third of the customers report no consumption.)

Figure 11. Vacancy Rate by Age Group



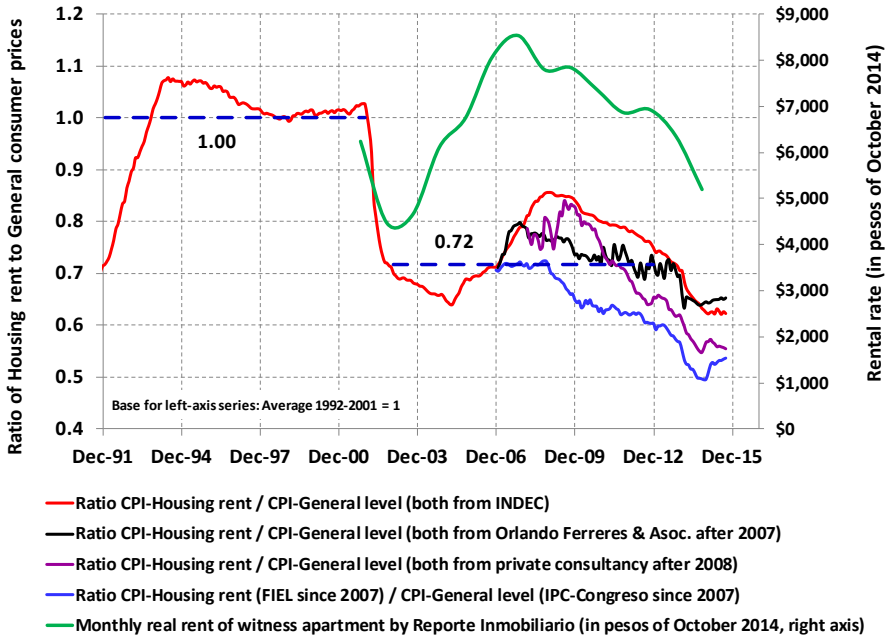
This figure shows vacancy rates for dwellings of different age groups. Newborn houses have an average vacancy rate of 26 percent. Given the evidence in Figure 9 that new houses take a full year to reach the steady-state vacancy rate of about 7 percent, we interpret this to be a frictional (as opposed to structural) vacancy. Houses in the other age groups display very similar vacancy rates among themselves and significantly below those of the Newborns. The average vacancy rate for Children, Youngsters and Adults is about 5.2 percent, and it is quite stable. (As noted in Figure 10, there is severe measurement error in the original data during the last bimester of 2012 and the third bimester of 2014.) If anything, the houses that one would expect to be used as a primary means of saving (Children and Youngsters) have lower vacancy rates than Adults. None of the four series show a secular rising or decreasing trend.

Figure 12. Speed of Occupation of New Houses by Year of Birth
(Cumulative distribution function of age at which they are occupied for the first time)



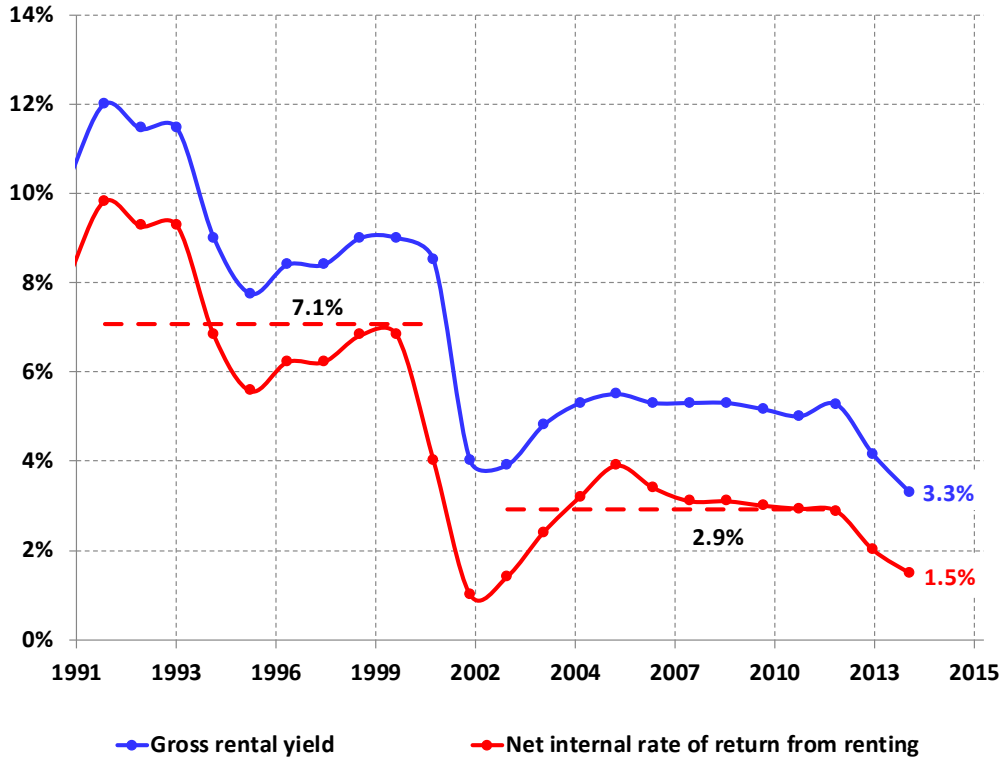
This figure shows the progression of the occupancy rate starting right after the electricity meter was installed and during the first 24 months of life. (The 25th month adds the observations of dwellings that took more than two years to become occupied and those that were never occupied during the sample period.) Occupation here is defined as consuming more than the minimum threshold for a full semester. The different lines correspond to different periods when the meters were installed. The partitions approximately correspond to different phases of the Argentine business cycle. The blue lines correspond to periods in which the economy was growing strongly, while the red lines correspond to periods of more moderate growth (2011-2012) or recovery from a very deep recession (2003-2004). The progression of occupancy rates is strikingly similar across periods. For instance, by the third month after the meter was installed, about one-half of the new houses are occupied, no matter when the house was built. One year after meters were installed, between 91.6 percent and 92.8 percent of houses are occupied. This figure rules out the possibility that dwellings built at any point along the sample period were left vacant and solely used as a store of value without producing rental income any more so than houses built during other periods of time.

Figure 13. Real Rental Rates



This figure depicts the ratio of the housing rent component of the consumer price index (CPI) to the general level of the CPI. It shows that real rental rates have been much lower since 2003 than they were during 1992-2001. The long series is from the national statistical office, INDEC, and it is normalized to equal 1 from 1992 until 2001. For the 2003-2012, average real rents were 28 percent lower than in the previous decade. If underestimation of inflation is uniform across the different components of the CPI, the ratio from INDEC would be unbiased even if general inflation is underestimated. We complement the INDEC figure with three alternative measures from private providers after 2007. As of September 2015, the average ratio among these alternative sources is 0.56, which compares to 0.62 using the official data. This means that, at the end of the sample, rents have fallen about 40 percent in real terms compared to their average value during 1992-2001. The thick green line reports the real value, in October 2014 pesos, of the monthly rent of a sample apartment in the Barrio Norte district that Reporte Inmobiliario publishes every year since 2001. Real rents went from a low of about 4,500 pesos in the 2002 crisis to a high of about 8,500 pesos in 2007, and are back to about 5,200 pesos at the end of the sample. This information, coupled with the fact that vacancy rates are in line with the international norm of about 6 percent suggests that the market's reaction to the increase in the supply of real estate since 2003 has been to reduce the price of rents as opposed to leaving houses vacant.

Figure 14. Investor Rental Yields on Real Estate



This figure shows that rental yields have fallen substantially during the last few years. The average net internal rate of return was 7.1 percent per year from 1992 until 2001, while it was 2.9 percent from 2003 until 2012. This information is in line with that in the previous figure indicating that the market has responded to the excess supply by reducing rental rates. At the end of the sample, the net rental yield is 1.5 percent per annum. The hike in real estate prices noted in Figure 1 has further compressed the rental yield.

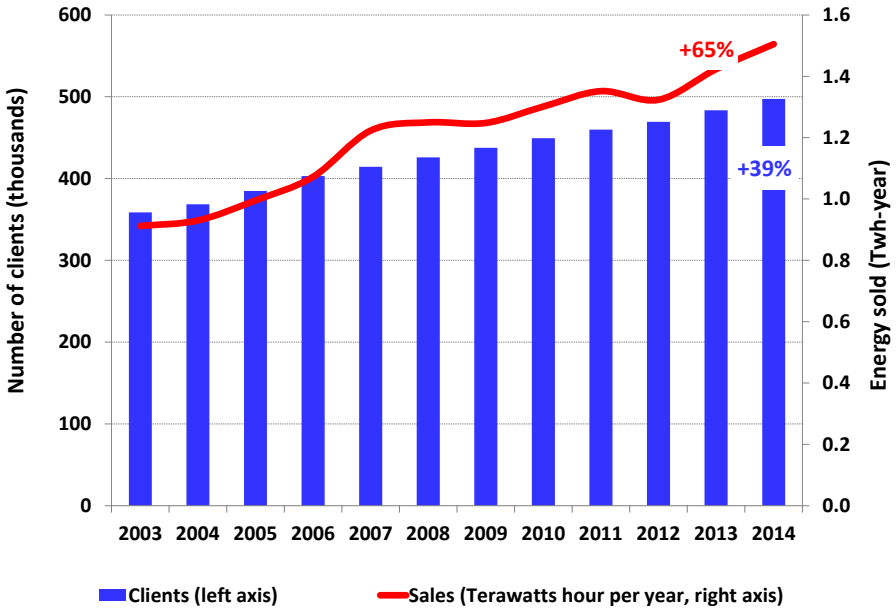
Table 1. Welfare Loss from Investments in Real Estate

Yield	Annual income	Welfare loss
1.5%	$0.34	--
5%	$1.13	$0.79
6%	$1.36	$1.02
7%	$1.58	$1.24
8%	$1.81	$1.47
9%	$2.03	$1.70
10%	$2.26	$1.92
11%	$2.49	$2.15
12%	$2.71	$2.37
13%	$2.94	$2.60
14%	$3.16	$2.83
15%	$3.39	$3.05

This table shows an estimate of the opportunity cost of channeling money into the real estate sector. During the period from 2003 until 2012, a total of $22.6 billion flowed to the real estate sector (see Figure 5). Such funds currently earn a yield of about 1.5 percent per annum (see Figure 14). This table reports the annual income that such funds would generate from now on if invested at alternative rates ranging from 5 percent to 15 percent. As shown by Campos, Serebrisky, and Suárez-Alemán (2015: 31), this is a reasonable range for investments in Argentina and in Latin America. The welfare loss from the money sunk in real estate is between $0.8 and $3 billion dollars per year. The higher end of this range amounts to a loss of 0.6 percent of GDP per year. To further put this figure in context, Argentina's conditional cash transfer program to the poor (Asignación Universal por Hijo) costs about $1.8 billion dollars per year.

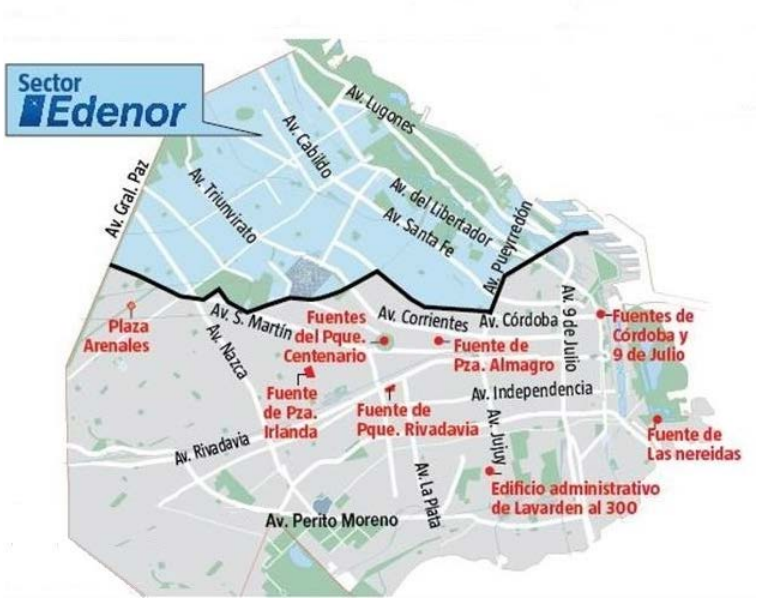
Appendix

Figure A.1. Edenor's Residential Market in the Autonomous City of Buenos Aires: Number of Clients and Energy Sales



This figure shows the total number of customers at the end of each year and the annual volume of energy sold to them. The sample is made of all residential clients served by Edenor within the Ciudad Autónoma de Buenos Aires (CABA) from 2003 until 2014. At the end of the sample, Edenor serves about half a million clients in the sample. The clientele rose by 39 percent, while sales rose by 65 percent during the sample period. Therefore, average consumption per client rose by about 20 percent from start to finish.

Figure A.2. Area of the Autonomous City of Buenos Aires Served by Edenor



CABA is the part of the Buenos Aires metropolitan area within the federal capital city limits. This map of the CABA shows in light blue the part served by Edenor. This is the most affluent part of the city, and it is also the one with highest population density. According to the Energy Secretariat, the City of Buenos Aires has about 1.4 million residential electricity customers, of which roughly one third are served by Edenor while the rest are served by Edesur. Edenor's part corresponds to the most active market for real estate transactions. If investors were using real estate as a store of value for the long-run and leaving their units vacant to avoid the risk that rental regulations might change to their disadvantage (as they did from 1942 until 1976), this area is precisely where one would expect this effect to be more prevalent.

Table A.1. Number of Residential Clients by Age Group

Year	Age group				Total
	Newborns	Children	Youngsters	Adults	
	[0 ; 1] year	(1 ; 4] years	(4 ; 7] years	> 7 years	
2003	6,295	28,013	28,078	296,173	358,559
2004	9,931	23,169	31,208	304,182	368,490
2005	16,392	22,766	31,326	314,347	384,831
2006	18,385	32,479	27,977	324,287	403,128
2007	11,276	44,465	23,167	335,390	414,298
2008	11,531	45,859	22,742	345,697	425,829
2009	11,669	41,079	32,479	352,264	437,491
2010	11,896	34,387	44,463	358,559	449,305
2011	10,515	35,014	45,811	368,439	459,779
2012	9,549	33,957	40,991	384,831	469,328
2013	14,180	31,869	34,281	403,128	483,458
2014	13,771	34,194	34,966	414,298	497,229
Average	**12,116**	**33,938**	**33,124**	**350,133**	**429,310**

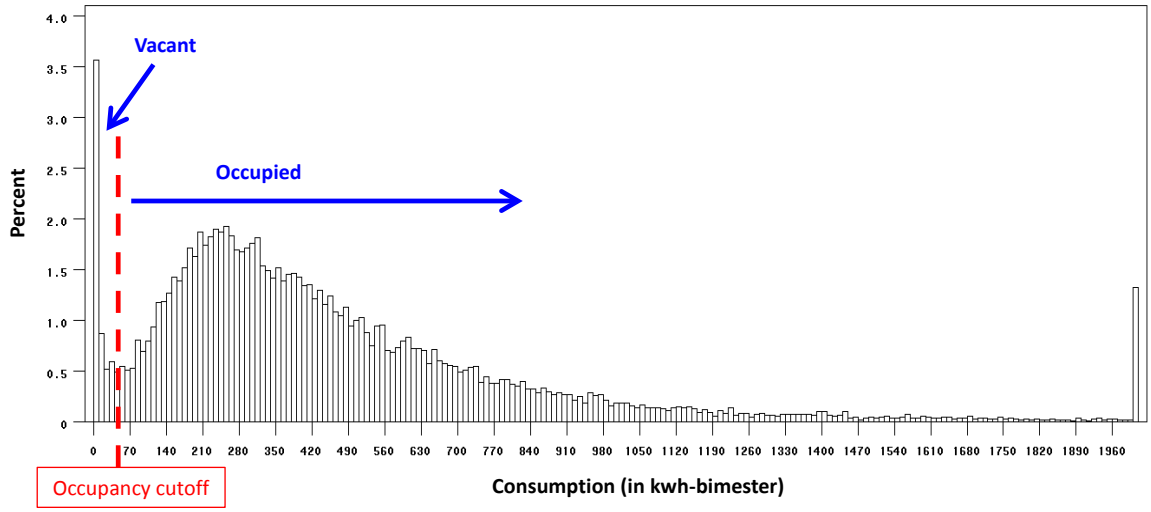
This table shows the number of clients at the end of each year, broken down by age group. The groups are: clients up to one year old (Newborns), clients aged between one and four years (Children), clients aged between four and seven years (Youngsters), and clients older than seven years (Adults). An average of 12,000 new houses became clients of Edenor every year. On average, 82 percent of the stock of houses in the sample belongs to the Adults group. Based on the evidence from Figure 9, the Newborns group is defined so as to capture the higher frictional vacancy rates that take place when new houses enter the market for the first time.

Table A.2. Number of Vacant Houses at the End of Each Year

Year	Age group				Total
	Newborns	Children	Youngsters	Adults	
	[0 ; 1] year	(1 ; 4] years	(4 ; 7] years	> 7 years	
2003	1,385	1,385	1,208	16,736	20,714
2004	2,232	1,240	1,220	16,399	21,091
2005	3,450	1,204	1,212	17,013	22,879
2006	3,458	1,576	1,243	17,264	23,541
2007	2,294	1,814	1,100	17,463	22,671
2008	2,297	1,939	1,063	18,481	23,780
2009	2,587	1,768	1,459	19,145	24,959
2010	2,432	1,603	1,766	19,313	25,114
2011	1,800	1,465	1,726	20,071	25,062
2012	4,766	11,322	12,831	116,572	145,491
2013	3,043	1,332	1,238	21,816	27,429
2014	3,205	1,476	1,345	23,654	29,680
Average	**2,746**	**2,344**	**2,284**	**26,994**	**34,368**

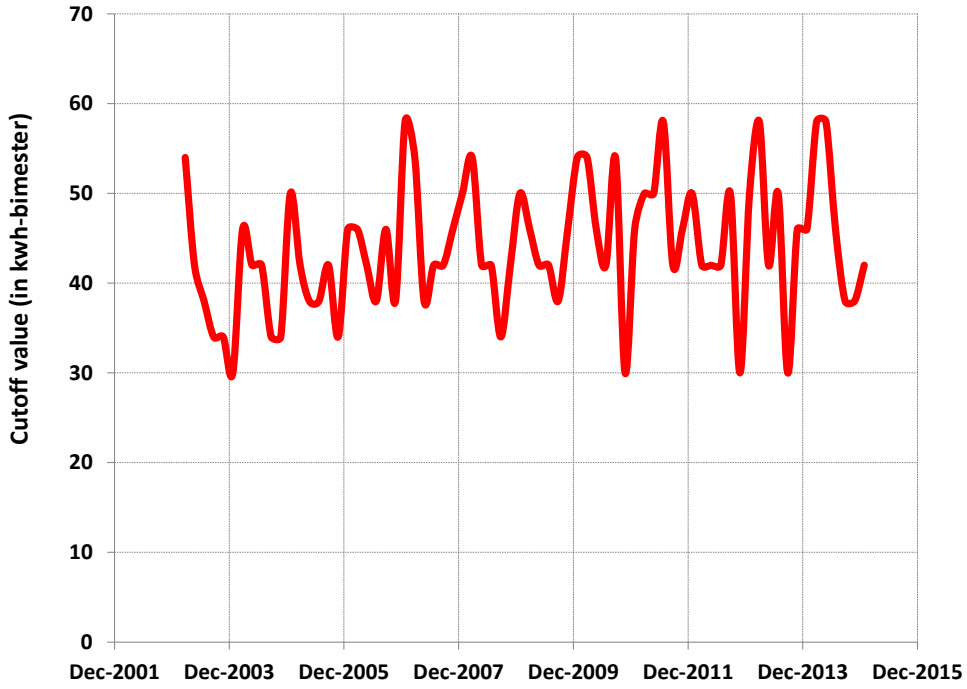
This table shows the number of vacant houses by age group at the end of each year. On average, about 34,000 houses are empty in the sample each year. This is substantially less than the 162,000 vacant houses recorded in census data.

Figure A.3. Computation of the Vacancy Consumption Cutoff
(Based on the consumption histogram in a bimester)



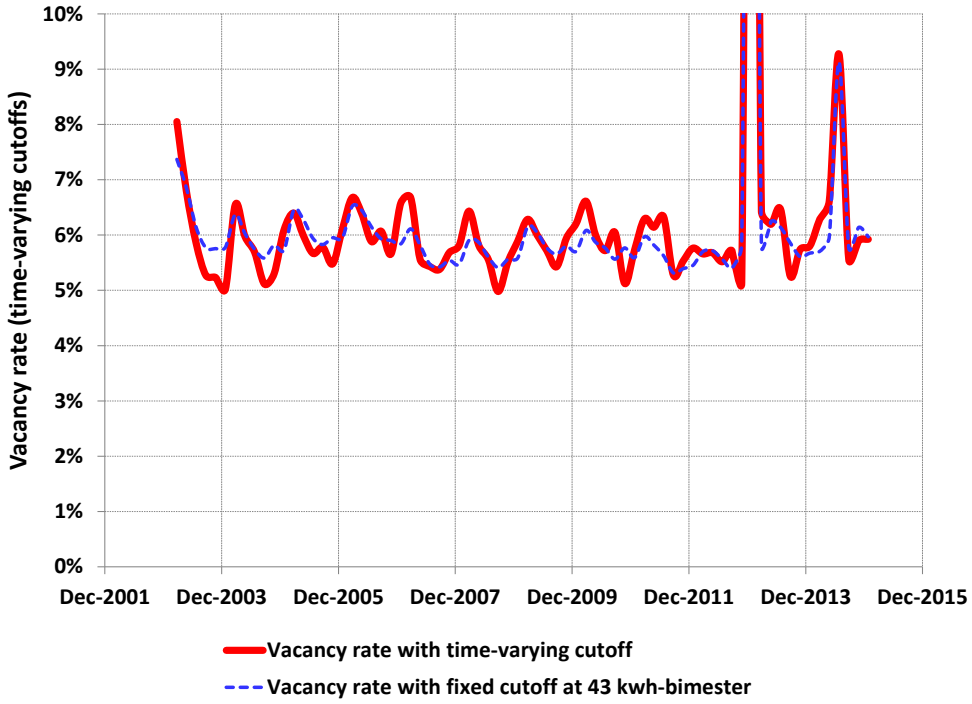
This figure shows a typical frequency distribution of consumption per bimester. In the robustness checks, we use such histograms to compute vacancy consumption cutoffs that vary by bimester and by age-and-bimester. The cutoff is the consumption level corresponding to the first trough of the distribution. Houses up to that level of consumption are declared vacant, while houses with more consumption are declared occupied.

Figure A.4. Evolution of the Vacancy Consumption Cutoff (Time-Varying)



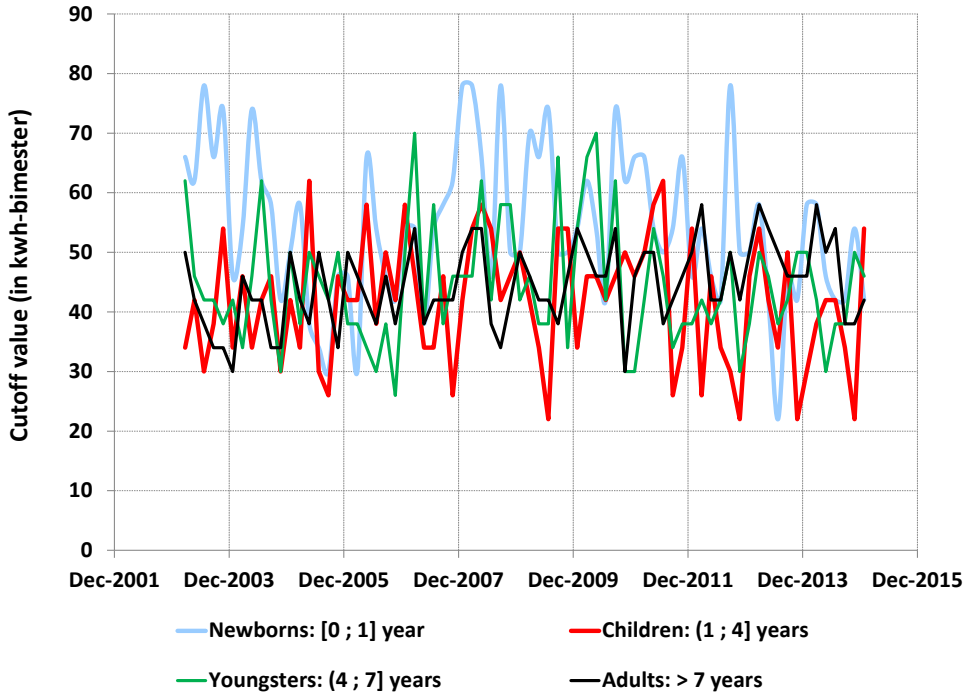
This figure shows the time series of the vacancy consumption cutoff. Cutoffs fluctuate between a minimum of 30 kwh per bimester and a maximum of 58. The median value is 42 and the average is 44, hence the value of 43 in the benchmark specification. Cutoffs tend to be greater in the hotter months of the year (average of 49 kwh-bimester from November until April) and lower in the colder months (average of 39.5 kwh-bimester from July through October).

Figure A.5. Vacancy Rate per Bimester Using Time-Varying Vacancy Cutoff



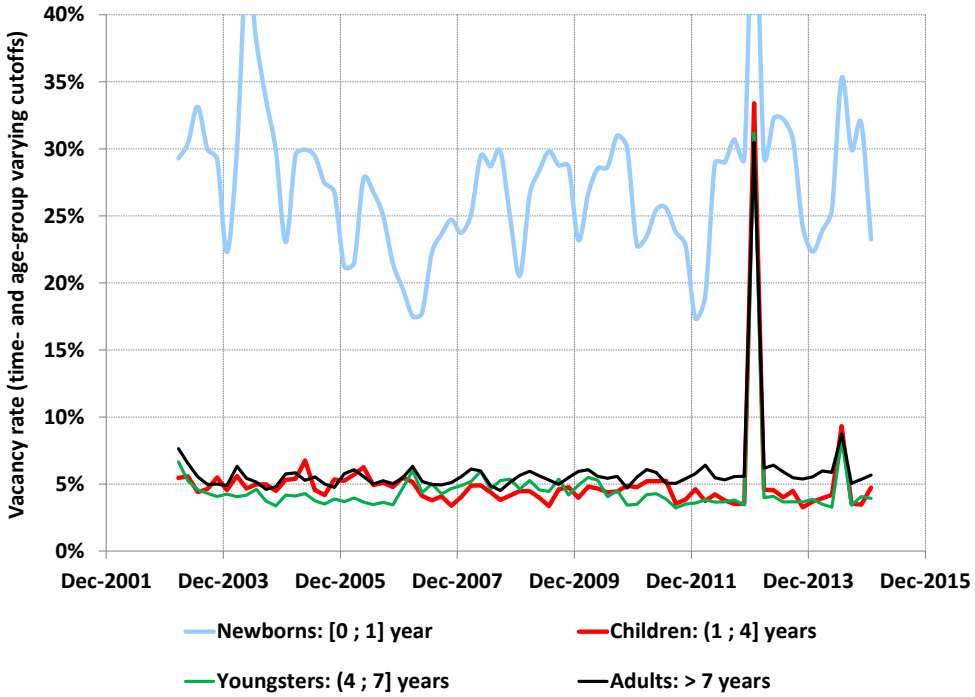
This figure shows the time series of the vacancy rates when using minimum consumption cutoffs that vary by bimester (thick solid line) and when using the fixed 43 kwh-bimester cutoff. By and large, both specifications give very similar average vacancy rates, though the new ones are slightly more volatile.

Figure A.6. Evolution of the Vacancy Consumption Cutoff



This figure shows the time series of the vacancy consumption cutoffs that vary by age group as well as by bimester. Cutoffs fluctuate between a minimum of 22 kwh per bimester and a maximum of 78. Newborn houses tend to have larger cutoffs, with a median value of 54 kwh per bimester compared to 46 for Adults and 42 for the other age groups.

Figure A.7. Vacancy Rate per Bimester Using Time- and Age Group-Varying Occupancy Consumption Cutoff



This figure shows the time series of the vacancy rates when using minimum consumption cutoffs that vary by age group and by bimester. This information compares with that in Figure 11, which uses a fixed 43 kwh/bimester cutoff, and it confirms that the findings in the benchmark specification do not result from measurement error in the vacancy cutoff. The Newborn group is the only one that has a high vacancy rate (27 percent on average), while the other three age groups have vacancy rates that average 5 percent. Average differences between this specification and the benchmark specification never surpass 1.1 percentage points.