Real Estate Watch
Chile

BBVA

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EXECUTIVE SUMMARY

The Chilean real estate sector has experienced an important growth in the last few years. For example, since 2004, an average of 130,000 housing units was sold per year, 30% more than in the nineties. Furthermore, private investment in the sector reached almost USD 5 billion in 2007, or around 5% of the Chilean GDP. This scenario has meant a significant increase in infrastructure and in the productive capacity of the country. However, the greatest benefits were social, due to the considerable decrease in the housing deficit.

On the supply side, this increase in the number of housing units built can be attributed, in part, to private firms involvement, which have been attracted to the sector by competitive rates of return on investment. The legal framework has also contributed to this situation as it offers stability to the companies in the real estate sector. Furthermore, unlike the situation in other emerging countries, the share of the State as driving force of the housing supply is limited. Although most of the units built in Chile are somehow linked to government policies (the government either contracts out the construction of the units which are then allocated to lower-income sectors or provides a subsidy), the share of the private sector is crucial and is encouraged by transparent processes ruled by market incentives.

The availability of mortgages is one of the factors that have contributed most to the development of the sector. For example, Chile has one of the higher banking indexes, as evidenced by the deep penetration of financing for the purchase of housing units, which accounts for about 15% of the GDP (significantly higher than in other countries of Latin America). Looking forward, there is a great potential for growth: mortgage borrowing is still low with respect to income, if compared with developed countries, and a high percentage of the population still has no access to this type of financing. Finally, the reforming spirit associated with the sector, the incentives and the adequate regulations created by the government, a deep market in financing instruments available to families, the securitisation of credits, the structural decline in interest rates and an economy that will grow at a rate of about 5% on average during the next 15 years would lead the housing credit to the highest levels of growth within the financial sector.

Looking forward, the housing market will not only benefit from the development of mortgages. In this respect, demographic, economic and social factors will together increase the demand for housing in Chile in the near future. For example, during the next 15 years, the population between 20 and 40 years old (first time owners), will grow by almost 30% above the growth rate for the 1990-2005 period. This means that the sector will have to meet the demand of more than 620 thousand young persons, a figure that has never been seen in the history of Chile before. Furthermore, the number of persons per household is expected to drop, as a consequence of several factors associated to the level of development of the Chilean society (increase in the share rate of women, increase in the income of the youngest groups, better retirement conditions, etc.). Moreover, the construction of new housing units would be driven by an increase in the replacement rate, given that although "only" 3% of households share housing, between 15 and 20% of housing units are in a condition such that would require substitution in the upcoming years. Besides, the second housing market is underdeveloped and as income levels raise there would be a significant increase in demand. Lastly, according to what happens in other more developed markets, both the price and the area required per household are expected to show an important increase.

In the short term, the risks related to the sector are focused on the likelihood of lower growth worldwide and on the increase in inflation and their consequences on monetary policy. Nonetheless, the lack of serious imbalances in the market and the strong financial position of banks, families and companies show that if those scenarios unfold, the impact would be limited. In the medium term, the main setbacks that could affect demand in the next years could be the informality and a substantial drop in the population growth rate. Furthermore, the supply could face higher costs if reforms under consideration are not carried out and the increase in the price of materials is consolidated. In any case, the expectations are positive.

I. INTRODUCTION

The development of the real estate sector is key for the present and future of Chilean economic activity. About 8% of employment is generated by the construction sector, which accounts for 8.5% of the total product generated in a typical year in Chile. Moreover, building housing units attracts constant investment flows, which in 2007 reached almost USD 5 billion and, unlike other countries of the region, more than 90% of these resources are associated to the private sector.

This relative importance has encouraged us to carry out an analysis of the main conditions that make the Chilean real estate market an attractive source of investment for the upcoming years. This is important, in the first place, from the perspective of the financial business, where the increase in the demand for housing and the stability and institutional framework of the Chilean economy are expected to increase the share of mortgages in the total business of banking entities. However, this development is also important from a social perspective, because looking forward, if the growth we are predicting for the sector takes place, Chile will have to face big challenges, ranging from the provision of infrastructure (in order to sustain the forecasted increase in demand) to new ways of understanding cities, with the benefits and problems that the different decisions made both by the private and the public sectors may entail in terms of social coexistence.
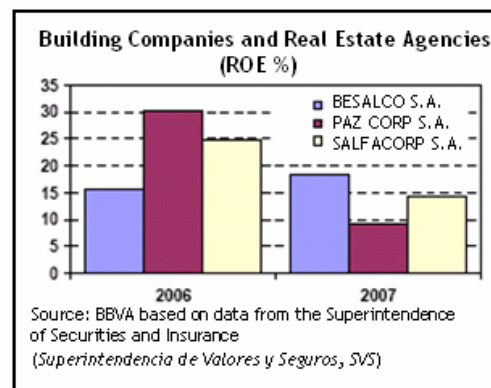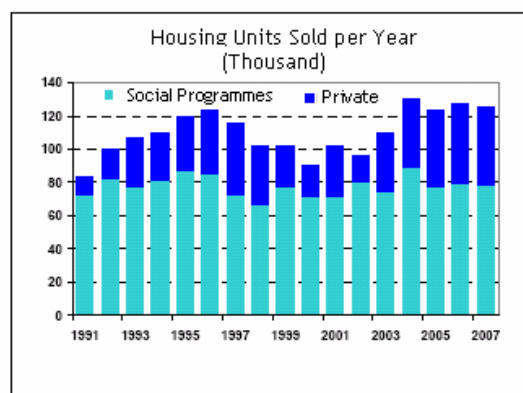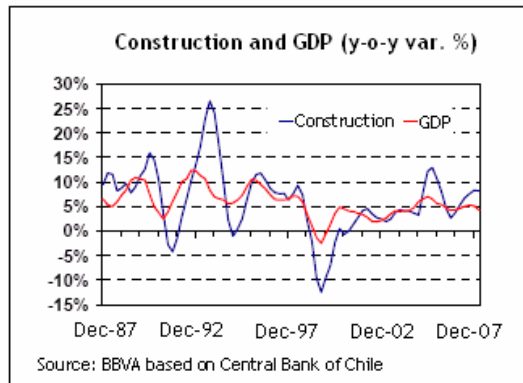
This analysis does not intend to be exhaustive but simply to provide a brief outline of the supply and demand conditions that prevail in the Chilean market. Our greatest contribution is originated in forecasts about the demand for housing based on a simple growth accounting exercise. The results presented in this analysis show that despite facing less favourable demographic conditions than other countries in the region (aging population, lower population growth, etc.), there are several social, economic and demographic factors that will be capable of compensating for those setbacks.

II. HOUSING SUPPLY

Since 2004, about 130,000 housing units are being sold per year in Chile, which represents an increase of almost 30% over the average observed during the nineties (see graph). This situation arises even as economic growth has been lower during the past 8 years and population growth has experienced a considerable drop. However, a combination of several factors has produced a dynamic sector that is currently considered as one of the main driving forces of the economy. Particularly, such factors as the fall in unemployment, the rise in real wages, the development of the financial system, the structural decline in interest rates and the modernisation of the real estate companies, were combined to generate an accelerated growth in the construction of housing units. This is evidenced by the profitability levels of the companies that participate in the sector. For example, the return on equity (ROE) for the main companies of the sector has been high during the last years, to echo the strong demand for housing.

The State share in the housing segment

The housing segment in Chile consists of totally or partially state-subsidized housing units, and private units. Their estimated share in the total number of units sold in 2007 was 65% and 35% respectively. Although a large part of the works is carried out by private building companies, the government contracts out the construction of most of the units, which are

Construction and GDP (y-o-y var. %)

Source: BBVA based on Central Bank of Chile

Housing Units Sold per Year (Thousand)

Building Companies and Real Estate Agencies (ROE %)

Source: BBVA based on data from the Superintendence of Securities and Insurance
(*Superintendencia de Valores y Seguros, SVS*)

then allocated to lower-income sectors under different types of social programmers. The remaining percentage represents independently developed private projects, which are sold directly to third parties and of which the main target population is the growing Chilean middle-upper class.

The scenario described above is particularly important when analyzing the amounts invested in the sector. For example, based on the fact that the housing units built for social programmers have a lower unit value, the proportions of the public and private share change dramatically when valued in terms of housing investment, which originates 90% in the private sector.

However, the social policy associated to the housing sector was of enormous importance to considerably reduce the housing deficit in Chile. Particularly, the help granted by the State can be summarised in two classes: by the direct involvement of the public sector (public housing), or indirectly, by granting a subsidy but leaving the construction process, verification of data, project profitability, etc. to the private sector.

Public housing units (or basic housing units) are a permanent solution, because they are built with solid materials, preferably brick, their built area varies between 38 sq. m. and 42 sq. m., their price is below 350 UF[1], and are financed directly by the Ministry of Housing.

State-subsidised housing units are housing units that fluctuate in value between UF 380 and UF 1,500 and their built area varies between 47 sq. m. and 80 sq. m. Buyers of these units may get a demand subsidy provided by the State, which ranges from 6% to 26% of the price of the property, depending on the value, subject to a minimum prior savings requirement equal to 10% of the final value of the unit. If the units are located in urban renovation areas, the subsidy covers from 13% to 36% of the total value of the unit, up to UF 200, for households worth less than UF 1,000.

In this process, the State is only involved in the granting of subsidies, while the responsibility for the construction and financing, marketing, and granting of credit to the buyer lies with different agents of the private sector.

However, demand from this segment is practically guaranteed, so much so that when real estate agencies start building, usually a high percentage of the units have already been sold.

Non-subsidised private housing units are acquired without any subsidy and without any state involvement whatsoever. Their average value amounts to UF 2,500, their built area totals approximately 100 sq. m. and they are mainly acquired through mortgages.

III. FINANCING

The financing alternatives for the acquisition of housing units are provided not only by banks but also by other type of specialised financial institutions, such as mortgage credit companies and housing leasing

Mortgage Debt by Issuer				
	2001	2003	2005	2007
Billion $ (1)				
Total	7,660	8,962	11,837	15,646
Bank	6,204	7,346	10,131	13,462
Non-Bank	1,455	1,616	1,708	2,184
Percentage				
Total	100%	100%	100%	100%
Bank	81%	82%	86%	86%
Non-Bank	19%	18%	14%	14%
(1) Currency March 2008				

Housing Investment				
	2006		2007	
	Billion USD 2004	Percentage of the Total	Billion USD 2004	Percentage of the Total
Housing	4953	100%	5123	100%
Public	498	10%	574	11%
Private	4455	90%	4549	89%
Copayment Social Prog.	318	6%	414	8%
Non-subsidised property	4137	64%	4135	81%

Source: Chilean Construction Chamber (*Cámara Chilena de la Construcción*)

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[1] *Unidad de Fomento* is a unit of account indexed to the inflation of the month immediately preceding the period on which it is calculated. It was created in 1967 (1 UF = 100) and as of this day (19 June 2008) it amounts to $20,164.32. Before the 9th of each month, the Central Bank of Chile publishes the daily value of the UF for the period covering from the 10th of the current month to the 9th of the following month, with a variation between those dates equal to the variation of the Consumer Price Index (CPI) for the immediately preceding month.

companies. Practically all the credits are granted in *Unidades de Fomento* and their maturities range from 5 to 40 years.

As at December 2007, bank financing accounted for almost 86% of the total number of home mortgage credits and the average housing unit price financed by banks is about UF 1800. All the banks grant financing for amounts above UF 700. In practice, this means that they only cover the segment of non-subsidised private housing units. There is only one state bank in Chile (called BancoEstado) that is focused on lower-income segments and finances housing units of a minimum price of UF 450, covering part of the segment of state-subsidised housing units. Additionally, this institution grants credits for amounts below UF 350 through a housing agency affiliate, which is a mortgage credit company.

Mortgage credit companies specialise in providing financing by means of mortgages. Although they compete with banks, private mortgage credit companies cover a wider range of prices, as they finance cheaper housing units and provide finance starting at UF 500, filling the segment of state-subsidised housing units. Mortgage credit companies include mainly companies belonging to financial conglomerates or to agents involved in the construction business.

Housing leasing companies finance housing units of a minimum value of UF 500 through financial leasing. Although the amount required from the requesting party as down payment may only be 5% of the total, the implicit interest rate applied to the agreement by these institutions is much higher than the one applied by banks and mortgage credit companies.
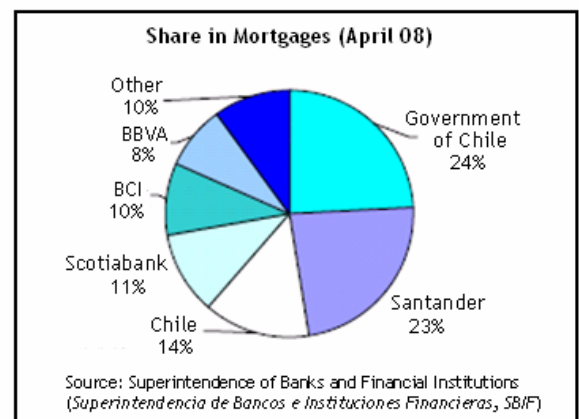
Regulations currently in force allow banks to grant mortgage credits using a whole range of instruments existing in the market (mortgage bills, endorsable and non-endorsable mortgage loans) while mortgage credit companies can only offer mortgage credits. Although strictly speaking they can grant endorsable and non-endorsable mortgage loans, in practice they only originate the former.

The State share in mortgage financing

The State only provides direct financing to those persons who acquire basic housing units by granting credits through the Ministry of Housing and Urban Development (*Ministerio de la Vivienda y Urbanismo*, MINVU), while state-subsidised housing units are chiefly financed by other institutions, mainly BancoEstado and its mortgage affiliate.

Credits granted directly by the MINVU are targeted to families within the low socioeconomic segment who cannot provide sufficient evidence of income in order to gain access to the credits granted by BancoEstado and its affiliate. Under this alternative, in order to gain access to this credit category, these families are only required to be registered in the application system and to have a minimum prior saving (UF 10). The average credit amounts per household amount to nearly UF 100 and the total credits reach 500 billion pesos, which is below the total balance of mortgages of 1%.

BancoEstado maintains a competitive position within the Chilean banking market. It is an institution that plays a key role in the bancarisation of lower-income sectors, as it provides financing for the purchase of inexpensive housing units which do not attract the interest of the other banks.

Share in Mortgages (April 08)

Other 10%, BBVA 8%, BCI 10%, Scotiabank 11%, Chile 14%, Santander 23%, Government of Chile 24%

Source: Superintendence of Banks and Financial Institutions (*Superintendencia de Bancos e Instituciones Financieras, SBIF*)

Thus, the average mortgage credit barely reaches 6.3 million pesos, compared with $25.6 billion from the other banks, which explains why the state bank share accounts for 54% of the total number of mortgages in 2007, although only for 25% of the balance.

Mortgage financing instruments

The development of the capital market and the harmonisation of banking regulations to international standards, after the tight controls implemented as a consequence of the banking crisis in 1982, have helped to extend the range of instruments available for mortgage financing. Thus, while the main mechanism to finance the acquisition of housing units was traditionally the Mortgage Bill (securitized mortgage), its use has declined in the last years, giving prominence to Mortgage Loans, which now account for 80% of the total stock of bank and non-bank credit.

Mortgage bills are fixed-rate debt instruments with maturities ranging from 8 to 20 years, which are sold in the secondary market, mainly to pension fund managers and life insurance companies. Thus, what customers actually receive are the mortgage bills, which, by virtue of a mandate included in the underlying bill of sale, are sold in the Santiago Stock Exchange. Under current regulations, only banks are allowed to originate these instruments, acting as intermediaries between the credit applicant and the party willing to make resources available (Pension Fund Administrators, Insurance Companies). Banks take over a debt for the holders of the bill, who provide money for credit. As regards to the customer (mortgage debtor), he undertakes a commitment with the bank, who charges a fee (included in the final interest rate) for services rendered.

Mortgage bills are an attractive instrument for pension fund managers and life insurance companies, as they are long-term instruments under which these institutions can cover different term periods. As of December 2007, 3.5% of pension fund investments and 11% of insurance company investments consisted of mortgage bills. This figure contrasts with a share of 9% and 20% respectively, observed at the end of 1997, which, despite the growth of total funds invested, evidences a reduction of the stock of investment in bills in real terms.

Mortgage loans are money loans granted by a financial institution. Unlike mortgage bills, these credits may bear flexible or combined interest rates, and they may be granted by banks or non-bank companies (mainly companies belonging to agents involved in the financial or construction business). Their maturities range from 5 to 40 years. These loans may be endorsable or non-endorsable. Under an endorsable loan, the financial institution may assign the credit to other institutions expressly authorised by law[2]. In contrast, non-endorsable mortgage loans cannot be sold to other institutions and their greatest advantage is that they are not governed by specific regulations, except for maturity mismatch rules and other rules that apply to financial institutions in general. As a consequence, in practice, these non-endorsable instruments are chiefly originated by banks and not by mortgage credit companies.

Instruments for Bank Financing of Housing Credits (Percentage of the Total)

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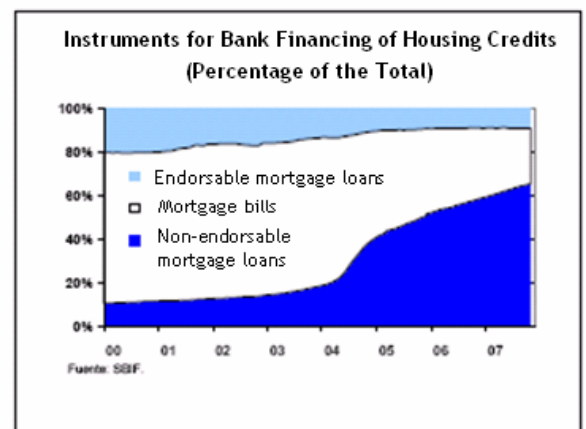
[2] These institutions are Insurance Companies, Real Estate Investment Funds, Real Estate Companies governed by Decree-Law No. 3.500 that regulates Pension Funds, and Securitising Companies governed by the Securities Act (*Ley de Valores*).

The possibility of granting credits at flexible rates and of extending their maturities beyond the 20 year maximum offered by mortgage bills promoted their strong growth as from 2002, when interest rates reached historically low levels that are maintained up to these days.

This is why in the last years, thanks to this scheme of flexible or combined interest rate, it was possible to transfer a greater proportion of the decline in the rates to the debtors, which has translated into a lower dividend during the first years of the credit, compared to the alternative of long-term financing at a fixed rate. The flexible rate is revised every year (on the basis of the evolution of a reference rate and a predetermined spread) and the combined rate is fixed for longer periods, usually during the first five years of the credit.

The leading role that mortgage loans have assumed in order to finance housing is mainly a consequence of the development of Non-Endorsable Mortgage Loans, whose relative importance has evolved in ten years from 10% to 65% of the total (see graph). This phenomenon in itself has helped the banking industry recover market share from its non-bank competitors.

Regulations applied to mortgage financing instruments

Mortgage bills: Regulations currently in force require that the purchaser pay 25% of the value of the housing unit to be purchased[3], with the purpose of ensuring a more comfortable loan-to-value ratio and covering a possible fall in the price of the property. However, in practice, banks finance up to 90% of the value by granting an additional loan for an amount equal to 15% of what the client needs to complete its part. This supplementary credit is originated with a higher final rate both due to the higher risk and the higher administrative cost, as it is processed as a separate product.

There is another regulation that only governs credits equal to or lower than UF 3,000 under which the dividend to be paid must be below 25% of the current income of the applicant. In practice, this restriction applies especially to young professionals, with higher income expectations for the future.

Endorsable Mortgage Loan: The institution is only allowed to finance up to 80% of the value of the property, although as described above, it is possible to finance a higher percentage through supplementary loans.

Non-Endorsable Mortgage Loan: They are not governed by any specific regulation, except for maturity mismatch rules and other rules that apply to financial institutions in general.

Although all the types of Mortgage Loans can be securitised, this practice has not achieved significant growth in the last years. This can be attributed both to the fact that banks have obtained good sources of direct funding as well as to the difficulties that advance payments create in the transaction, an increasingly growing trend due to the structural decline in interest rates.

IV. DEMAND FOR HOUSING

Mortgages in Chile are one of the more developed credit alternatives of the region, as a result of the bancarisation level of the population of the country. Particularly, mortgages account for slightly more than 14% of the GDP, a percentage significantly higher than the one observed in other

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[3] This is the lesser of the appraised value as stated by the bank or the purchase price of the property.

countries of the region and that compares favourably with the behaviour of other emerging countries. There are several factors that have contributed to this scenario, ranging from more stable macroeconomic policies to an environment that promotes the development of medium to long-term economic relationships. This way, the strong economic growth that has been observed in the country during the past 20 years has brought improvements in the income level as well as a considerable increase in employment. Furthermore, the implementation of reliable and orthodox fiscal and monetary policies has generated an important drop in interest rates and inflation, raising confidence among investors, users and companies within the financial sector.

Mortgage loans show a rather steady growth rate (compared to other types of credit). It is worth mentioning here that despite the strong moderation of growth as a result of the Asian crisis (1998- 1999), or the recession cycle in USA during 2001-2002, mortgages have maintained a positive growth during these periods.
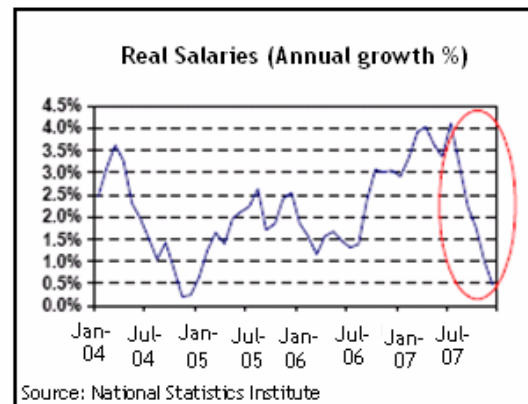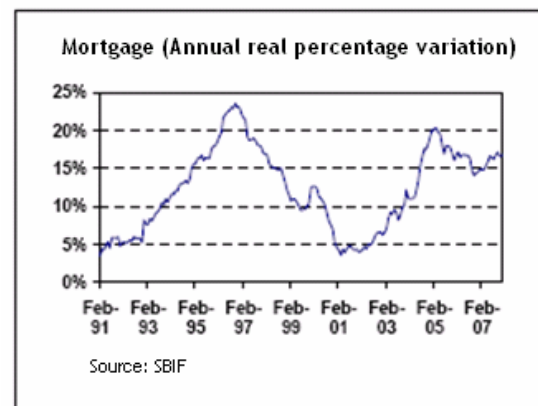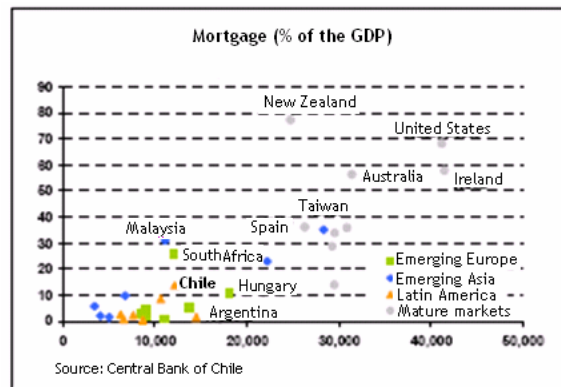
During the past 3 years, the reacceleration of the economy, the increase in the employment growth rate and the recovery of wages have promoted an increase in the provision of credit for the purchase of housing units. However, the stability and development observed in previous years imply that mortgage growth rates in Chile are not as high as those observed in other economies that are either emerging from a financial crisis or simply starting from a relatively low development level.

During 2007 and the first part of 2008, credit growth has stabilised at a real rate of 15%. Looking forward, the acceleration of financing seems unlikely, for the following reasons.

i) **Rise in inflation**. As explained before, a large part of the credits is indexed to the variations of the CPI. Moreover, housing prices in general are set in UF. Therefore, the sharp rise in inflation experimented during the past year, together with the volatility associated to its future behaviour imply a negative bias in demand.

ii) **Fall in real wages growth**. Due to the rise in inflation and the fact that, until now, the shock in prices has had a limited impact in salaries.

iii) **Increase in long term rates**. The increase in inflation expectations has caused the Central Bank to implement a more restrictive monetary policy. Furthermore, the sterilisation of resources injected as a result of the purchase of dollars in the foreign exchange market has put additional pressure on long-term rates.

iv) **Deteriorated expectations**. The GDP slow-down has seriously deteriorated private sector confidence on the economy.

Despite the previous statements, there are reasons to believe that growth will remain strong during the following months. In particular, mention can be made to

i) **Strong growth of employment.** The rise in male and female participation rates should be particularly noted. This implies that despite the real wages slow-down, total family income continues to grow.

ii) **Inflation should start a downward path.** According to our oil price forecast, the pressures on inflation would begin to subside during the second semester of the year, limiting the increase in nominal rates and leading to a fall on the long ends of the yield curve.

Mortgage (% of the GDP)

Source: Central Bank of Chile

Mortgage (Annual real percentage variation)

Source: SBIF

Real Salaries (Annual growth %)

Source: National Statistics Institute

Besides, this scenario would contribute to eliminating the high degree of uncertainty as to an increase in the UF, thus helping to boost the growth of the sector.

iii) **Real rates remain at minimum historical levels.** (Real) returns on mortgage bills have reached historically low levels.

iv) **Low levels of mortgage borrowing.** According to a recent study carried out by the Central Bank, only 15% of Chileans hold a credit to finance the purchase of a housing unit. Moreover, this type of borrowing is concentrated in segments of young, highly educated persons, with high expectations of income growth.

As our forecast about growth for the next two years indicates that the economy should maintain the dynamism observed during the 2006-2007 period, with small adjustments to the monetary policy, a strong growth of employment and high inflation with a downward trend, there is a moderately optimistic expectation. Risks, mainly focused on price variations, their impact on rates and reduced credit availability worldwide, continue growing in terms of probability of occurrence. Their impact, however, would be limited, due to the existence of sound financial regulations, the central government's ability to act given the availability of resources and the relatively healthy situation of families to face a more stressful scenario.
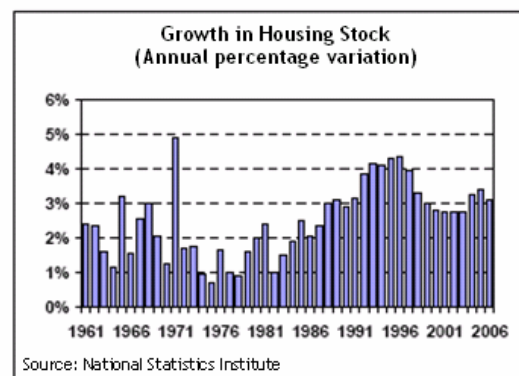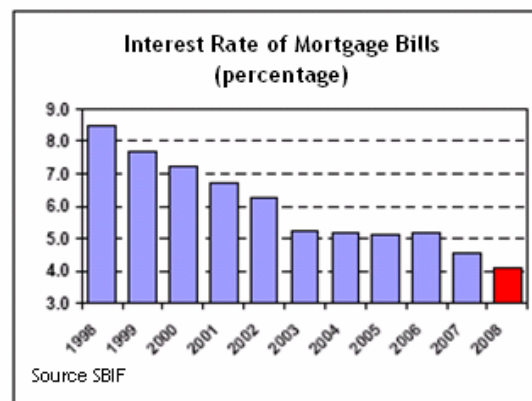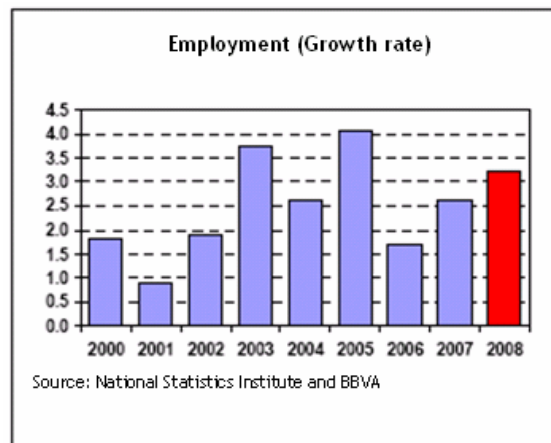
Evolution of the determining factors of demand for housing

The demand for housing of the Chilean population has grown steadily during the past two decades. During this period, several factors have contributed to the development and maturity of this market, among which we can mention housing supply, the price of housing units, family income, financing conditions or fiscal incentives. However, this analysis is not focused on describing some of them but on their impact on three specific variables obtained from the following identity:

$$HS = \frac{HS}{HH} \bullet \frac{HH}{POP} \bullet POP$$

Thus, a change in housing stock (HS) depends NEGATIVELY both on the number of households per housing unit (HH/HS) as well as on the number of persons per household (POP/HH), and POSITIVELY on the population of the country. These relations are rather intuitive: in the case of the first two factors, a drop implies that someone within the household is getting his/her independence and will demand his/her own residence. The third variable simply reflects the direct impact of population growth on the demand for housing.

In order to understand the importance of each of these factors for determining growth in the demand for housing, we use statistics obtained from the 1990 and 2003 Socioeconomic Characterisation survey (*Encuesta de Caracterización Socioeconómica*, CASEN) included in the chart attached. During that period, the number of housing units increased by 40% or at an annual average rate of 3.4%. Slightly more than half of this increase can be attributed to the increase in population growth (25%), while the other half can be divided in equal parts and attributed to a drop in the number of persons per household (7%) and a reduction in the number of households per

Employment (Growth rate)

Source: National Statistics Institute and BBVA

Interest Rate of Mortgage Bills (percentage)

Source SBIF

Growth in Housing Stock (Annual percentage variation)

Source: National Statistics Institute

housing unit (8%). Therefore, although the three factors under analysis had a positive evolution, the most important variable to explain the increase in the demand for housing was population growth.

Having defined the main sources of growth in the demand for housing in Chile and their behaviour during the last years, the next question to be addressed is if those growth patterns will remain unchanged in the near future. Particularly, the prominence of population growth is worrying in the light of the forecasts made by the National Statistics Institute (*Instituto Nacional de Estadísticas*, INE) of Chile, which, as stated below, predict a considerable slowdown of this factor. However, as explained below, the expected dynamics of the other two variables would suffice to offset the negative expectations as regards population.

Number of households per housing unit

As can be observed in one of the charts attached, the problem of the housing deficit has been partially resolved in Chile during the last years. Particularly, in 1990, 12% of households shared their housing unit with other families, while in 2003, only 3% did.

Looking forward, a greater reduction in the dependence on other families can be expected as households increase their purchasing power (through improvements in the labour market, higher schooling levels, access to the financial market, etc.). As there are many cases in which the second family occupying the unit is made up of relatively young and elderly persons, it will be especially important to introduce policies that encourage the employment of the former or soften the impact of the retirement of the latter.

However, the main factor for being optimistic about this variable is **households' potential in acquiring a second residence**. According to figures of the 2003 CASEN, only 13% of Chileans have an alternative housing unit. These figures are well below what is observed in developed economies. In Spain, for example, 32% of the population owns a second residence.

Again, the point of view of this study is that if the country experiences growth rates similar to the ones observed in other income convergence processes (e.g. Spain), patterns such as this one should recur. Particularly, the data available for Chile would indicate that there is sufficient space for some segments of the population, for example those belonging to the wealthiest quintile, to start being an important factor within this variable. Here, more than 500,000 middle and high-income households could become a potential market that would develop in the next years (see chart attached).

Number of persons per household

One of the factors that explain the increase in the demand for housing is the number of persons per household. If the other variables remain constant, a reduction in this quotient implies that some members of the family have become independent in order to set up their own household and demand a housing unit. Thus, as observed in developed economies such as Spain, France and USA, in Chile, household size has decreased in recent years (see chart attached).

This significant decrease in the average household size can be mainly attributed to the increase in the number of one person households. For

Number of Households per Housing Unit

	CASEN	
	1990	2003
Population	12,934,650	15,545,921
Households	3,172,550	4,112,838
Housing units	2,835,392	3,987,568
Persons/housing unit	4.10	3.80
Households/housing unit	1.12	1.03

Source: BBVA based on 1990-2003 CASEN

Chile: Population Households and Housing Units

No. households	1990	2003
1	82.9%	97.0%
2	14.7%	2.4%
3	1.7%	0.4%
4	0.4%	0.1%
More than 5	0.2%	0.1%

Source: BBVA based on 1990-2003 CASEN

Second residence: Average earned-income according to quintile of self- employment income per capita

Quintile	Owners		Non-owners	
	Average income	No. of households	Average income	No. of households
1	100,641	19,827	100,806	418,179
2	153,915	38,488	151,514	525,881
3	205,877	52,553	208,459	505,862
4	330,387	89,763	294,430	534,154
5	1,387,397	174,048	876,963	513,199
	773,646	374,679	334,209	2,497,275

Source: BBVA based on 2003 CASEN

GDP per capita (Dollars adjusted by PPP)

Spain 1980-2008
Chile 1988-2008
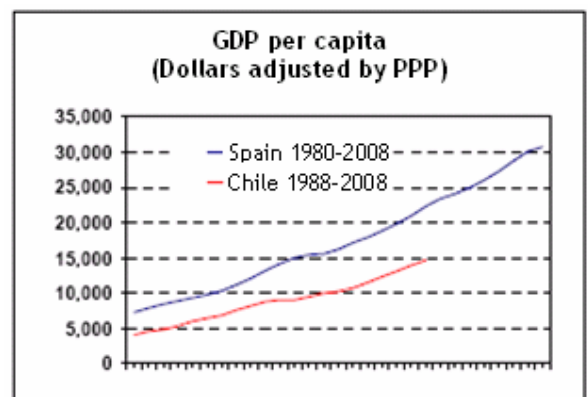
example, in 1990 individual households accounted for only 7% of the total, while in 2003 they rose to 9%. This evolution implies an increase in this type of families of more than 60% between 1990 and 2003. What are the reasons for this increase in individual households? We can basically mention four reasons: i) increase in female share in the labour force; ii) economic independence of young persons; iii) increase in the population of old adults, and iv) a change in social habits.

As regards the first factor, the share of women in the labour market has increased in Chile, which has resulted in an increase in individual households belonging to women of 68% during the 1990-2003 period, according to data provided by CASEN. For example, at the beginning of the nineties, female share in the labour force amounted to 30.9%[4] while nowadays it amounts to 38.8%. However, female share in the labour force in Chile is still relatively low compared to what is observed in developed economies and even in Latin America. Nonetheless, looking forward, expectations seem to be positive: on the basis of the data for younger generations, it can be stated that 60% of women between the ages of 20 and 34 are working or searching for employment. Furthermore, the factors that determine access of women to the labour market (including, among others, education, number of children, access to services and wages)[5], have improved.

The second factor under consideration is the growth of the population between 20 and 40 years old, because within this segment the increase in housing expenditure and the need to set up a household become stronger. In that respect, despite the drop in population growth rate in general, we should take into account that during the next 20 years the trend in the growth of this segment of the population will change. Therefore, more than 600 thousand young persons will demand a new housing unit within this period, a figure never seen in the country before. Moreover, precisely this segment of the population has experienced the greatest increase in their income level, with increments of 102% during the 1990-2003 period. Besides, precisely the youth make up an important part of individual households, accounting for approximately 19% of this type of households.

Finally, another factor that influences the process of setting up a household is the increase in the population of old adults. In fact, this segment accounts for 37% of one person households and, as statistics show, their income level has risen 90% during the 1990-2003 period, boosted by an improvement in pension levels, which represent almost 80% of the total income of this population. Therefore, the existence of health and pension systems similar to the ones in Chile, which guarantee the independence of older people, will be crucial to allow an increase in the demand for housing. Thus, this segment will also show a significant increment in the future, given that as life expectancy of the population has increased the population of more than 65 years is estimated to have an annual average growth of 3.6%, which will gradually rise.

Population factors

Average size of households per age segment of head of household

Head of household Age Segments	CASEN 1990	CASEN 2003
15 and younger	2.6	1.0
Between 16-25	3.1	2.9
Between 26-35	3.9	3.6
Between 36-45	4.5	4.2
Between 46-55	4.5	4.2
Between 56-65	4.0	3.6
More than 65	3.3	3.1
Total	4.1	3.8

Source: BBVA based on 1990-2003 CASEN

Individual households: Average household income and years of school ($ Nov2003)

Age segments	School 1990	School 2003	Household income 1990	Household income 2003
Between 18-35	12	14	217,357	439,443
36-50	8	11	253,561	509,493
51-65	7	8	188,266	302,372
More than 65	5	6	148,955	281,223

Source: BBVA based on 1990-2003 CASEN

Growth Rate of the Population between 20 and 40 years old

Source: BBVA based on WPP

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[4] Seasonally adjusted figures.
[5] For a greater analysis of these factors, see the publication "*Participación laboral femenina en Chile*" (Female Share in the Labour Force in Chile). Dante Contreras-Gonzalo Plaza. 2007
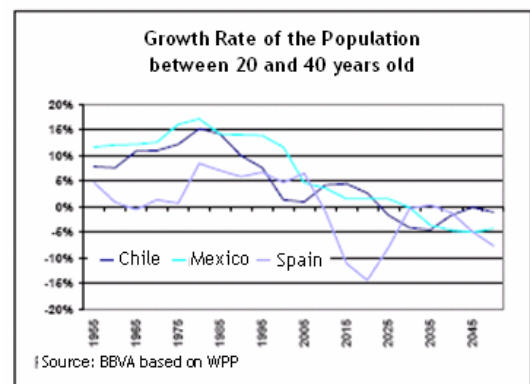
Chile is facing an aging population as a result of the decrease in birth rates, partially compensated by a considerable increase in life expectancy. Consequently, the National Statistics Institute forecasts that during the next years the annual average population growth rate will decline from 1.5% during the seventies to 0.9% in 2025. Given the importance of this factor to the growth in the demand for housing, such a decrease will have a relatively strong negative impact on the real estate sector. However, there is great uncertainty about forecasts for demographic changes, and particularly for the evolution of the fertility rate. For example, the effects of the higher share rate of women on the number of children per household or the age at which they will give birth are yet not clear. Thus, some potential mothers might be delaying the decision to have one or more children in order to develop their professional careers. On the other hand, the country should become a place capable of attracting migration, as happened to other economies, such us in North America or Spain, whose neighbours have a significantly lower income than theirs.

Future scenarios

According to the expected behaviour of the demographic variables analysed before, the growth in the demand for housing looks promising for Chile. Below is a description of our main assumptions as regards to future behaviour of the three variables referred to in this study (population, housing units per household and persons per household). Our idea is to show a reliable basic scenario according to our expectations of growth for the Chilean economy. In the first place, in order to estimate the anticipated path of population growth, we took the estimations prepared by the Latin American & Caribbean Demographic Centre (*Centro Latinoamericano y Caribeño de Demografía*, CELADE) as reference. These estimations take into account an expected drop in the fertility rate in Chile which is partially compensated by an increase in life expectancy. Therefore, during the next 20 years, population growth is expected to be significantly lower than the growth observed in the past. Particularly, while from 1987 to 2007, the number of persons would have increased by 33% (1.5% yearly), it is assumed that during the 2007-2027 period the population will only increase by 16% (0.8% yearly).

Secondly, we want to present our forecast about the future behaviour of the remaining two variables: the number of households per housing unit and the number of persons per household. As it is impossible to have an official forecast on this regard, we have taken the experience of other countries with situations similar to those faced by Chile today. Particularly, we have taken the case of Spain as an example. At the beginning of the eighties, Spain had income levels per capita similar to those of Chile today. The exercise below assumes that Chile maintains growth rates somewhat below what was observed by the Spanish economy during the 1980-2000 period. Specifically, income per capita in Spain increased more than 200% during those 20 years, while as a result of GDP growth estimated in 5% yearly, we assume that a comparable number for Chile would be 130%. Therefore, the scenarios described below assume a partial convergence of the country to present income levels of the Spanish economy.

Thus, during the period of high growth in Spain, both the number of persons per household as well as the number of housing units per household declined. Particularly, they decreased by 19 and 8% respectively. Furthermore, the population rose by 17%, rather similar to the growth expected by CELADE for Chile during the next 20 years. Taking as a basis for comparison the development of the real estate market in Spain, the chart attached shows the creation of different scenarios of growth in the demand for housing for Chile during the next 20 years. In these scenarios, different assumptions are used depending on the convergence after 20 years to the levels observed in Spain in the year 2000. For example, on the line "100%", it is assumed that in the year 2027 the number of persons per household in Chile would have dropped by 19% (0.9% yearly), which is exactly what happened in Spain during the period of high growth mentioned above. This way, as we move to the bottom of the table, objectives are met only partially: by 75%, 50%, etc. Finally, as a basis for comparison, we introduce the experience of Spain during its period of high growth and the historical average for Chile during the past 40 years.

There several points to highlight. In the first place, if our forecasts about economic growth and improvement in poverty levels are correct, the reduced increase in population would be widely compensated with drops in the number of persons per household and in the number of households per housing unit. This means that the main factors that determine the future dynamics of the real estate sector depend on improvements that allow for the independence of young persons, women and pensioners or that encourage the access of the middle and high-income segments to purchase a first and second housing unit. Therefore, we expect that in the most likely scenario (between 50 and 75% in the chart attached), the demand for housing will grow at a rate 30% higher (2.3% yearly) than the one observed during the past 40 years (1.7%).

Secondly, the final result strongly depends on the change in housing units per household. Particularly, here we assume that this coefficient might drop from 1.03 (current coefficient) to 0.7 (Spain coefficient in 1981)[6] due to the following: i) improvement in the access of poor families to a main housing unit; ii) increase in individual households (greater independence of young persons, women and pensioners); and iii) increase in the demand for second residences.

Finally, in our theoretical exercise, population growth remains constant as estimated by CELADE for Chile. However, as already mentioned above, we think there are factors that would support a more optimistic forecast about this variable. For example, one of the variables that might positively influence an increase in the Chilean population is migration. Thus, within the growth and stability scenario of the Chilean economy that we forecast for the next 20 years, a potential income divergence in favour of Chilean households compared with that of their neighbours of the region would end up attracting workers and families that would compensate for the drop in the fertility rate.

This is consistent with what has been observed in other high growth economies, such as the USA or Spain, in which their proximity to less favoured regions has caused an increase in the number of immigrants. This is why we present a second estimate chart, where we have adjusted the population growth rate, increasing it up to potentially reaching a maximum

Chile Scenarios: Annual growth: Demand for Housing with Changes in Population Growth

	Increase population	Decline HH/ Population	Decline Housing Unit/HH	Increase Housing unit
Chile (2008-2028)	0.8 %	0.7 %	1.1 %	2.3 %
	1.0 %	0.7 %	1.1 %	2.4 %
	1.2 %	0.7 %	1.1 %	2.6 %
	1.5 %	0.7 %	1.1 %	2.8 %
Spain (1981-2005)	0.8 %	0.9 %	0.4 %	1.9 %
Chile (1966-2006)	1.6%	N/A	N/A	1.7 %

Source: BBVA

Chile Scenarios: Annual Growth Demand for Housing

	Increase population	Decline HH/ Population	Decline Housing Unit/HH	Increase Housing Unit
100%	0.8 %	0.9 %	1.4 %	2.7 %
75 %	0.8 %	0.7 %	1.1 %	2.3 %
50 %	0.8 %	0.5 %	0.7 %	1.8 %
25 %	0.8 %	0.2 %	0.4 %	1.3 %
0 %	0.8 %	0.0 %	0.0 %	0.8 %
Spain (1981-2005)	0.8 %	0.9 %	0.4 %	1.9 %
Chile (1966-2006)	1.6%	N/A	N/A	1.7 %

Source BBVA

of 1.5% yearly, equal to the increase observed in the country during the past 20 years. If we combine our basic scenario included in the previous chart (75%) with a population growth forecast moderately more optimistic than the one made by the National Statistics Institute, the demand for housing growth rate obtained is 50% (2.5%) higher than the one observed during the 1966-2006 period.

Construction of new housing units

The estimates shown above refer to the growth in the housing stock for the next 20 years in Chile. However, it is also important to estimate the demand for new housing units, taking into account that these units, as they are a durable asset, have a limited useful life. This means that after a certain number of years they have to be replaced or restored because they otherwise would not be in good living conditions or they would simply not comply with the changing needs of the family occupying the unit (higher income, children, etc.).

On this basis, it is easy to demonstrate that the growth in new housing units is equal to the increase in stock plus the depreciation rate. This rate reflects the percentage of houses that had to be replaced during the year in question.

It is difficult to obtain data on the depreciation rate in Chile. The results obtained from the 2003 CASEN point out that 3.1% of households occupy housing units considered "unrecoverable," i.e., the persons that live there should acquire a new unit. However, this number does not take into account the capacity of these families to replace the house where they live nor their intention of doing it. Moreover, there are households that occupy houses in perfect living conditions that decide to substitute their existing unit with a new one, as a result of improvements in their income or changes in their needs. As it is impossible to obtain data that could give us an idea of the rate at which the current housing stock in Chile is replaced, once again we use the international experience.

For example, the Bank of Spain estimates that the depreciation rate of housing units for Spain would be approximately 0.5% per year. In principle, the need of housing units in "good living conditions" would lead us to assume that the depreciation rate in Chile could be higher during the next years. However, the income effect is also important: an improvement in the financial situation of families encourages them to renew their housing units within shorter periods of time. Therefore, it is not clear whether the depreciation rate is currently higher in Chile than in Spain. Given the lack of a good estimate for this variable, the chart attached presents different scenarios for different assumptions about the depreciation rate. Particularly, using the same rate that is applied in Spain, the demand for the construction of new housing units would rise by an additional 10% during the next 20 years, only due to the effect of depreciation.

Size of housing units

Another important point in the construction of new housing units is related to the characteristics of residences. According to available data, as family income increases, households are more likely to demand better quality and bigger units. For example, in 1991 housing units constructed in Chile had an average area of nearly 63 sq. m., while in 2006 they have an average area of 72 sq. m. In order to determine the evolution of square metres per unit, we use a methodology similar to the one explained above. Particularly, we have used the following identity

Household Distribution according to Conditions of the Unit

No. of households per housing unit	1 household	2 to 3 households	More than 3 households	Total
Recoverable	93.9 %	2.8 %	0.2 %	96.9 %
Unrecoverable	3.1 %	0.0 %	0.0 %	3.1 %
Total Households	97.0 %	2.9 %	0.2 %	100 %

Source: BBVA based on 2003 CASEN

Depreciation and Increase in Demand for Housing

	Annual depreciation. Annual housing demand increase	Increase demand housing 20 years
100%	1 %	22 %
75%	0.75 %	16 %
50%	0.50 %	10 %
25%	0.25 %	5 %
0%	0.00 %	0 %

Source: BBVA

Spain: Evolution of Built M2 and No. of Housing Units

Year	Total M2	M2 per person
1960	102	23
1970	116	29
1981	131	36
1991	135	40
2001	142	47
2005	144	49

Source: BBVA based on National Statistics Institute

$$\left| \frac{M^2}{HS} \equiv \frac{HH}{HS} \bullet \frac{POP}{HH} \bullet \frac{M^2}{POP} \right.$$

The area per constructed unit depends on the number of households per housing unit, the number of persons per household and the square metres per person. From previous exercises, we know that our expectations are positive for the first two variables and from this point onwards we will use the forecasts of our basic 20-year scenario.

For the third variable (M2/POP), we will once again observe what happened in Spain and extrapolate the growth (1.1% yearly) of this variable during the 1960-1981 period to Chile. We have selected this period for comparison because in 1960, the sq. m. per person in Spain were similar to those observed currently in Chile (23 vs. 19 sq. m. per person respectively).

The result of these simulations indicates that in the most likely scenarios (50-75%), housing units would have a larger area, ranging from 78 to 85 sq. m., an increase of almost 30% in the built area per residence.

Challenges for the future

In the first place, despite being the more developed market of the region, the number of families with access to mortgage credit is still relatively low. A recent survey carried out by the Central Bank shows that only 15% of households have a mortgage loan.

This indicates a great potential for growth, but also some weaknesses and setbacks that must be addressed. For example, **the high degree of informality** in the Chilean labour market implies a lack of steady income that would allow financial entities to provide credit.

Another factor behind the low degree of mortgage penetration is **the time and cost involved in recovering assets** from debtors in the event of insolvency. According to figures provided by the World Bank, it takes 5 years in average for a bank to complete an insolvency process, and when it is ultimately finished, only about 20% of the debt is recovered.

Another important problem is related to the **availability of land**. This asset was about to become scant, mainly in Metropolitan Area of Santiago, as a consequence of the growth observed in recent years. However, last April, the Ministry of Housing announced the new Regulating Plan for the Metropolitan Area of Santiago (*Plan Regulador Metropolitano de Santiago*), which includes an increase of more than 10 thousand hectares of building land. This is great news, although it is opposed by some pressure groups that might hinder its approval. Besides, other recent regulations would add extra costs to the construction activity. For example, through the requirement to private development projects to destine a fixed percentage of the units to lower income families.

Furthermore, **taxes on financial transactions** (stamps and seals) represent an important part of the costs of buying a house. Particularly, the law establishes a rate of 1.2% of the total value of the principal amount borrowed. This type of tax inhibits financial activity and ultimately constitutes a setback against bancarisation. Even so, it is worth mentioning

Chile: Evolution of Built M2 and No. of Housing Units

Year	M2 housing unit	Built M2	No. of housing units
1991	63	5,557,428	88,197
1996	68	9,798,515	143,823
2000	70	6,974,689	99,928
2006	72	11,070,630	154,291

Source: BBVA based on National Statistics Institute

Chile: 20-year Estimate of Built M2

	HH/ Housing unit	Persons/ HH	M2 persons	M2 housing unit
100 %	0.8	3.2	28	90
75 %	0.8	3.2	27	85
50 %	0.8	3.2	24	78
25 %	0.8	3.2	23	73
0 %	0.8	3.2	23	72
Spain 1960	0.9 %	4.35	23	102

Fuente: BBVA

that the government has recently made an effort by reducing the rate from 1.35%, which implies better expectations for the sector.

Finally, it will be crucial for the public and private sectors to face the increase in the demand for housing forecasted in this study, by anticipating trends and preventing possible bottlenecks. This will require coordinated actions in order to provide improvements in the legal framework but, above all, an adequate infrastructure, essential to meet the demand of an increasingly sophisticated population.

V. CONCLUSIONS

As expressed above, Chile has the more developed mortgage market of the region. A sound regulatory framework, reliable institutions and the stability of the country have reduced significantly the costs associated with accessing credit.

Against this background, no one should be surprised at the fact that the provision of financing of housing continues thriving in Chile. Regardless of the economic cycle, our forecasts indicate that the market should continue growing during the next years. Particularly, despite the fact that a considerable drop in the population growth rate is expected, there are other demographic patterns and economic conditions that would significantly increase the demand for housing during the next years above the growth levels observed during the past 20 years. It is worth mentioning here that the expected increase in income and several social factors (increase in the share rate of women, improvements in the pension system) are the main reasons for being optimistic about the future of the sector in Chile.

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