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TO BUY? TO RENT? TO EACH ITS OWN

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ABSTRACT

Buying a house is one of the most important economic decisions made by many households over their life (Arce and López-Salido, 2006) and has important consequences to the economy as a whole.

Portugal is a country featured by the strong own home purchase demand, as consequence of incentives to home acquisition, namely the easily accessible mortgage loans and the numerous failures on the Urban Lease Act (ULA). After successive failures on the implementation of reforms in the ULA, with the managing and financial assistance program in Portugal appears a new opportunity to new laws made in effect.

This research departs from Tabner (2008) paper which analyses six hypothetical housing purchasers using the Gordon Growth Model. The same model, with the properly changes, will be applied in the Portuguese context in three distinct periods: in the early 90s; at the present time, before the expected new law; and a few years from now, when the new ULA is in effect. Its conclusions will illustrate the impacts on the financial decision of buying or renting a house depending if it is to own or to let.

JEL Classification: D1, G10, R21, R31

Keywords: Lease versus Buy, Residential Real Estate, Housing, Household Finance

RESUMO

Comprar uma habitação é uma das mais importantes decisões económicas tomada por muitas famílias na sua vida (Arce and López-Salido, 2006) e acarreta importantes consequências para a economia como um todo.

Portugal é um país caracterizado pela forte procura de aquisição de habitação própria uma vez que foi incentivado a isso pelas políticas de crédito acessível a todos e pelas muitas lacunas no Regime de Arrendamento Urbano (RAU). Após consequentes falhas na implementação das reformulações no RAU, com a chegada de apoio financeiro e simultaneamente do apoio à gestão a Portugal surge uma nova oportunidade para que novas leis sejam implementadas de facto.

Esta pesquisa parte do modelo de Tabner (2008) que analisa seis hipotéticos perfis de adquirentes usando o Modelo de Crescimento de Gordon. O mesmo modelo, com as devidas alterações, é aplicado no contexto Português em três períodos distintos: no início dos anos 90; presentemente, antes do novo RAU ser aplicado; e após alguns anos, quando o novo RAU já estiver em vigor. Os seus resultados demonstrarão os impactos na decisão financeira de comprar ou arrendar uma habitação dependendo se é para o próprio ou para investimento.

Classificação JEL: D1, G10, R21, R31

Palavras-chave: Arrendar versus Comprar, Imobiliário residencial, Habitação, Finanças Domésticas

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1 INTRODUCTION AND MOTIVATIONS

Buying a house is one of the most important economic decisions made by many households over their life (Arce and López-Salido, 2006). This decision usually implies at the same time a financial decision. At that moment, a common mistake is to compare the rent paid to the landlord and the amount paid to the lender. However, they are different amounts. There are another expenses and potential income associated to each decision. For example, if the decision maker opts to buy, she has to pay taxes, building insurance and maintenance costs because that costs are paid by the owner, but if she opts to buy to let, in return she can receive an income, or if later the decision maker sells the property she can receive a capital gain from the sale. On the other hand, if the decision maker does not buy the property but rent a house to live, the costs are implied in the rent amount, hence she does not have accrued expenses. And this one can be cheaper than buying.

Notwithstanding the decision of buying or renting being an individual decision, it has consequences to the economy as a whole. If most people had their own house, instead of renting, that would work as a restriction to the labour market, by restricting the mobility of the workforce. It means that, households with a job opportunity outside the region where they bought their own property, hardly move to other place because of the psychological barrier which forces them to stay in the region where they bought a home. Besides the labour market, the financial market and the building market are also influenced by that individual decision.

Laia and Moedas (2011) refer "*Portugal lives with a similar interest rate of German, an identical consumption of Sweden, but with an identical production and productivity of Morocco*", it means, Portugal is living at a level which cannot afford. As a result, Portugal is now receiving help from the International Monetary Fund to make the correct structural reforms in the economy. This financial assistant suggests the necessary changes on the economy to make the market more competitive. The Portuguese economy in general and the real estate sector in particular need adjustments such as on the ownership ratio. The ownership ratio in Portugal is relatively high and, to achieve higher rates of mobility within unemployed group, it is essential a far urban lease act which stimulates renting instead of buying.

The present paper focus on real estate market, particularly on residential market, approaching the controversial decision of buying versus renting. Quoting Fanico (2009)

"The buyers of this segment are usually individuals who require use for housing of the property" and "The purpose which makes individuals to accomplish the purchase is usually the psychological effect of owning a home, leisure and investment". Notwithstanding the monthly amount which, perhaps, the owner-investors are paying to the bank, they feel like they own a piece of the property and they can settle in and relax there. Owner-investors can be at the same position of renters, however the former can say the house is theirs.

For that reason the challenge of this study is to help the readers and to explain this common but complex financial decision in the individual's point of view. It also offers insights to potential buy to let investors in order to determine if the investment is a profitable.

The remainder of this paper is segmented in four main sections. Section 2 provides an overview of the Portuguese Experience in the rental market and a summary of the advantages and disadvantages of buying and renting. Section 3 describes the methodology used in the study and section 4 presents the results. Finally section 5 summarises the main conclusions of the model as well as possible improvements applied to policies which can be made by the government to promote either the rental market or the housing purchase.

2 OVERVIEW

2.1 THE PORTUGUESE EXPERIENCE

Portugal currently needs to implement new policies with the purpose of revitalising the rental market. The rental market is essential to deleverage the private sector and the financial sector. Until now the policies have been implemented in order to incentivise people to purchase a home instead of renting. In the next subsections a historical review will be done to explain the policies, or rules, implemented until now and their consequences.

2.1.1 Rental Market

In 1910, a law freezing rents for one year was passed. Four years later, and until the end of the First World War (1914 – 1918), a period of frozen rents, eviction for convenience prohibition and renting obligation of the landlord was implemented. The decree no. 2030 of 22nd of June of 1948 maintained the frozen rents for new and existent contracts on major urban centres of Portugal (Lisbon and Oporto) without a limit of time and the prohibition of the eviction for convenience. This rule had a number of impacts on the rental market, making it less interactive and attractive for investors, the investors rented vacant houses and the contracts made until 1985 were still active. This has been of critical importance because investors have had some difficulty in expelling bad tenants or renegotiating their agreements in order to be equitable for tenants and landlords as well as in investing in their properties to increase their profit in the medium or long term.

A new law passed in 1966, the Rental Law, limited the contract terms to a maximum of thirty years according to article 1025th of the Civil Code which regulates the maximum duration of leases, but the leases done before that law were not revised. Just after almost twenty years (in 1985) another law repealed the frozen rents, decreeing free rental contracts and establishing a coefficient approved by the Government (currently the inflation rate published by INE[1]) which would affect the rents on an annual basis. With the new law a rise in rental prices was expected, and a social security system was introduced to minimize the potential negative impacts on poorer tenants. Another important point was the introduction of a minimum of five years for the contract duration.

[1] INE – Instituto Nacional de estatística – Statistics Portugal

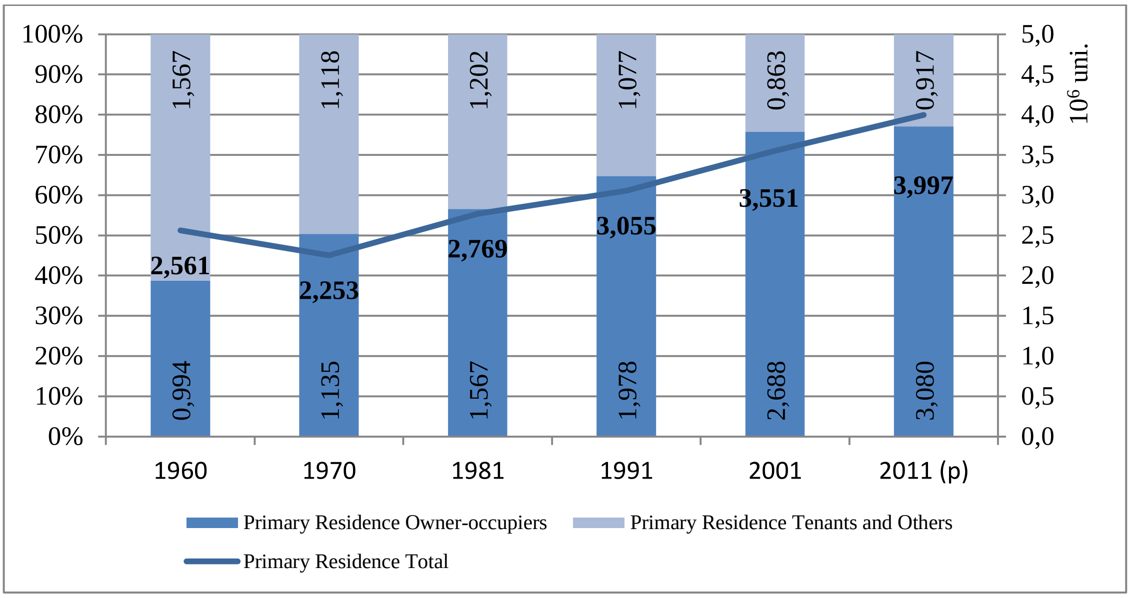
In the 60's, "the urban Portuguese residents were mostly tenants. The frozen rents in a high inflation period and the partial transfer of property rights from the landlords to the tenants had radically changed the urban rental market interaction and affected investments in repair and maintenance for many years, leading to a marked degradation of the existing tenant housing" (Tuna and Teixeira, 2007). The State gave special attention to shanty town residents building and invested in thousands of new houses for them and forgot the poor tenants who lived in worse conditions. The State conferred to landlords a social role, freezing rents and protecting the contracts, without compensating them, for example with non-repayable financing for the conservation and rehabilitation of houses (CIP, 2010).

Decree-law no. 321-B of 1990 (the Urban Lease Act, "ULA") repealed the law no. 46 of 1985 and many other laws on this subject. The ULA had as main objectives the reactivation of the rental market and to make the law on rents more clear. However, as Figure 1 represents, the tendency of the rental market was to decrease and the objectives were not being accomplished. The absence of an active Rental Market is not healthy for society as it limits population's mobility. As a result of such limitation, individuals who cannot find employment at their residential area are not able to get a job in another area, resulting in the diminishing of family wealth. Additionally, the impossibility of renting may lead individuals to buy houses. As different persons have different financial capacities, buying a house is not always the best decision, especially if they have to borrow money at extremely unfavourable conditions. To buy a home is a huge financial decision and a decision of great importance, with serious repercussions on families' finances who reach an agreement with financial institutions. Hence, the Rental Market can act as an important tool to stimulate family wealth and labour mobility.

At the end of the decade (in 1998), 38% of the rental contracts were done before the ULA, 43% were free contractual terms and 19% were other types of rental agreements, which means ULA did not have the expected impact after eight years.

The New Urban Lease Act (NULA) was passed by the law no. six in 2006, as Fanico (2009) emphasized "this law has as its main objective to get rents closer to their real market value, contributing to better resource management, and to eliminate the waste of resources used in new constructions when there is vacant real estate". However this has not happened and the issue will always be the balancing of the need for flexibility and responsibility in the rental agreements.

Figure 1 - Primary Residence



Source: INE

More recently, in 2007, a new subsidy was introduced, the «Porta 65» Young People programme, to give some benefits to young people when they rent a house. According to this programme, the Government agrees to pay a percentage of the rent instead of letting the young tenant support the full cost. Currently, it benefits from a twenty million euro budget. According to official numbers, in 2009, it supported twenty-two thousand families and one year before it was thirty-five thousand and the tendency is to continue to decline.

As said above, the Government had to implement new laws until the end of the past year and these policies had to be harder and more reactive than the previous policies. Recently, another new Urban Lease Act arose and is currently in discussion on the Parliament. It is expected from that Act more certainty on the rental market in particular to investors and potential investors. In this way the new act pretends to update rents of old agreements, make the resolution of the eviction faster and make the rental market functional.

As these tendencies are purely indicative, the tendencies and habits for the future is that our society will be shaped by the policies of our Governments, and in the future there will be many more people renting than now, bearing in mind the changes that lie ahead.

2.1.1.1 Urban Regeneration

As can be perceived, the housing stock has been deteriorating mainly in urban areas due to implemented policies on those areas and mostly in the rental agreements. The housing right is constitutionally recognised by the article no. 65 of the Constitution of the Portuguese Republic, however the State was unable to provide needed housing for those who it was lacking. As a result the State relied heavily on private investors to provide for the existing needs.

With low rents and rights practically absent in respect of choosing the tenants or the contract timing, the landlords left their houses abandoned, without fulfilling their duties inherent to contracts signed. By the article no. 89th of the Legal Regime of Construction and Land Development the landlords are obliged to do maintenance works in the house each eight years and, even without that elapsed time, to do all the ordinary maintenance works to keep the house in good order, nevertheless there was never a building concern. Thus, decades of negligence after, the housing stock remained in worrisome conditions: the houses were almost in ruins and sometimes with residents living in poor conditions and without insurance; adding the low rentals. The apparent solution was rebuilding and regenerating those houses in order to new tenants with high income to occupy them, rejuvenating inner cities. But what would happen to the current tenants of those houses? Most of them started to live in those houses for the first time when rents were low and frozen for a long period, and landlords had to ensure the State's social obligations. However, the free rents increased and, today, the current tenants are not being able to pay the rents of the free rental market. As the tenants could not afford the free market rents and the rental law protected them even when they did not pay their rents for a large period of time, they have been living in those houses in the available conditions. Nowadays tenants are undesired in those houses because the landlords are subject to several fronts: first local authorities are putting pressure to regenerating those houses, lifting a penalty on the Real Estate Tax rate when the regeneration is not completed in the specified time; second, penalization on rents cannot remain lower because lower rents imply the possibility of the payback period be higher than the landlord expectations (almost forty years); and finally, the landlords might be unable to borrow money toward housing refurbishment bearing in mind the current economic context.

Since 2008 the liquidity crisis has been affecting Europe and particularly the Portuguese Banks. Banks do not have sufficient funding to lend money, leading to a lack of liquidity. As a consequence, banks are offering higher rates on deposits and lending less money, particularly in case of mortgage loans, with more restrictions of Loan-to-value and at a higher reference rate (usually the loans are attached to the Euribor interest rate) and spread. But banks are restricting credit not only to particulars but also between each other.

Euribor® *is the rate at which Euro interbank term deposits are offered by one prime bank to another prime bank within the EMU*[2] *zone, and is published at 11:00 a.m. (CET) for spot value (T+2).*[3]

Thus, as they are lending between them at a higher rate, the Euribor is also higher, and as Euribor is the most used reference rate to mortgage loans of particulars, the interest rate has been increasing since then. The highest historical levels of Euribor interest rates in all maturities were achieved in that year. Banks are having a different position related to the risk of financial sector and to their financing on international markets because of that crisis.

2.1.2 Housing Market

The housing market has special features which make it very distinct from others. The main features referred in the literature (Hilbers *et al.*, 2008) are:

1. Heterogeneity – in this market each asset is different from each other;
2. High transaction costs and low turnover – the unit value is higher compared with assets from other markets and has low turnover at a short period;
3. Varying conditions of sales – the agreement is done by negotiation of both parts so the same house with different persons can have different prices;
4. Rigid supply – the delay between the offer and the supply, corresponding to the building period, makes this market more rigid;
5. Financing conditions – this market has special assets because they can be guaranties to mortgage loans done by purchasers; and finally
6. Taxes and subsidies – there are specific taxes and subsidies for this type of actives and usually disfavour the house owners.

Due to special features of that market, its dynamics are also special because they are driven not only by the macroeconomic environment but also by potential buyers' preferences.

[2] Economic and Monetary Union
[3] *In* European Banking Federation web site.

As far as laws are concerned, after the First World War there was a lack of decent housing and, following the European tendency, in 1955 the Portuguese Government introduced horizontal property through decree-law no. 40333. Nevertheless, the decree-law's effects only showed in the sixties. The tenants, mainly tenants with greater purchasing power, were able to buy an asset which they could use and take some gain on a future sale. Until that moment, to buy a flat they had to buy and own the whole building.

Parallel to the period of frozen rents, when the potential landlords were not interested in renting because they did not have rights and subsidised credit (the credit is subsidised in the form of deduction to the contractual interest rate) was implemented in 1976. There was an incentive to take loan to buy a permanent own house without many restrictions, it means, everyone could apply for the benefit, although only in the 90s an increase on housing demand was observable. During that period there were some conditions like the interest rate reduction, the financial market liberalization, the financial institutions competition and, in macroeconomic terms, the slowdown in the Consumer Price Index (CPI) rate and the continuous rising of the Gross Domestic Product (GDP) which have led families to run in debt, making their debt-to-income[4] ratio increase. Table 1 summarises some relevant interactions of the market which explain the sharp increase of the number of dwellings per Portuguese family from 1,13 up to 1,38 (during the period of 1981 to 2001) on average. Nowadays the ratio is 1,45 what means almost 45% of the families have two dwellings and 55% have one dwelling, on average, as can be seen on Table 2.

The supply clearly realised the opportunity that the market was giving to them and, thereupon, fitted betting in new construction on that period. As the bet is inversely proportional to the interest rate decrease on the mortgage loans, at that moment, the number of new houses built increased seriously. Another interesting progress observed on Table 2 is that since 1991 less people are now living in the same house, on average.

[4]The debt-to-income ratio measures the financial effort of the families with debts.

Table 1 – Housing Stock Dynamics in 1990

Demand	Supply
An increase in household income – the Portuguese disposable income *per capita* was 5.600€ in 1990 and 15.200€ in 2008, current prices;	There was a growth on the number of building companies and the appearance of the Real Estate Development concept in 90s – in 1990 there was merely 21.688 building companies, today are more or less 122.487;
An interest rate decrease – in 1993 the interest rate to the mortgage loans on average was 16,6%, in 2005 was 3,3% and in 2010 was 1,84%.;	There was a concentration and the entrance of foreign companies at the end of 90s (such as: Scyr, Prasa, San José, Bouygues, Nexity, between others); and
There was an improvement on the housing credit terms, leveraged by the government subsidies and incentives; and	The substantial increase of the number of dwellings built.
There was inertia on the rental market because the obsolete rental law and extremely disadvantageous to the landlord.	

Source: Laia *et al.* (2011)

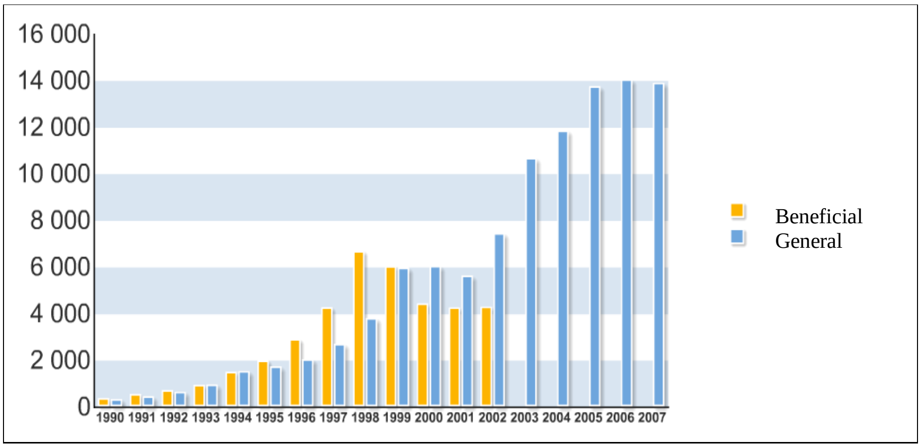
Table 2 - Census Data

	1991	2001	2011
Number of people by households on average	3,1	2,8	2,6
Number of housing by household on average	1,3	1,38	1,45

Source: Censos 2011

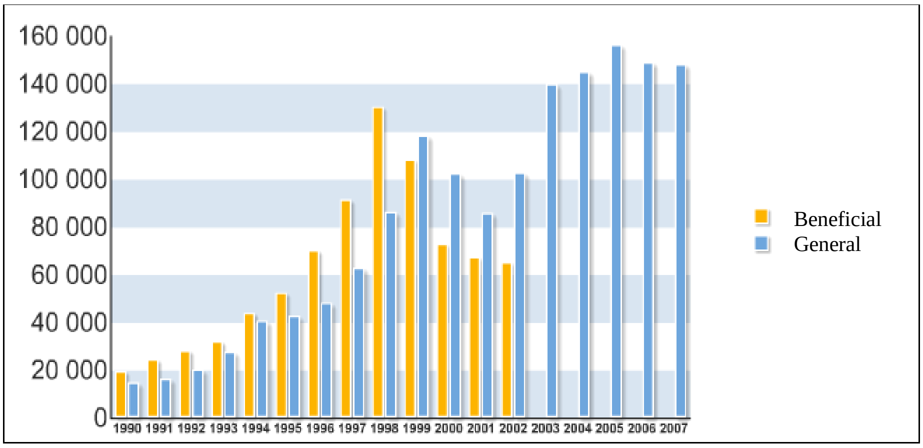
At the end of this decade a new restriction of who should apply for subsidised credit came and, looking to the Figure 2, it is evident when that restriction was implemented; clearly it was in the transition from 1998 to 1999. There was a decrease on the total amount borrowed with benefits in these two years although the total amount borrowed and, regardless the type of regime, continued to increase (as Figure 4 illustrates). The decree-law in which the restriction was decreed was no. 349 of 1998. The benefit was restricted to families with less financial possibilities, which makes sense given that not everyone needed the benefit to hire a housing credit. However, the introduction of the single currency (the Euro in January 1, 2000) and the new reference rate (the EURIBOR in January 4, 1999) reduced interest rates. This reduction had an equivalent impact on the bonus on subsidised credit. As a result, it was easier to hire a mortgage even without the additional benefit on the interest rate. As can be seen from Figure 2, in 1999 the amount provided by the general regime was equivalent to the one provided by the beneficial regime. In number of contracts awarded (Figure 3), there were a higher number of agreements done by the general regime and by the beneficial regime the number of contracts fell in 1999 as a consequence of the restriction when hired the last type of regime. On that period, the notarial and registral costs have been exempt when transferring the mortgage loans. Therefore the borrowers had the chance to shift their loans to other cheaper, or with other advantages, banking institutions.

Figure 2 - Mortgage loans hired by regime (total amount)



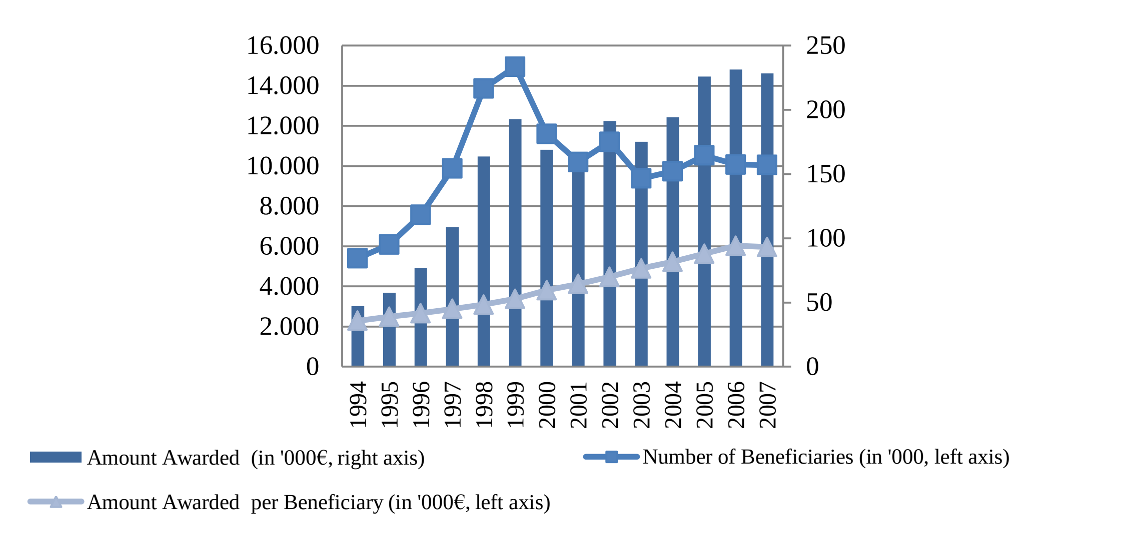
Source: DGTF

Figure 3 - Mortgage loans hired by regime (number of contracts)



Source: DGTF

Figure 4 - Mortgage loans, total amount hired



Source: DGTF, Pordata

The peak on the number and amount of subsidised loans hired was in the year in which the subsidised mortgage loan modification was announced, in 1998 (DGTF, 2008). Nowadays, this excess of contracts outstanding are gnawing the banking activity because several credits are in default (some borrowers should never have hired a mortgage loan as they did not have the financial capacity to buy a house or pay the loan instalment) and the house values are above the real value. “After the 90s, particularly from 2000, there was a down turn in individual debts mostly in 2002 when the beneficial credit ended. As solution the borrowers made an enlargement of the maturity date” (Fazenda, 2008) up to 30 years. One year later the reassessment of properties was started with the goal of getting the assessed prices closer to market prices and to fiscal effects. Accordingly, the Real Estate Tax would be fairer because the Tax would start being applied on a market price basis. At the same time, the 6-months EURIBOR had an upward trend which started in 2005, the costs increased and, once again, was clear the household’s savings rate decrease and the debt increase (GFMI, 2006) as shown in Table 3.

Table 3 – Household Disposable Income

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Households disposable income (nominal rate of change, per cent)	5,2	4,0	3,3	4,4	3,6	2,9	5,0	4,3	0,7	2,6
Memo: **Saving rate (in % of the disposable income)**	10,6	10,3	10,7	10,0	10,0	8,0	7,0	7,1	10,9	9,8

Source: INE

2.2 *PROS* AND *CONS* OF RENTING

As noted above, the rental market has fallen into disuse, but "everything is just a habit, our grandparents have always rented their homes and we, accordingly with the market changes, are used to buying it and our grandchildren might or might not re-rent housing" according to ADENE General Director Alexandre Fernandes in a speech delivered at the Lisbon Real Estate Fair 2011. Due to current market limitations, one of the points recommended by the managing and financial assistance program underway in Portugal was the incentive for rental housing. Homeowners and investors consider the present legislation outdated and unattractive, as it entails for them more risks than benefits.

The main disadvantages are: (i) the risk of default by the tenants and (ii) the delay in the eviction in case of non-compliance; (iii) in case of careless use of the property by the tenant and the investor does not undertake proper and regular maintenance, the result can be costly to the investor (such as having to refurbish the property or the total loss of future income); (iv) the high tax burden which can reach up 46,5% for individuals or 25% for companies and (v) the expenditures on Real Estate Tax (RET), condominium, the home insurance are borne by the investor or owner.

The advantages for the investor will only be (i) the profitability of the investment, i.e. the required rent as counterpart of the lease, (ii) the investment which can lead to a capital gain in case of selling the property valued and (iii) the possibility of easier acquisition of assets even when it is necessary to apply for a housing loan (specifically the buy to let loan).

But in the tenant's perspective the *cons* of the investor are their advantages, (i) only be responsible for the ordinary maintenance; (ii) the remodelling or the improvement of the accommodation are not their contractual liability, nevertheless if the tenant performs them (when foreseen in the contract) their total cost will be subtracted from the rental payments; (iii) not being responsible for the home insurance, notwithstanding the cases where the tenant accepts to pay the home contents and the personal property insurance; (iv) not being taxed over the home ownership such as RET and still get tax savings of about 30% of the rent up to the annual limit of 591€ (that limit respects to 2010 and the deduction is made on the Personal Income Taxation (PIT)) if the contract is done by the ULA terms; (v) as she does not invest in a house, downside risks, particularly if the house depreciates, are not incurred; and (vi) the last but not the least, the existing flexibility to change residence if she needs it for professional or family reasons. The last point will be analysed further because flexibility is crucial to the local economy dynamism and foremost to the national economy.

Nowadays, there is a standard practice which relates the Rental Market to the House Market. The Rental Market can be a first step to the house acquisition when the contracting parties agree with, what can be termed, an experimental period of time in which the potential buyer will be the tenant. Over that period of time the option of buying is available to the tenant and the rents paid until the deadline day provide a down payment if the tenant chooses to buy. There are points on the agreement done that can be variable, for example the experimental period can be defined on the beginning or undefined but established a deadline to the acquisition; can be given the possibility to the tenant proposing herself the date of buying the house or alternatively just when the landlord decides to exercise her contractual power. The decision may have to be more or less swift depending on the landlord needs. If she has received a proposal, the tenant has to make the decision. Thus, there is another point which can be variable, the tenant's decision can be dependent on other proposals made to the seller. If the landlord has the opportunity to choose the best offer amongst all including the tenant's offer, the tenant's offer can be privileged over competing offers. If not, the landlord has to accept the tenant's decision because other buyers were not foreseen on the agreement.

This change was a market requirement. As the amount of credit provided by the financial institutions is now lower and more restricted, potential buyers want to resort to less credit. However the house sellers want and need to make the transaction, hence this was a possibility given to those who do not have the required amount and wish to have their own house at the moment without asking for credit.

Being tenant is not only advantages; many of the advantages mentioned above have disadvantages linked. For instance in numbers (ii), (v) and (vi) it was referred that there is no risk for tenants if the property depreciates, that there are no responsibilities for the regeneration and there is a greater flexibility on residence changing, but the counterpart of these advantages are: (i) they do not add to their own net worth with real estate; (ii) they are dependent of the landlord's opinion when the house needs maintenance or repairing, sometimes urgent, even when their intention is to do that themselves; and (iii) there is the possibility of the eviction procedure takes place if the property-owner decides so, even when it is hampered by the Law. Another possible disadvantage is the advance payment of at least one month's rent, which is usually required as a guarantee to cover the inherent risk of the entire business of the property-owner.

In Portugal, the rental market is considered a replacement to the housing purchase market. Even though "being the rental market more dynamic and being evident the transactions increase, due the fact that banks are increasingly stringent and more demanding when granting loans" compared with the first half of 2010, "it is possible to state that rental market transactions increased only because the credit house was became harder to get" and therefore, "it has no further significance in the context of the Portuguese real estate market" accordingly to ERA Portugal's General Director Miguel Poisson.

2.2.1 Residential mobility and the labour market

Bearing in mind the Portuguese economy's dynamism in general, the Portuguese Government together with the International Monetary Fund (IMF) has proposed structural reforms in several economic sectors, two of which directly or indirectly related to the Rental Market.

The first concerns the <u>Urban Regeneration and rental market itself</u>, in order for the market to be more dynamic especially in urban centres. Hence the rental offer can increase and, as a consequence, the market can become more active. Several reforms before the above mentioned ones were created with the same purpose (the latest originated NULA[5]) which implies housing regeneration, its property valuation, resulting in increased rental income and more guarantees to the investors as regards the eviction of defaulting tenants. So far, the reforms have not achieved the established objectives. For that reason the housing stock was not rejuvenated and the expected dynamism was not accomplished.

[5] New Urban Lease Act

In accordance with the 31st XII Daft Law which approves the Major Planning Options for the period 2012 - 2015[6], the Government seeks to review the rent update mechanism, to implement an extra-judicial mechanism for tenant eviction and to increase contractual freedom among the parties. These procedures had been tried earlier (without much impacts on the market), however well executed, jointly with other measures, they can modify the housing market in general.

With the housing supply increase and increased rental market dynamism, labour market mobility is expected to benefit. Like some authors (Haavio and Kauppi, 2002; Böheim and Taylor, 2000; Haavio and Kauppi, 2003; Henley, 1996; Oswald, 1997) have been arguing, a working rental market is positively correlated with Labour Market efficiency, and as Haavio and Kauppi (2003) refer "…*in the labour market model the rental arrangement is actually socially optimal…*". An article quoted by Haavio and Kauppi (2003) and other by Oswald (1997), linked the proportion of owner-occupied housing in OECD countries and the average rate of unemployment, concluding that they are positively correlated. Böheim and Taylor (2000) reinforce the last proposition saying that *"…changing job or employment status and moving house are positively correlated*".

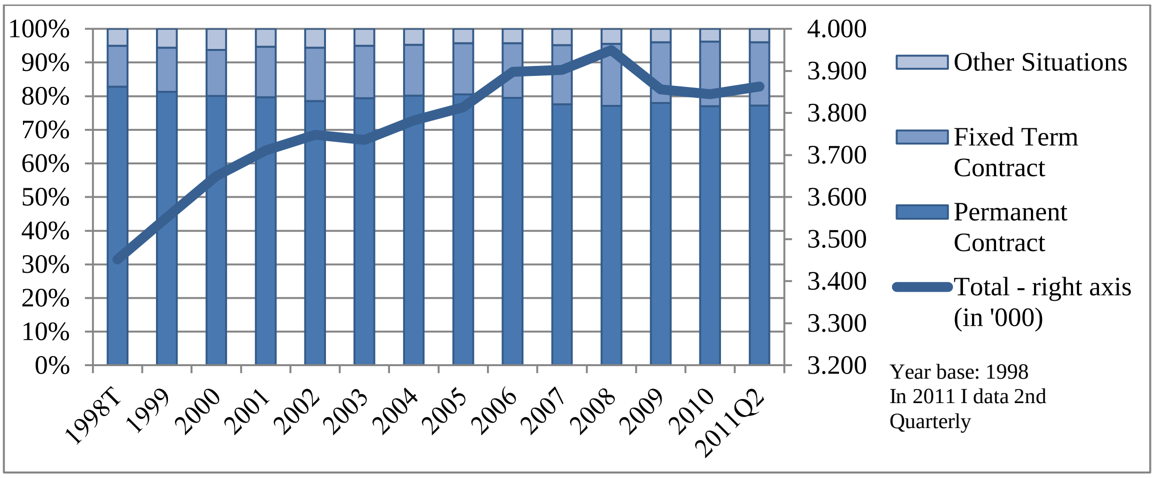
Figure 1 - Primary Residence shows the constant growth of the home-ownership proportion in Portugal between 1960 and 2001. The forecast for the second half semester of 2011 points to a slowdown on the home-ownership ratio reaching 77% of the total of habitual residences when in the homologous census period it was 76%. The slowdown happens because the housing credit is not so accessible to everyone who wants to acquire its own house, particularly in 2002 when the beneficial credit was abolished, and those were forced to rent the house instead of buying it. The same occurred to each who saw their homes repossessed because the borrower had failed to comply with the financial agreement entered into.

Another cause of home-ownership being so high is the fact that the usual type of employment in Portugal is the "employment-for-life". As permanent contract gives more stability to the employees, they believe that are able to acquire a house and use it for a while. As can be seen in Figure 5 - Employees by type of contract, in Portugal during decades the usual type of contract has been the permanent contract, rounding 80% of the total contracts signed by employers and employees. Then, the housing

[6] It was approved per majority on November 9th of 2011 by Portuguese Parliament.

market has been the predictable option for these life-long employees. On another point of view of Böhiem and Taylor (2000), with the same conclusion: the unchanging job is positively correlated with the unmoving house but, as Henley (1996) concluded, that relationship between the two is not linear.

Figure 5 - Employees by type of contract



Source: INE

As the Government needs to shake the Portuguese goods and services market, it believes that a labour Law reform which "… promotes the national economy, the competitiveness and job-creation, which diminish the precarious labour market…"[7] is necessary, resulting in its simplification, with flexible contracts in work timetable terms, with temporary transference of employees between companies and with training offer capable of generating new jobs. If all of the previous actions are well implemented, the "employment-for-life" will be questioned and then "…a housing market which forces employees into owner-occupation at an early stage in their life-cycles may not be one which is optimal"[8], as a consequence the rental market will be benefited.

Thus it can be shown that the second structural reform related to the Rental Market is the Labour Market and the Employment reform.

[7] *in* 31st XII Daft Law - "… fomente a economia, a competitividade e a criação de emprego, que diminua a precariedade laboral …"

[8] Henley, A. (1996) take this conclusion to Britain but for 1990s

2.3 *PROS* AND *CONS* OF BUYING

Quoting João Duque, "o imobiliário tem características próprias, dando-lhe motivo para ser simultaneamente um bem de investimento e de fruição" that means real estate has specific features, giving it a motive to be both an investment and ownership property. This is one of the possible advantages of buying a house because while the owner is investing on the property, she can enjoy the benefits of this possession, or as an alternative can "realise cash flows more or less safe and constant on time" (Neves, J. *et al*, 2009) when rented to other. Another advantage of buying (particularly when it is built to suit) is the possibility of choose the location and the type of construction; when there is a need to change something in the house will be easier because the decision maker is the owner thus the process is faster. The fact that is possible to obtain a capital gain when selling the house if the selling value exceeds the purchase value is another advantage. If there is a mortgage loan to acquire a first home, there is the possibility of deduction on the Personal Income Taxing (PIT) of 30% of the total amount (composed of principal and interest) paid to a financial institution. The same applies for rental contracts, up to 591€ annually.

The property maintenance is faster, however it implies that the decision is considered and taken by the owner, as well as the property insurance. In respect to taxes, the disadvantage of acquiring a house is the obligation of the RET annual payment which is between 0,2% and 0,7% of the urban property value or, on one hand if the house was revaluated according the RET Law, the new cap is 0,4% and, on the other hand, if not the floor is 0,4%. The effective value is defined according to the house location. At the time of house purchase the new owner pays the Property Tax (the Tax on Onerous Transmission) and at the same time the Stamp Duty which currently are up to 6% and 0,8% of the Real Estate value at time of transaction, respectively. "Os activos imobiliários detêm um elevado risco específico e uma forte condicionante que são as barreiras à entrada existentes nos mercados imobiliários"[9] (Neves, J. *et al.*, 2009). The Taxes referred earlier and the house value itself are strong barriers to market entry. The Real Estate funds overcome barriers to entry but are not a feasible option for individual investments in own housing, for which the only available financing solution is the mortgage loan.

[9] That means: "The Real Estate assets hold a higher specific risk and a strong constraint which is the barriers to real estate market entry".

Now imagine that a few years after acquisition, for professional (employment move) or personal (new family members implying a bigger house) reasons, a house change is required. This change implies two new deals: one for buying the new house and other for selling the current house; adding the property taxes related to the purchase transaction and the costs of the mortgage loan change if there is a loan for the previous house. If the loan does not exist and if the old house's seller does not have enough funds to keep the two houses, she has to wait for a buyer before buying her new house. Even when the old house is sold, the sale value does not always cover the total amount of the housing swap costs. Thus, there is little flexibility when you own a house.

When there is a mortgage loan appears the inherent risk to the interest. If the base rate grows (falls) before the interest rate review, there is an increase (decrease) in the rent paid or a decrease (increase) on the principal amortization.

3 METHODOLOGY

The purpose of this research is to produce general recommendations on the decision of home acquisition. It is important because we can have a perception of which variables have more relevance on that decision.

During the research some types of models were tried. One of them was a cash flow model. It is a model in which all of the variables are projected and a fair value is computed, pointing to the best solution for one single hypothetical housing purchaser. However the objective is a generalised model where each person can identify herself in a specific hypothetic purchaser. The cash flow model would have other limitations such as the number of variables and its forecast, mainly when talking about a large period of time. The potential purchasers could have a big tree of options which would make the decision and the computation much complex and less objective. The conclusions would not be precise or conclusive because the abundant hypothetical types of purchasers.

Instead, the model in use will be a Generalised Gordon Growth Model which was developed by Tabner (2008) with the objective of "enabling individuals to decide whether to buy, or to rent, their housing consumption needs and offering insights for potential buy to let investors" "in the context of the UK housing market". To get this perception "the present value of their consumption needs, or rental income respectively, thus to enable them to weigh up consumption decisions objectively alongside risky investment decisions" is determined. In this type of model it is extremely relevant to differentiate the consumption and the investment decision. The best investment not always has features that the owner wants to have and conversely when the house has *those* characteristics it could not be the best investment.

The Gordon Growth Model will be applied to the Portuguese housing market context in three different periods of time: the 90s; the present time, before the expected new law; and ten years from now, with the new law in force. By looking at those three periods it is easier to explain the risk for each profile to decide on buying versus renting and if the policies have the same impact on every hypothetical house purchaser. Given the policies implemented in Portugal it is expected that: the buying decision was preferable ten years ago; currently buying is only preferable renting for some buyer profiles, and vice versa; and it will be preferable to rent in ten years.

The conclusion will be different for each hypothetical house purchaser because each profile has "different discount rates, different cash-flows and hence different fundamental values", "even if the underlying property is identical." One main point of the model is the property value standardisation, therefore in all cases the property in question will always be the same (either renting or buying) making all the options comparable.

3.1 MODEL DESCRIPTION

In the Tabner model five main assumptions, which are transcribed below (Figure 6), were applied.

1. Purchase holding periods are infinite
2. Discount rates are fixed at the time of purchase and expected to be constant to infinity
3. Non-funded purchases are financed by an interest only mortgage with an infinite life
4. Rentals and purchases are substitutable so that housing consumption with identical utility may be either rented or purchased
5. Households' housing assets do not form part of a fully diversified market portfolio with the result than the required risk premium return of non-geared housing assets is scaled to the market risk premium using a ratio of housing return standard deviation divided by market portfolio return standard deviation

Figure 6 - Tabner (2008) model assumptions

The first assumption has the objective of standardising the projects duration, and the best way to do that is extending the duration up to infinity. With that assumption it is possible to compare options which are substitutable and the investor or purchaser has to choose one of them.

In finance, when the Cash Flows are annually constant (A) up infinity, and a fixed discount rate is expected (r, as emphasises the second assumption) the Present Value (PV) of future income is computed as in the perpetuity formula (1)

$$PV = \frac{A}{r} \tag{1}$$

But, when a constant annual growth of rents is expected (G) the Gordon Growth model applies:

$$PV = \frac{A}{r-G} \qquad , G < r \tag{2}$$

The constant annual growth should never be higher than the inflation because if it took place, in the perpetuity it would mean that rent would be higher than the global economy.

For simplification, non-funded purchases are financed by an Interest Only Mortgage (IOM) which is easier to predict than a mortgage. If the other type of mortgage was applied, should be necessary to predict when the last amortization occurs and just after that moment the Gordon Growth Model would be applied. Accordingly with the objective of standardizing the mortgage, to the mortgagee is only required the interest amount on the perpetuity.

In the specific case of the housing acquisition, the annually constant cash flow is the net rent of a furnished real estate. That is the Annual Rent deducting costs like mortgage interests (to non-fully funded purchases), maintenance costs (to maintain the fair value), annual Real Estate Taxes[10] (every profile has to pay the Real Estate Tax directly for buy-to-let investors and indirectly for tenants) and building insurance (like maintenance and building insurance usually is included in the rental cost). For an investor are deducted also the agent fees and the vacancy costs however that net rent, which is the net income before taxes, will be taxed at a marginal tax rate paid by a buy to let investor.

The discount rate is composed by the risk free rate and the risk premium times a tax paid for by fully funded profiles. The risk premium is distinct to each profile but it is going to be explained later. The implied g is computed after known the model price comparing with the market price. And the all-in costs, which are the purchase costs and the up-front costs, should be subtracted to the present value of the net rent because they occurs on the beginning of the contract.

Equation 3 resumes the Generalised Gordon Growth model applied to the House Market in this paper.

$$P = \frac{\left[R\times\left(1-(m+i+a+v)\right)-p\times(mi\cdot LTV+t)\right]\times[1-T_{btl}]}{(r_f+r_p)\times(1-T_{ffb})-CPI-g} - pc - f \tag{3}$$

[10] In Portugal, IMI – Imposto Municipal sobre Imóveis

Where:

a – annual letting agents fees including advertising and administrative expenses incurred by the owner as a percentage of R

CPI – the assumed rate of CPI, inflation used to adjust the nominal growth rate G to the real growth rate g

f – up front cost of purchasing future equivalent in value to that which would be included in a furnished let

G – the nominal growth rate

g – the assumed real annual growth rate in future rental income

i – annual building insurance costs as a percentage of R

LTV – loan to value which is the percentage of loan on p

m – average annual maintenance costs as a percentage of R

mi – mortgage interest as a percentage of p, this is zero for fully funded purchasers

P – the model price based on fundamentals

p – the market price which is as exogenous variable based on the most recently available comparable transactions or the asking price

pc – purchase costs, including solicitors fees, stamp duty, surveyors fees, mortgage approval fees as a percentage of the exogenous variable p

R – the rent required to occupy the property when fully furnished

r_f – risk free rate of interest for a depositor

r_p – the percentage risk premium return required by the owner or mortgage finance provider over the contemporaneous risk free deposit rate scaled according to leverage determined by the loan to value ratio

t – annual real estate tax as a percentage of p

T_{btl} – marginal tax rate paid by a buy to let investor, this is zero for housing consumers

T_{ffb} – marginal tax rate paid for by fully funded buyers be they consumers or buy to let investors. This is zero for unfunded consumers

v - vancancy costs as a percentage of R.

3.2 HYPOTHETICAL HOUSE PURCHASES PROFILES

Tabner had identified six profiles of purchasers:

1. a fully funded consumer with a marginal tax rate of 40%,
2. a fully funded buy to let investor with a marginal tax rate of 40%,
3. a fully funded tax exempt consumer,
4. a tax exempt buy to let investor,
5. a tax exempt consumer with a 50% loan to value ratio, and
6. a buy to let investor with a 50% loan to value ratio and 40% marginal tax rate.

However, in Portugal's case these six profiles are not observable. For example, every consumer has to pay taxes, notwithstanding there are some exemptions. Those exemptions have limits to each person and thus they cannot be considered on the model because it would become more complex and no longer be a generalized model. Consequently the third profile is eliminated.

Partially funded and unfunded profiles can deduct a percentage of the loan interest amount, but fully funded cannot do that. Hence, without a marginal tax rate to deduct, the *fully funded consumer with a marginal tax rate of 40%* becomes *fully funded consumer*. The last profile, *buy to let investor with a 50% loan to value ratio and 40% marginal tax rate*, is the only one where that deduction is considered.

Consumers do not pay taxes because they do not have any real estate profit either renting or buying. Only buy to let investors pay that marginal tax over the net rent pre-tax.

1. a fully funded buy to let investor with a marginal tax rate,
2. a fully funded consumer,
3. a tax exempt buy to let investor,
4. a consumer with a percentage of loan to value ratio, and
5. a buy to let investor with a percentage of loan to value ratio and a marginal tax rate.

It is not defined the loan to value ratio and the marginal tax rate in the profiles because each period has its appropriate marginal tax rate and percentage of loan to value.

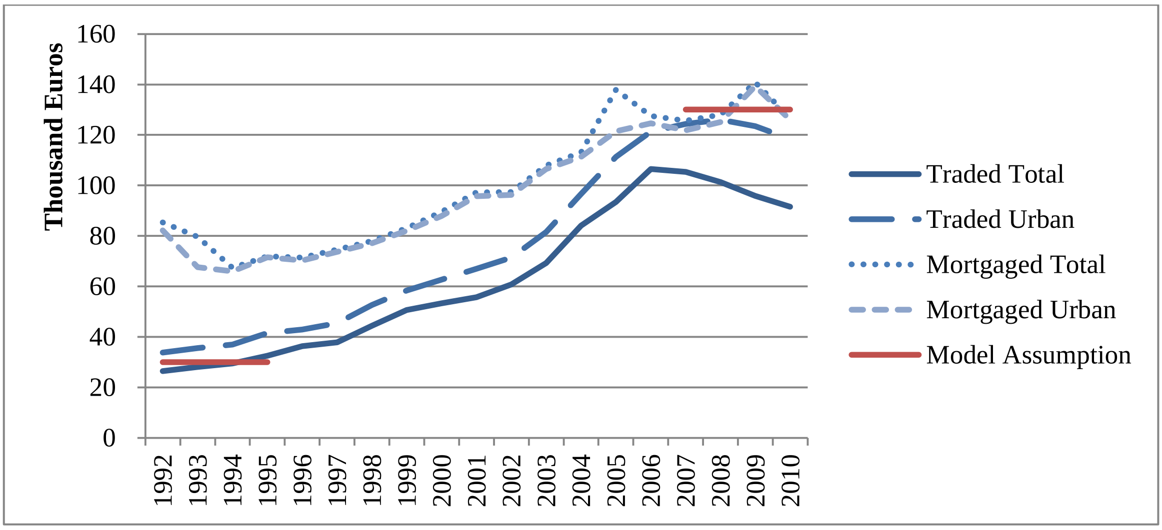
3.3 VARIABLES DESCRIPTION

The evolution of the market prices could be represented by an Index, in this case by the House Price Index (HPI). The Eurostat group is exploring a new HPI which considers the Euro area and the EU27 progress since the first quarter of 2005. However Portugal does not have its harmonized results published, which makes the work with that index unfeasible.

As denoted in Hilbers, P. *et al.* (2008), understanding housing price developments is important because: (1) housing-related economic activity generally represents a significant share of GDP and employment; (2) they are an important determinant of household sector gross and net wealth, and thereby of households' consumption/savings decisions (in many countries property is households' largest asset); (3) house prices can be a threat to economic and financial stability.

Figure 7 illustrates the evolution of real estate market price (p) of the Portuguese assets. In the early 90s the mortgaged real estate was overvalued and banks lend higher amounts of money. For that reason the market price assumed to the first period is based on the average traded and it is 30,000 euros. For the current period as there are less transactions the real estate can be undervalued and, therefore, the mortgage was privileged and a 130,000 euros market price was assumed. To a few years from now an increase of the mean value is expected, however a slower increase, being the assumed market price 200,000 euros.

Figure 7 - Mean Value of Real Estates

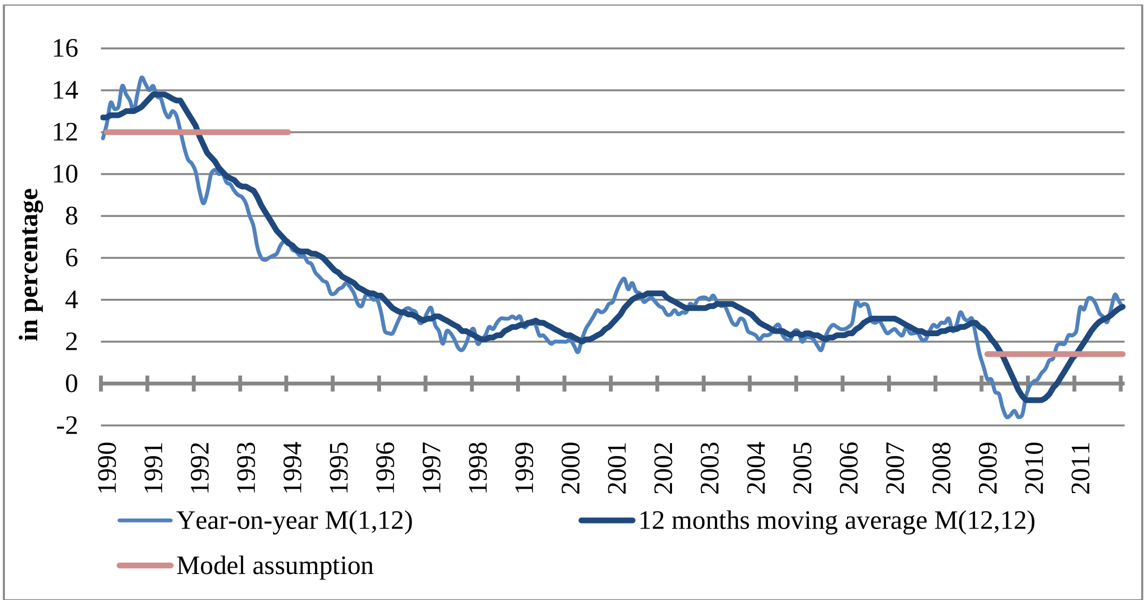


Source: INE, DGPJ/MJ

Another important variable is the inflation. In Portugal it is usually considered the Portuguese Consumer Price Index (CPI) because CPI measures the evolution of a basket of goods and services price. This index is the one which most closely matches the inflation rate.

Figure 8 shows the CPI changes and, as can be seen, early 90s was a period of high inflation. As follows it is assumed 12% for this variable on the model. For the present time and for few years from now the inflation assumed is 1,4% and 2%, respectively. In 2011 the inflation was near 4% however in the preceding years the rate reached negative values, therefore it was considered a lower rate. The 2% is considered for many authors the optimal inflation to a development country particularly when the economy is stable.

Figure 8 - Portugal Consumer Price Index



Source: Bank of Portugal

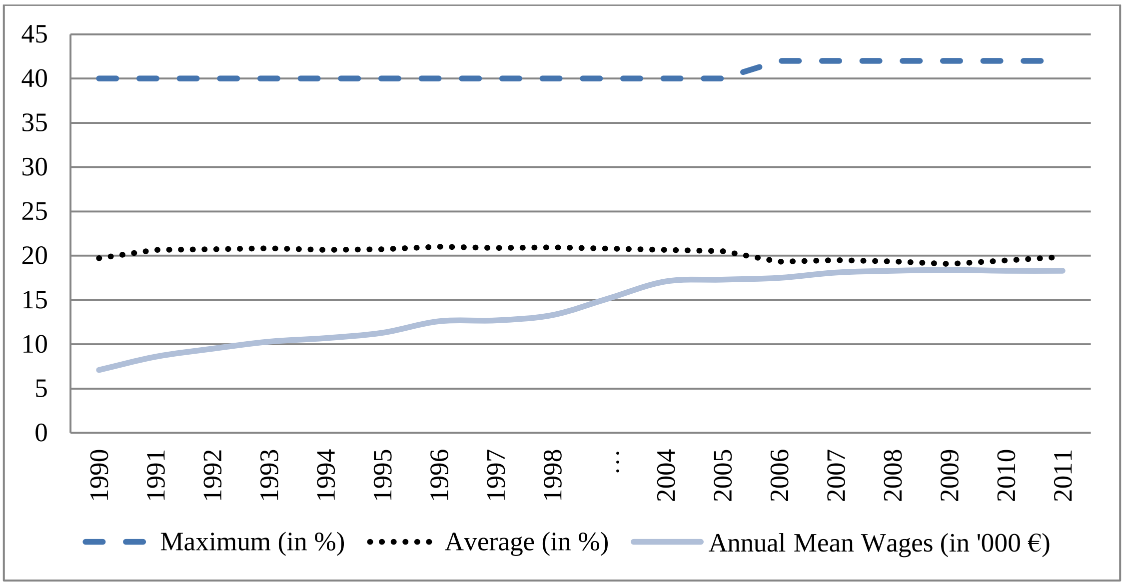
According with Laia and Moedas (2011), in the early 90s the interest rate implied on the house purchase was rounding 16% which is as high as the inflation rate and had followed the downward trajectory of inflation. Since 2000 the interest rate and inflation reduced their differential to approximately one percentage point, it is explained by the introduction of a single currency and the new reference rate in many Europe countries.

Recently, in a Bank of Portugal (2012) survey to the Portuguese banks, they reported "…the deterioration of expectations regarding both general economic activity and the housing market contributed to this more demanding credit policy. Similarly, most banks pointed out the increase in cost of funds and balance sheet constraints as an additional factor contributing towards the tightening of credit policy." As consequence, banks are stringent in lending money and just the potential contractor with higher sources can ask for a loan thereby obtaining a reasonable interest rate. Who cannot lend money in the banks has to find the alternative on the rental market, as referred on the second section. It was considered 6% and 7% to the present period and few years later, respectively.

To the discount rate it was considered a risk free rate different in each period. The logical alternative to invest on housing market is the time and saving deposits (over one year). Using the long series of Monetary Financial Institution interest rates on new operations are found the 14,5% to early 90s and 2% to today. And it is assumed 5% to a few years later. There is an additional risk premium rate of 2% for every period however this risk premium rate has to be scaled (assumption 5 of Figure 6) in relation to the market risk premium as in the Capital Asset Pricing Model (CAPM). As Tabner (2008) referred, "*there are more sophisticated scaling methods*" although in the present paper, the risk premium is going to be scaled by the loan-to-value factor based on the assumption that the required risk premium on homeowners' equity is directly proportional to risk.

In Portugal, the real estate profit (from renting when referring to a buy to let investor) is taxed by Personal Income aggregation. Accordingly it was computed a PIT average considering the annual mean wages and the proportional taxes by taxable income earnings (results in Figure 9). Then, to the early 90s, to the present time and for a few years ago are considered 20,5%, 19,5% and 20%, respectively. As the amount of tax savings is limited and Buy to let investor with a percentage of loan-to-value ratio and a marginal tax rate is the only profile able to deduct the interests, the tax paid is adjusted to the maximum annual amount of 591€.

Figure 9 - PIT on average of the annual mean wage



Sources: Portuguese Finance Website and author's computations

Note: The average PIT is computed considering the annual mean wages at that year and the scaled table to PIT.

4 ANALYSIS OF EACH PROFILE

The analysis is carried out with reference to three periods of time: the 90s; the present time, before the expected new law; and ten years from now with the new law in force.

4.1 THE EARLY 90S

The beginning of the 90s was characterised by high inflation and high interest rates. In the first four years the annual mean wages increased about 45% (from 7,1 to 10,3 thousand euros), notwithstanding the disposable income per capita in 1990 being 5,6 thousand of euros. Therefore, the annual rent, which was considered to be about 3,6 thousand euros, represented 64% of the disposable income (like a debt service ratio) which was higher than the recommended. As households could get their own property if they asked for a loan and the amounts paid to the bank were considerably low, they preferred to buy the house instead of renting and getting nothing in the end.

As can be seen in Annex 1 – Results for the Early 90s it is largely preferable to buy for *fully funded consumers*. Only if rents had decreased 5,16% per year, buying would be a bad decision. However, it did not happen as free rents have been increasing. Thus, *fully funded consumers* who bought the house have made the best financial decision. But, when those consumers asked for a loan of 50% of the house amount at an interest rate of 16%, the net present value (in the early 90s) fells to negative, which means that renting was preferable.

As said before, tenants got the idea that renting was more expensive than asking for a credit, so they bought the property. However as can be seen by the results, if the rents increased less than 4,18% per year that was a bad financial decision.

To the buy to let investors it was a good financial decision, particularly *tax exempt buy to let investors* as they had the benefit of do not pay the marginal tax rate paid by buy to let investors. That exemption increased the net present value in 13.475 euros. On the other hand, when they had to ask for a loan to invest, the result was not invest because the net rent after taxes was really lower than the *fully funded buy to let investors'* net rent and the tax shield was restricted to 5%. The net present value of -9.130 would become positive if the rents had been increased 4,18% per year, what does not seem realistic.

Even if the interest could be fully recuperated, the net present value would be -716 euros and the decision would be not to invest. But if it was expected an annual real increase of at least 1,33%, which is more attainable, the decision would be to invest.

4.2 PRESENT TIME

"Deceleration in mortgage lending, starting 2007, should be considered in the context of the international financial crisis which had negative effects on both supply and demand for mortgage loans. On the supply side, reference should be made to the significant squeeze on lending conditions in most countries" (Bank of Portugal, 2011b) and on the demand side, the restraining on the consumption.

Nonetheless the model results are interesting, as can be seen in the Annex 2 - Results for Present Time. For consumers is always preferable to buy a house while for *fully funded buy to let investors* is the perfect time to invest. If every consumer prefers to buy a house, it means there is no rental market and then the investors should not invest.

Ignoring that fact and looking for the results of buy to let investors, they present the same conclusion. For *fully funded consumers* it is interesting to invest in the market and it is better if they are *tax exempt*. If we make a simulation for *buy to let investor with a 55% loan to value ratio and 19,5% marginal tax rate* with a fully tax shield of 19,5% instead of 2,7% the decision would be invest but it would be important to pay attention to the growth rate. If the rents are expected to have an annual increase of less than 1,90%, then it is better not to invest because the model price would be lower than the market price.

Regarding consumers, the safer purchase is for fully funded consumer. As *consumers with a 55% loan to value ratio*'s net rent is lower than for *fully funded* and the discount rate is higher for *partially funded consumers*, the model price is lower and the purchase decision is riskier.

4.3 A FEW YEARS FROM NOW

From the new law it is expected a higher dynamism of the rental market. However, under the model and variable assumptions the results presented in Annex 3 - Results for A Few Years From Now show that the purposes of the new law will not be fulfilled because investors do not have the appropriate conditions to invest.

The one which will invest on the market is the *tax exempt buy to let investor* (which is always the profile with higher net present values) but if the net rent is expected to decrease more than 0,36% yearly, the investor should not invest as the model price (P) will became lower and not profitable.

The only way to buy to let investors be able to invest under the conditions assumed will be if they became simultaneously exempt from the Real Estate Tax and from the marginal tax rate paid by buy to let investors. Table 4 displays the results of each profile if buy to let investors would become tax exempt. With those adjustments they would be willing to invest notwithstanding the short margin of positive or negative growth which they are exposed to.

Table 4 - Total exemption to buy to let investors

	Fully funded buy to let investor with a marginal tax rate of 20%	**Fully funded consumer**	**Tax exempt buy to let investor**	**Consumer with a 40% loan to value ratio**	**Buy to let investor with a 40% loan to value ratio and 20% marginal tax rate**
NPV	50.000 €	53.750 €	50.000 €	-25.357 €	16.000 €
g	-0,91%	-0,98%	-0,91%	2,23%	0,97%

For the consumers, the *fully funded consumers* will keep truthful and should buy the house. If the consumer will contract a loan of 40% of the house market price (p), the decision would be rent because the net present value would be negative.

5 CONCLUSIONS AND POSSIBLE IMPROVEMENTS

The present study proposed to help the readers and to explain this common but complex financial decision. To reach that purpose it was developed a nominal Gordon Growth model for three distinct periods with five profiles of investors and consumers: a *fully funded buy to let investor with a marginal tax rate*; a *fully funded consumer*, a *tax exempt buy to let investor*, a *consumer with a percentage of loan to value ratio*, and a *buy to let investor with a percentage of loan to value ratio and a marginal tax rate*.

The conclusions show that in early 90s despite the common thought that buying would be the best financial decision, as a result of the lower mortgage interest, renting would be more profitable.

On the present time and for consumers are always preferable to buy a house while for *fully funded buy to let investors* is the perfect time to invest. But, if every consumer prefers to buy a house, it means there is no rental market and then the investors should not invest. For that reasons today the rental market is stagnant and needs to be promoted.

Despite the creation of a law to promote the rental market, the model implemented shows that the main objectives of that law will not be fulfilled. One way to overcome the limitations of the law and to reach the proposed goals is to exempt the buy to let investors (being they fully funded or partially funded) from the Real Estate Tax and marginal tax paid by them.

Looking at each profile it is also possible to conclude that for the *fully funded consumer* is always preferable to buy regardless the period of time considered as a result of the net rent. For the *tax exempt buy to let investor* is always a good option to invest in the rental market because this investor benefits from the marginal tax paid exemption. For the *buy to let investor with a percentage of loan to value ratio and a marginal tax rate* the decision is optimal decision is always not to invest given the considerably low net rent after taxes and the effect of the scaled discount rate which is not reduced by the tax shield effect leading to a negative net present value.

The present study is key to development of the Real Estate market in Portugal and contributes to an important gap on the literature, given the absence of this type of studies regarding the Portuguese reality. It gives an embracing and very complete explanation on the financial decision of buying versus renting which is not a strict comparison of two rents. Moreover this study can contribute to enhance the Portuguese fiscal law by giving an updated overview of the rental market.

As the literature in the Portuguese Real Estate Market is still poor there are several opportunities for future research.

Relevant studies would be the creation of an effective law based on the current real estate market needs, an international comparison including the Portuguese reality and studying the effects of these financial decisions to the economy as a whole.

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7 ANNEXES

7.1 ANNEX 1 – RESULTS FOR THE EARLY 90S

The early 90s	variable assumptions	Fully funded buy to let investor with a marginal tax rate of 20,5%	Fully funded consumer	Tax exempt buy to let investor	Consumer with a 50% loan to value ratio	Buy to let investor with a 50% loan to value ratio and 20,5% marginal tax rate
R	3.600 €	3.600 €	3.600 €	3.600 €	3.600 €	3.600 €
m	8,0%	288 €	288 €	288 €	288 €	288 €
i	0,0%	0 €	0 €	0 €	0 €	0 €
a	4,0%	144 €	0 €	144 €	0 €	144 €
t (of *p*)	0,7%	210 €	210 €	210 €	210 €	210 €
mi (of *p*LTV*)	16,0%	0 €	0 €	0 €	2.400 €	2.400 €
v	0,0%	0 €	0 €	0 €	0 €	0 €
Net Rent Pre Tax		**2.958 €**	**3.102 €**	**2.958 €**	**702 €**	**558 €**
Tax paid (T_{btl})	20,5%	606 €	0 €	0 €	0 €	114 €
NCFR, C		**2.352 €**	**3.102 €**	**2.958 €**	**702 €**	**444 €**
Discount rate (scaled)	14,5%+2,0%	16,50%	16,50%	16,50%	18,50%	18,50%
Tax paid for (Tffb)	5,0%	0,0%	0,0%	0,0%	0,0%	5,0%
Effective discount rate		16,50%	16,50%	16,50%	18,50%	17,57%
PV		**52.258 €**	**68.933 €**	**65.733 €**	**10.800 €**	**7.970 €**
Pc	5,0%	1.500 €	1.500 €	1.500 €	1.500 €	1.500 €
f	2,0%	600 €	600 €	600 €	600 €	600 €
P		**50.158 €**	**66.833 €**	**63.633 €**	**8.700 €**	**5.870 €**
p	30.000 €	30.000 €	30.000 €	30.000 €	30.000 €	30.000 €
g		-2,83%	-5,16%	-4,71%	4,31%	4,18%
NPV		**20.158 €**	**36.833 €**	**33.633 €**	**-6.300 €**	**-9.130 €**

To obtain the interest was multiplied 16% of the mortgage interest rate by the total amount of the loan (50% of 30.000€). It is assumed an only interest mortgage to make the rents constant up to the infinite. The discount rate is a combination of the 5% risk free rate and the 2% risk premium rate scaled up by the gearing factor of 1/LTV. As the LTV is 50% the risk premium is 2% divided by (100% - 50%). And the assumed CPI is 12%.

7.2 ANNEX 2 - RESULTS FOR PRESENT TIME

The present time, before the expected new law	**variable assumptions**	**Fully funded buy to let investor with a marginal tax rate of 19,5%**	**Fully funded consumer**	**Tax exempt buy to let investor**	**Consumer with a 55% loan to value ratio**	**Buy to let investor with a 55% loan to value ratio and 19,5% marginal tax rate**
R	10.000 €	10.000 €	10.000 €	10.000 €	10.000 €	10.000 €
m	8,0%	800 €	800 €	800 €	800 €	800 €
i	0,8%	75 €	75 €	75 €	75 €	75 €
a	10,0%	1.000 €	0 €	1.000 €	0 €	1.000 €
t (of *p*)	0,4%	520 €	520 €	520 €	520 €	520 €
mi (of *p*LTV*)	6,0%	0 €	0 €	0 €	4.290 €	4.290 €
v	0,0%	0 €	0 €	0 €	0 €	0 €
Net Rent Pre Tax		**7.605 €**	**8.605 €**	**7.605 €**	**4.315 €**	**3.315 €**
Tax paid (T_{btl})	19,5%	1.483 €	0 €	0 €	0 €	646 €
NCFR, C		**6.122 €**	**8.605 €**	**7.605 €**	**4.315 €**	**2.669 €**
Discount rate (scaled)	2,0%+2,0%	4,00%	4,00%	4,00%	6,44%	6,44%
Tax paid (Tffb)	2,7%	0%	0%	0%	0%	2,7%
Effective discount rate		4,00%	4,00%	4,00%	6,44%	6,27%
PV		**235.463 €**	**330.962 €**	**292.500 €**	**85.540 €**	**54.781 €**
Pc	6,5%	8.450 €	8.450 €	8.450 €	8.450 €	8.450 €
f	2,5%	3.250 €	3.250 €	3.250 €	3.250 €	3.250 €
P		**223.763 €**	**319.262 €**	**280.800 €**	**73.840 €**	**43.081 €**
p	130.000 €	130.000 €	130.000 €	130.000 €	130.000 €	130.000 €
g		-1,72%	-3,47%	-2,77%	2,00%	2,99%
NPV		**93.763 €**	**189.262 €**	**150.800 €**	**15.340 €**	**-15.419 €**

To obtain the interest was multiplied 6% of the mortgage interest rate by the total amount of the loan (55% of 130.000€). It is assumed an only interest mortgage to make the rents constant up to the infinite. The discount rate is a combination of the 2% risk free rate and the 2% risk premium rate scaled up by the gearing factor of 1/LTV. As the LTV is 55% the risk premium is 2% divided by (100% - 55%). And the assumed CPI is 1,4%.

7.3 Annex 3 - Results for A Few Years From Now

Few years from now with the new law in force	variable assumptions	Fully funded buy to let investor with a marginal tax rate of 20%	Fully funded consumer	Tax exempt buy to let investor	Consumer with a 40% loan to value ratio	Buy to let investor with a 40% loan to value ratio and 20% marginal tax rate
R	13.500 €	13.500 €	13.500 €	13.500 €	13.500 €	13.500 €
m	8,0%	1.080 €	1.080 €	1.080 €	1.080 €	1.080 €
i	2,0%	270 €	270 €	270 €	270 €	270 €
a	10,0%	1.350 €	0 €	1.350 €	0 €	1.350 €
t (of *p*)	0,6%	1.200 €	1.200 €	1.200 €	1.200 €	1.200 €
mi (of *p*LTV*)	7,0%	0 €	0 €	0 €	5.600 €	5.600 €
v	0,0%	0 €	0 €	0 €	0 €	0 €
Net Rent Pre Tax		**9.600 €**	**10.950 €**	**9.600 €**	**5.350 €**	**4.000 €**
Tax paid (T_{btl})	20,0%	1.920 €	0 €	0 €	0 €	800 €
NCFR, C		**7.680 €**	**10.950 €**	**9.600 €**	**5.350 €**	**3.200 €**
Discount rate (scaled)	5,0%+1,0%	6,00%	6,00%	6,00%	6,67%	6,67%
Tax paid for (Tffb)	20,0%	0%	0%	0%	0%	20%
Effective discount rate		6,00%	6,00%	6,00%	6,67%	5,33%
PV		**192.000 €**	**273.750 €**	**240.000 €**	**114.643 €**	**96.000 €**
Pc	7,0%	14.000 €	14.000 €	14.000 €	14.000 €	14.000 €
f	3,0%	6.000 €	6.000 €	6.000 €	6.000 €	6.000 €
P		**172.000 €**	**253.750 €**	**220.000 €**	**94.643 €**	**76.000 €**
p	200.000 €	200.000 €	200.000 €	200.000 €	200.000 €	200.000 €
g		0,51%	-0,98%	-0,36%	2,23%	1,88%
NPV		**-28.000 €**	**53.750 €**	**20.000 €**	**-25.357 €**	**-44.000 €**

To obtain the interest was multiplied 7% of the mortgage interest rate by the total amount of the loan (40% of 200.000€). It is assumed an only interest mortgage to make the rents constant up to the infinite. The discount rate is a combination of the 5% risk free rate and the 1% risk premium rate scaled up by the gearing factor of 1/LTV. As the LTV is 40% the risk premium is 2% divided by (100% - 40%). And the assumed CPI is 2%.