

***DRAFT***

***Housing market reactions in presence of  
retirees' migration***

**Paloma Taltavull de La Paz**, Universidad de Alicante  
Department of Applied Economy Analysis  
International Economy Institute  
Campus de San Vicente del Raspeig  
03080 Alicante, Spain  
telf. 34.965909693  
e-mail: paloma@ua.es

**Karen M. Gibler**, Georgia State University  
PhD, Associate Professor,  
Department of Real Estate,  
P.O. Box 4020, Atlanta,  
GA 30302-4020  
e-mail: [kgibler@gsu.edu](mailto:kgibler@gsu.edu)

## **Housing market reactions in presence of retirees' migration**

**Paloma Taltavull de La Paz**, Universidad de Alicante, España

**Karen M. Gibler**, Georgia State University, US

### **Abstract:**

Retiree migration in Europe has been an increasing phenomenon during the last fifteen years as people from Northern countries move to the South. Spain has been one of the primary destinations for this group where they tend to concentrate in some coastal and very warm areas such as Alicante, Islands and the South. The larger groups are British and Germans retiree arriving to Alicante and their flow of arrivals are in the same period when price and construction start to grow dramatically. This paper explores the role these retiree migrants could have played in the expansion process of the housing market in Alicante. We specifically investigate their implications on the housing prices and the different impact related to the nationality. Using time series analysis, the paper uses time methods to adjust a housing demand function where international economic variables are introduced in order to capture the impact of monetary and income conditions in Germany and UK on Alicante housing market. Results seem to suggest that the strong appearance of the retiree flow of migration could have created a shock in housing market in Alicante with different effects depending on the nationality.

**Key words:** housing market, retirement, economic effects, housing prices

**JEL Classification:** R21, R23, R31

### **Introduction**

International migration has been increasing in recent years in Europe. Most studies of this phenomenon have focused on workforce migration and its labor and societal impacts, but little attention has been paid to retirees moving from the richer countries of Europe, like Germany and the UK to less affluent countries such as Spain. This group of immigrants exhibits very different socioeconomic characteristics than the other major flow of immigrants, laborers coming to Spain from Latin America and Africa. The retirees are also distinctive from the local Spanish residents in terms of their income and housing tastes. Depending on the strength of the migration movements, the arrival of these new residents should have a measurable impact on the local economy. There are no studies in Spain that examine the economic and housing consequences of these immigrants. The long-term effect that these residents will have on their new communities and local housing markets, have not been estimated.

The arrival of Northern European retirees may produce a shock in local Spanish housing markets. Their sheer numbers have created a spike in housing demand in recent years in some communities. If large numbers of them purchase homes at the same time rather than as a slow growth in population, then instead of experiencing a gradual structural change, local housing markets where retirees concentrate may experience a dramatic shock (Maddala and Kim 1998). These new residents may demand housing with more expensive features when compared with local population. Thus, we would expect to observe an increase in building activity accompanied by an increase in prices. This shock may have permanent effects and

progressively change the market mechanism, moving the equilibrium price level and construction quality upward. The entry of these new buyers to the market could modify the long term determinants of the local housing market, changing the equilibrium conditions. The initial shock, funded by capital inflow from immigrants' home countries, is expected to contribute to house-building and increasing construction employment first, but then influencing prices and overall economic activity in the region. This influence is especially important in areas whose local economies rely heavily on tourists and retirees.

The aim of this paper is to determine whether this is happening in Alicante, the main destination within Spain for retirees from the UK and third for Germans. The study aims to check whether the flow of migration has supposed a shock in housing markets and could have contributed to the explanation of the expansion of development and increases in prices.

This paper is organized as follows. Section one explains the economic reasons why the retire migration to Alicante could have produced an economic shock in those housing markets. Section two defines the theoretical bases to construct the model. Section three explains the data used in the analysis. The fourth part defines the empirical results. A discussion of the results and conclusions are included in two last part.

### **International Retiree Migration to Spain**

Mobility and international migration have been very important, increasing in Spain until 2008. According to the Residential Variation Statistics (EVR), more than 72% of all household moving into and within Spain from 1988 TO 2008 were concentrated in the last 10 years (Table A). Almost 6 million households immigrated to Spain during that time, with a dramatic increase in arrivals from foreign countries until recent years, as it can be seen in figure A, starting diminish during 2008 as a consequence of international crisis.

The average age at retirement is declining in Europe (OECD 2001). Many retirees can look forward to decades of healthy living. No longer geographically tied to a place of work, their pensions and wealth are mobile. 'Amenity led migration' is not prompted by the quest for economic opportunities, but rather for leisure opportunities, and is oriented to achieving a better quality of life, which leads them to settle in geographical areas with mild climates and amenity facilities.

There is a relevant flow of retiree migrants in Europe being oriented to the southern (Mediterranean) countries as well as overseas. The migration has resulted in the appearance of communities of retired foreigners in certain areas of the Spanish Mediterranean coast acting as a magnet for the retired populations of Northern European countries (Warnes 1994; Williams et al. 1997; King et al. 1998; Rodríguez et al. 1998; King et al. 2000; O'Reilly 2000).

These immigrants are concentrated in a few destinations in Spain. As Gibler et al, 2009, showed, Alicante is third largest recipient of immigrants followed by Valencia, Malaga, Murcia and the rest of Mediterranean provinces and the Islands. The arrivals of those aged 55 and older coming from developed countries increase dramatically during last years (Figure B) tending to be concentrated in similar cities with other immigrants from the same origin country. In the case of Alicante, the two major sources of retiree immigrant flow are the UK and Germany, as shown in Figures C,D and E. The movement of aging Northern Europeans to Alicante must at least partially be explained by attractive housing market conditions and weather. However, the strong entrance, as well as the fact that it is concentrated in a bundle of

small and medium size towns, have had relevant impacts on the housing market and also the economy as a whole in those areas.

### **Retiree Migration Impact on Housing Markets**

The behavior of migrant retirees in the destination area should follow the theoretical principles of housing demand. Consumers are expected to maximize utility, choosing a preferred bundle of housing features subject to their income constraint. What is known about this type of migration is that (1) retirees may be making a protective move in anticipation of the reduction in real income they will experience when they retire, (2) older homeowners' income constraint is not tied to wages and salaries, but to pensions and wealth, (3) international migrants may choose to live in an economy where housing costs are more affordable than where their income and pension were earned and they receive a better 'quality of life' due to the environment, among other reasons. (4) Due to retirees' consumption depends on their pensions and wealth and these have been set exogenously to the economy where they choose to live, their presence should create a second wave of demand for in-home services or purpose-built retirement housing, resulting in changes in the local economy with construction of the new housing and resale of their original homes, in the first moment, and a permanent increase on the consumption quantity and specialized goods (Gibler et al, 2009,b).

A reverse flow of migrants may eventually occur, returning the retiree population to the home country, which will have an opposite effect on the local economy from the arrival of the retirees.

Research has been conducted in the U.S. regarding interstate migration of retirees (see for example Reeder 1998; Stallmann *et al* 1999; and Skelley 2004). The overall effect that these older migrants have on the host residential market does not differ much from that usually found in the general housing literature. Demand for goods and services are generated by the family and the property in which they live. Demand concentration encourages dynamism in property markets by increasing both construction rates and prices, as is shown in the classical literature on these issues (Arcelus and Meltzer 1973; Hanushek and Quigley 1979; Muth 1988; Smith *et al* 1988; Quigley 1996; Quigley 1997; Clark and Withers 1999; Coulson 1999; Eaton and Eckstein 1997; and Meen and Andrew 1998, among others). Migrants' income levels determine the size of the impact on the residential market. When any area attracts retirees, the main impact is on the housing sector. Research indicates that almost one-third of U.S. retiree migrants buy homes close to the time of arrival in their new community (Bennett 1996; Serow and Haas 1992; Miller *et al.* 1998). Most retirees also bring income and wealth flows with them, having higher wealth than the rest of retirees in the local market (Orzechowski and Sepielli 2003).

Although some of the pioneer studies of international retiree migration in Europe analyze the increasing number of property purchases in rural France by British retirees (Buller and Hoggart 1994, Hoggart and Buller 1995), analysis of the impacts of this type of migration on the housing markets of destination communities is very scarce, highlighting the need for further research on this topic. Taking all the empirical evidence mentioned above into consideration, it could be expected that retired people follow incentives to move only if their economic characteristics enable them to acquire housing in the destination market. Housing prices constitute a relevant variable to take into account together with income and housing features to understand movers' behaviors and their impact on the housing market equilibrium.

## **The research question**

Economic theory principles suggest that retire migration coming from developed countries would increase housing demand in their destination markets as well as services and goods demand with potentially positive effects in the economy. Due to their stable flow of income (pensions) and the fact that it must be enough to guarantee their quality of life in the destination city, they suppose a stable effective demand in the housing market and the rest of the goods market in the town. As the flow of retiree arrivals tend to concentrate in any specific town, the economic activity increases (mainly in building construction during the first hit and then shopping, services...) possibly impacting price and, then construction in the areas where they are located. In their origin countries, the retirees would have owned property commensurate with their income level in a market that exhibits higher median housing costs. When they move to a country that has traditionally offered lower housing costs and lower cost of living, they bring their higher income and wealth as well as a different level of acceptable housing expenditure. If any housing market receives demanders with a higher level of income and capital availability than the local residents, and they buy houses, their presence will tend to increase the level of housing prices until some point between the previous equilibrium price in the domestic market and the one existing in their origin markets. Whether the migrants pay homes using equity from previous houses sold or saving have to impact twice in housing market due to the strong capital availability. What the REVIcVAL<sup>1</sup> survey showed (Gibler et al, 2009, figure B) was that economic features were important in the destination areas, like good house prices perceived in terms of the retirees' income level, low cost of maintenance and public taxes, the existence of premium in the relative cost of living, and the strength of the retiree's purchase capacity of their income. All these characteristics could convince retirees to move and destiny their wealth to buy houses in Alicante area, paying in cash using previous housing equity owned. The former features support the idea of this movement has hit the housing markets in the destination areas in Alicante.

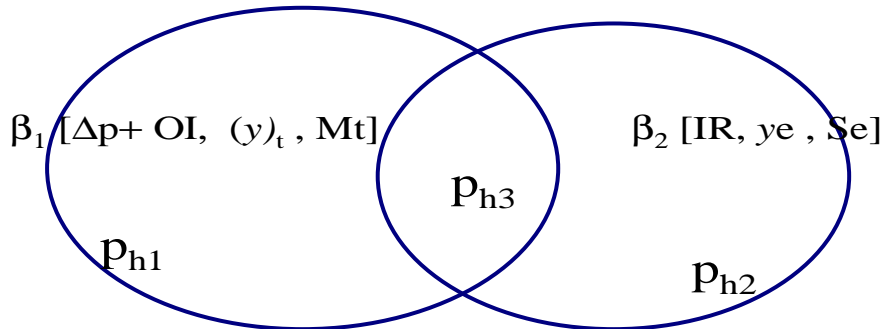
When this phenomena is present in any local housing market, a segmentation in the demand flow is experienced. Domestic demand use to be structured by level of income being dependent of the local economy which determines the purchase capacity for their housing demand (through level of wages, employment and economic cycles). The presence of new demanders depending on other different economic structures, and with relatively stronger purchase capacity (which make them to be added to the higher level of income's flow of local demand) stress the mechanism in the higher quality segment of the housing market, increasing the price level and construction in this segment, during the first stage. This segmentation could be more stressed when the market receives also other a flow of migrants for work purposes. The latter migration tends to have economic characteristics closer to the local population ones (due to their income depend on the wage level in the labor market) and push the housing demand up in the primary house market. Both different reason to housing demand increase (local demand plus labour immigrants and residence demand from retirees) tend to stress the tensions on the local sub markets raising the difference on the house price level. Since the flow of entrance of migrants continues, increase on prices could be transmitted to the rest of the market through the ripple effect. Diagram 1 show the impact, where  $\Delta p$  is the increase on population,  $OI$  refers to other immigrants,  $IR$  is retiree immigration,  $y_t$  is the domestic income and  $y_e$  is the income

---

<sup>1</sup> REVIcVAL is the acronym of 'Retirados y Viviendas en la Comunidad Valenciana' - Foreign Retired People and Housing in the Valencia Region, research project R&S&R of Generalitat Valenciana, reference number GV04 B530

of retirees,  $Mt$  is the total mortgage flows,  $Se$  refers to the saving used by retiree migration to buy a house.  $Ph1$ ,  $ph2$  and  $ph3$  refers to the different level of housing prices in segmented markets.

**Diagram 1**  
Housing market.. The presence of retired migrants



The increase on prices would act as signal to late supply reactions and they will result in increased housing construction, developing a sub-market offering products oriented to the higher income level of the immigrants, explaining the urban expansion in the destination area, possibly with higher level of quality or housing characteristics.

Empirically, to isolate the effect of retiree migrants in local markets is not a simple task due to the existence of other forces acting at the same time in Alicante housing market like labor migration and local demographic movements (figure A), others than a strong and sustainable economic growth and the credit expansion seen in most of developed countries. It is more difficult if some of the REVICVAL results related to the differences due to nationalities in the housing retiree demand are introduced into the analysis. What the survey remarks is the distinct impact that retiree demanders have on the housing market depending on their origin. Britons and Germans show not similar path in many aspects, as the tastes, location in Alicante province, income, cost of living sensibilities, the method of house payment and also flow of entrance, among others, possibly making the housing market to react with different sensibilities. The majority of Britons and Germans retiree's presence in Alicante (figures C to G) suggests that both nationalities could be introducing different influences into the housing market stressing the differences on market answer and segmentation.

What this paper undertakes is the latter perspective. It answers the research question about what different impact each group of retiree migrants have into the housing market signal and whether their economic characteristics have played the role as new fundamentals to affect the housing market prices in Alicante province.

### The model

This paper explores whether retiree flow of arrival in Alicante province is responsible of some part of the increase of prices in its housing markets, distinguishing between Britons and Germans retiree migrants. A traditional demand function is used, where the demographic component as well as the income level and flow of capital to invest in housing are supposed to have permanent effects on the housing markets and variables relatives to the short run

equilibrium are also included into the model suggesting to have transitory effects, such as user costs and vacancies.

The demand equation is focused in the effect of the retiree flows. Of course, there is a consistent reason to consider that retiree migration is part of the permanent demand which is that they buy a house in any town, register as residents and live in Alicante. In fact, and instead they only reside mid year or a bit more, they maintain fully link with the town through the house expenses and maintenance, and demanding new services every year, during the time they stay in Alicante.

Since housing demand can be estimated as follows:

$$Q_h = \theta(X, Z) = \theta[(Pop, y, K), (p_h, \Delta h, Cu), Of] \quad (1)$$

Where:

- $Q_h$ : housing demand
- $X$ : vector of variables with permanent effects on the market, which are:
- $Pop$ : Population
- $y$ : Real income per capita or other measure of permanent purchasing capacity
- $K$ : capital expenditure on housing other than income
- $Z$ : vector of variables with transitory effects on the market, which are:
- $p_h$ : housing prices
- $\Delta h$ : vacancies
- $Cu$ : user costs of housing
- $Of$ : other factors, such as relative prices of other goods and consumer tastes

At any moment in time, the market fits through prices following the expression (Meen 2001):

$$P_{h,t}^d = f(X, Z)_t = \alpha_1 + \alpha_2 (Pop)_t + \alpha_3 (y)_t + \alpha_4 (K)_t - \alpha_5 (\Delta h)_t - \alpha_6 (Cu)_t + \mu_t \quad (2)$$

Where  $P_{h,t}^d$  represents price per unit of housing, adjusting submit to any existing shock from the demand side. When this shock comes from any component included in the long term equilibrium trend, the increase on prices could be consider as permanent. This trend is a function of long term equilibrium factors ( $X$ ). Deviations are produced by components of  $Z$ .

The demographic component could be rewritten including different sources of population flows so that its variations are determined by the natural population growth and by immigration.

$$Pop_t = Pop_{t-1} + \Delta pop + IR + OI$$

where  $\Delta pop$  is the natural population growth,  $IR$  quantifies the international retiree immigration and  $OI$  measures the rest of immigration, national or foreign.

The origin of migrants is associated with the average level of income per capita through the labor market. Then, residents' income per capita could vary depending on whether the income source originates in the local labor market or not. The local population and immigrant workers will have similar income levels coming from wages ( $y_s$ ) set in the local market. On the other hand, the income of retiree migrants ( $y_e$ ), which may be higher than that of the local laborers, takes the form of pensions whose amount depends on the productive specialization and

education held by retirees in their country of origin as well as the wage levels in their country of origin during their working years. Income per capita can then be expressed as:  $y = f(y_b, y_e)$ .

The 'normal' level of housing price is a function of  $[pop, (y_s)_t]$  from local population with local income along with immigrants working in the local labour market,  $[OI, (y_s)_t]$ , and retiree migrants with their pensions  $[IR, y_e]$ . Available resources to finance the retirees' housing purchase,  $K$ , could also have two different sources: mortgages ( $M_t$ ) and the external saving or housing equity from the country of origin associated with retirees ( $S_{et}$ ), ( $K_t = M_t + S_{et}$ ).

Then, (2) could be re-written (2) as,

$$P_{h_t}^d = \alpha_1 + \beta_1 [\Delta pop + OI, (y_s)_t, M_t] + \beta_2 [IR, y_e, S_{et}] + \alpha_5 (\Delta h)_t + \alpha_6 (Cu)_t + \mu_t \quad (3)$$

Equation (3) could be interpreted as prices reached by the market are a result of two different forces that act simultaneously and derive from two sources of demand, each of which have their own characteristics. Both participate in the determination of market equilibrium. If the relative weight of  $(\beta_3 [IR, y_e, S_{et}])$  is large or increasingly relevant, changes in it could modify the market constants, driving the market to a new set of equilibrium parameters.

When the immigrant flow 'appears' in the market, i.e.  $\beta_2$  changes from 0 to any positive value, price  $P_{h_t}^d$  may move away from the previous trend line in answer to the demand shock. Once the market assimilates the innovation (shock and permanent change), then the effects of continuous and stable growth tend to be reflected by the market constants as the fundamentals predict. The retirees' presence will impact equilibrium if it is large enough relative to domestic demand's fundamentals, segmenting the market and differencing them from the average market characteristics.

These suggest that we could define a specific housing demand equation for retirees' migrants in order to capture their impact on housing prices growth.

We know<sup>2</sup> that the retiree migrants tend to use cash to pay for their houses, so their presence implies an important flow of capital arriving to the municipality, then variables related to the capital movements, as interest rates, have to be relevant to explain the housing purchase behavior. We also know that retiree migrants are taking advantage of housing price and cost of living differentials (Gibler *et al.*, 2009). Paying in cash should mean that migrants have to 'translate' their wealth from their local currencies to the peseta (previous to 1999) and then euros, being also relevant the role of exchange rates, as it happens in any other 'export' sector. This is important in order to quantify the purchasing capacity for Britons buying with pounds or Germans in marks. This then requires the inclusion of the exchange rate into the model as a variable determinant of the flow of capital component.

The differences in the cost of living should affect their pension's purchasing capacity measured in pesetas/euros. A pension that supported only a low to medium purchasing capacity in their origin country could provide high purchasing capacity in Spain (as the REVIcVAL project supported). This could be caught by the ratio between consumption goods price levels among countries. The evolution of this ratio could be a proxy of how strongly purchase capacity could attract retiree migrants to the Alicante municipalities.

---

<sup>2</sup> The results indicate come from the REVIcVAL Project results. See Gibler *et al.*, 2009 for more details.



Regarding those short term variables affecting the equilibrium in housing markets, the variable  $Cu$  (user cost of housing) captures the common effect from mortgage interest rates, depreciation rate, property tax rate, marginal income tax rate, inflation, and capital gains (Dougherty and Van Order, 1987)<sup>3</sup>. Some of its components are constant or zero from the retiree's perspective. Depreciation and property tax are considered fixed. For this group of migrants, income tax is zero because retiree migrants do not declare taxes in Spain. Regarding the capital movement, differential in interest rates, inflation and capital gains could play a role to explain the impact of the retirees' presence on the market equilibrium. Interest rates could have an effect on the housing purchase decision in terms of the difference in mortgage interest rates in those cases where migrants used a mortgage (in their origin country or in Spain) to buy the house or, simply, referring to the capital costs. The inflation effect on their purchase capacity is captured by the ratio between the CPI in the country of origin and the destination province. The capital gain perception for this group is captured by the speed on housing prices increase in the local market as usual.:

$$Hcg_t = (\Delta Hpr / \Delta Hpr(-1))_t \quad (5)$$

And the interest rate premium ( $Irp$ ) could be defined as

$$Irp_t = Mire_t - Mirl_t \quad (6)$$

$Hcg$  is the housing capital gains differential,  $\Delta Hpr$  the increase in housing prices, and  $\Delta Hpr(-1)$  the increase in prices in the previous period.  $Mire$  is the mortgage interest rate in the country of origin and  $Mirl$  is the mortgage interest rate in Alicante, so  $Irp_t$  will be negative when the cost of capital in Alicante is higher than in the country of origin.

Then, the short run component affecting to retirees demand remains as follow:

$$Cu_t = f([CPIE/CPII], Irp, Hcg)_t \quad (7)$$

Then, the model referring to the retiree's demand of houses in Alicante, to be estimated is:

$$\Delta P_{ht} = \alpha_1 + \gamma_1 [IR]_t + \gamma_2 [y_e / y]_t + \gamma_3 [Exr]_t + \gamma_4 [CPI_e / CPI_i]_t + \gamma_5 Hcg_t + \gamma_6 Irp_t - \alpha_5 (\Delta h)_t + \mu_t \quad (8)$$

## Data

The data for this analysis were obtained from different sources. We use the conclusions for British and German retiree migrants from REVICVAL in order to address the conceptual model, from which we learn the main flows of retiree migrants, their location, average age and habits to buy houses and pay with equity. This information draws this paper to select the specific data to define the housing price model.

A database is constructed pooling dynamic data (1988-2008) to estimate the model. A different model is fitted for Germans and Britons in order to contrast the various impacts by

<sup>3</sup> User cost component is commonly regarded as the arbitrage condition of housing market, due to  $Hp_t = R_t / ((1 - \phi)it - \pi t + \delta t - (ge./g)t)$  (Meen, 2001). This expression includes income tax component ( $\phi$ ), interest rates  $i_t$ , inflation  $\pi_t$ , depreciation rate or housing  $\delta_t$  and capital gains as a negative cost to hold houses ( $\delta ph./ph)_t$ ). Poterba, 1984, also includes other type of tax rates ( $\tau^P_t$ ) and the interest rates for alternative assets other than a house:  $Cu = ((1 - \tau^Y)(it + \tau^P_t) + dt - E(\pi^H_t))$ .

nationalities. Including the last information available (until 2008) we can check the impact on financial crisis through housing markets in the original countries, in the Alicante region. Definition of data is contains in Table 1.

Description of the information used in the model is below.

*Housing prices* are obtained from the Spanish Ministry of Housing database started in 1988 and collected through 2008. Real housing prices have been computing deflating the amount by square meter with the construction cost index, based in 2005. Figure 1

*Residential variations* – (IR) INE, Spanish Statistical Institute (<http://www.ine.es>) publishes the number of new registered persons to live in a municipality each year (about 27 millions from 1988 to 2008 in all Spain). Residents need to be registered in order to obtain the benefits in the municipality, such as the right to receive municipality services, use the amenities or receive health support. The database discriminates residents by origin, so we extracted those British and Germans older than 55 years by year. This provides a measure of the flow of British and Germans retirees arriving to each municipalities in Alicante during the period 1988-2008. As it is a flow, we include it without any transformation. The profile could be seen in Figure G explained before.

As a measure of *relative income* we have used harmonized measures of the total GDP per capita in constant terms of the three countries. In the case of Germany and Spain, both are measured in euros but the British total income needed to be normalized into euros using the exchange rate. It has been calculated starting from the GDP in constant pounds. Relative income is defined as the ratio between the income per capita in the original country out of the Spanish one. Figure 2 shows the evolution of the two measures together with the relative ratio between German and British real income.

*Exchange rates* are computed using the direct exchange rate between the British Pound and the German Mark with the peseta until 1999. From that time, the exchange rate is between the euro for the former and two for the latter<sup>4</sup>. They have been calculated using the original data from a German historic database (<http://triacom.com/archive>). The both shapes are shown in Figure 3.

The measure of the differences in *purchasing capacity* is made using the CPI series in the three countries. A common index in the same bases is estimated in order to allow us to compare the evolution of consumption goods purchasing capacity in the three countries and compute this variable as a ratio between Alicante CPI and the origin countries' CPI. We expect to capture the living cost incentives by the difference in the cost of living changes<sup>5</sup>. The base year of the index is 2005, so we fixed the value 1 for this variable at that year and during the rest of period the measure follows how the price indices evolve differently on a comparison basis reflecting the evolution of the cross purchasing capacity among economies.

To capture the impact of *interest rates differences*, the 10 year bonds rate of banks for the three countries (Germany, U.K and Spain) is used from data provided by the Bank of Spain (<http://www.bde.es>). Then, the ratio between the UK or German rates from the Spanish rate is

---

<sup>4</sup> Which is, in fact, the bilateral exchange rate fixed by the euro between the German and Spanish currency

<sup>5</sup> We also recognize that the CPI used also are not homogeneous due to differences in the internal structure of the consumption model in UK, Germany and Spain. However, there is not another source of prices we could use for the entire period., The Harmonize Price Index does not contains data for UK and is only available from 1997.

computed to reach the measure. It shows the incentive to capital mobility and governs the investment decisions. Figure 5 shows the shape of these variables.

Vacancies are not registered in the Spanish statistics. In order to approach the vacancy behavior, it could be considered that strong flow of demand increase prices and incentive the developers to start new construction. Then, a proxy for vacancies could be reached through the ratio between starts and completed<sup>6</sup>, which gives an idea of the changes into the vacancies stock but, unfortunately, nothing is known about the number of houses pending to be sold and, then, the existence of an 'excess' construction. Start and completed units statistics come from the Spanish Ministry of Housing (<http://www.mviv.es>). Figure 6 show this variable.

Lastly, *Capital gains* are computed using the housing prices of Alicante province. The definition we use is the same as in Meen (1997), i.e. the percentage increase in housing prices annually. Then:

$$cg_t = \left[ \frac{\Delta p h_t}{p h_{t-1}} \right] * 100 \quad (9)$$

### Empirical exercise

The model (8) is fitted in a context of stochastic relationships using regression techniques on a dynamic data base. The expression adopts a semilog functional form as follow:

$$\ln P_{ht} = \alpha_1 + \gamma_1 [\ln IR_k]_t + \gamma_2 [y_{ek}/y_s]_t + \gamma_3 [Exr_k]_t + \gamma_4 [CPI_{ek}/CPI_1]_t + \gamma_5 Hcg_{kt} + \gamma_6 Irp_{kt} - \alpha_5 (\Delta h)_t + \mu_t \quad (10)$$

Being  $k$ = origin nationalities,  $k=1,2, \dots$  Where  $k=1=UK$  and  $i=2=Germany$   
 With  $\beta_2, \beta_5$  and  $\beta_6 > 0$ ; and  $\beta_3, \beta_4, \beta_6$  and  $\beta_7 < 0$

It is applied in two separate models for Britons and Germans. Regarding the time structure of the data, stationary test are conducted on every variable (table 2) finding that all variables are integrated or order one and only vacancies are stationary.

We also take into account what we knew from REVICVAL about what variables should be endogenously determined and which not regarding the retiree reactions to home purchases. We consider that vacancies and capital gains are exogenous but others are endogeneously determined into the model. This is because the retiree answer that they are not attracted for the capital gains obtained selling the house they buy but also for the attractiveness to live on them, what means that there is no direct incentive from house revaluation to take the purchase decision. In fact, they choose the cheaper house along the territory subject to the tastes conditions, and availability and relative low purchase capacity for other goods. Vacancies are exogenous in this model. Then, capital gains are introduced into the model in difference form as exogenous variable as well as vacancies at levels.

<sup>6</sup> The inventories theory ( Maisel, 1963) maintain that those houses in construction are part of the vacancies

<sup>9</sup> In all notation, we have named this variable as  $Irk$ , We say  $R55$  in order to fix that the flow of migrants used are those older than 55 years, what it is supposed they are retired or pre-retired.

Cointegration test are also estimated in order to deep on the time relationships existing among the variables included into the model. Two cointegrated relationship are found among the independent variables real housing prices (in logs, LPHR)), relative income ratio (INC), flow of retiree migrants (in logs, LR55)<sup>9</sup>), relative long term interest rates (IRP), relative purchase capacity (PC) and the exchange rate (EXR). Those results condition the framework method to be used to fit the model. A Vector Correction model is defined as follow:

$$\Delta P_{h_t} = \Gamma[\Omega_{t-1}] + \Theta[\Sigma(\Delta\Omega_{t-i})] + \Psi[Z_t] + \varepsilon_t \quad (11)$$

Where:

$[\Omega_{t-1}]$  a matrix of the independent variables defined before, lagged one period. It constitutes the long term relationships with permanent effects on dependent variable and capture the permanent impact on changes on housing prices in Alicante.

$\Sigma(\Delta\Omega_{t-i})$  a matrix with the changes on independent variables lagged i periods. It represents the short run convergence to the equilibrium

$Z_t$  is a matrix of exogenous variables, including differences on capital gains and vacancies.

$\Theta$ ,  $\Psi$ , and  $\Gamma$ , are the vectors of parameters to be estimated

The model is checking the impact of the retiree migration presence on the housing prices relative to the province. As explained before, the arrival of this migration flow, with higher level of income and wealth, could impact the housing market equilibrium, increasing prices locally. We conduct this exercise discriminating between the two nationalities to check for differences. Then, we fit the model separately for Britons and Germans, estimating the impact on housing prices.

Once the estimations are obtained (Tables 3 ), the representation of the long term equilibrium are also calculated (Figures 7 for German model and figure 8 for Britons model) in order to observe the time pattern affecting housing prices in Alicante. Once the influence are isolated, an impulse-response effects to forecast the impact of a shift in main long term determinants are also estimated in both models (figures 9 and 10).

## **Results and discussion**

Both models show the existence of two cointegration relationships, one governed by prices (suggesting the combination of fundamentals demand for housing market equilibrium, named Long T1) and the second governed by interest rates (capturing the basis of long term investment decisions, named Long T2). In both cases, the VEC gives back an strong explanatory power (Adjusted R2=0.52 in the case of Germans and Adj R2= 0.63 in the case of Britons model) and statistically significant cointegration parameter in the case of the long T1 for Germans and both for Britons. These suggest a first difference among the impact of both migration flows, where Germans are more affected by living services and Britons by both aspects including the financial conditions. Both models show a relative rapid convergence process to the market equilibrium faster in the case of Germans, with a relative low impact of the short run determinants, but slower in the case of Britons who show a statistically significant effect of short run components determining a harder process of convergence due to financial shocks. Finally, in both cases, the changes on capital gains are related to the housing price

acceleration in Alicante with similar weight (parameters are -0.48 and -0.47, both statistically significant). Their sign (negative) shows the decreasing returns of capital contributing to the convergence process.

**- German model**

German models shows statistically significant long term relationship T1, where the only significant variable is the German income and others not included into the model. This suggests that the flow of retiree migrants towards Alicante does not affect to local prices increase as such but the income strongly does it. The impact of the relative income on price acceleration is 0.08. The model does not give any statistically significant relationship between changes on housing prices in Alicante and the second long term equation (T2) but their components are significant as their own, showing such type of independent impact not permanent on prices as a whole. These variables are migration flow (-0.09) and exchange rate (-0.001) with a final positive sign to changes on prices and purchase capacity (0.467), with negative sign and strong significance. In the case of the first two, their final impact is close to zero (0.008 and 0.00007), showing that the flow of migrants could have a very small impact on the housing prices change and exchange rates none, probably more relevant before 1999 which was the year when both currencies (German mark and Spanish peseta) entered into the euro. The close to zero and significant coefficient of exchange rate could suggest how the impact of the EMU integration has affected to the German investment on Spanish housing market, possibly eliminating the purchase capacity difference (for houses). These could explain, as the model seems to suggest, the evolution of the flow of migrants due to both variables show a common long term swing (cointegration vector- T2). Purchase capacity (PC) exhibit a negative impact on house prices changes apparently without permanent effect on housing prices. The sign and significance of the parameters in the long term relationships seem to explain how there is a reduction of Germans flow of retiree migrant at the same time that exchange rates become constant and the purchase capacity in Alicante falls (increasing PC means that Alicante price index rise faster than German price index, then reducing the purchase capacity of foreign income for Spanish goods), at each unitary change of interest rates difference.

The German model also shows any short run relationship, meaning with it that there no exist influences affecting the equilibrium from the short run perspective.

Finally, the proxy for vacancies is significant and positive related to housing prices change. The sign, contrary to the expected, does not seem to show the traditional equilibrium of the market (the larger the vacancies the lower the house price increase). On the contrary, it seems to suggest that there is a price incentive to house investment (more starts than completions) in presence of the German retirees and their economic characteristics, capturing the price incentive to house-building when Germans are part of the demand. The estimated parameter is small, 0.021, suggesting that an increase in 1% on vacancies is related with an increase of 0.021% of housing prices.

Representing the convergence process is useful to understand the results. Figure 7 shows the main and secondary long term relationships convergence to the equilibrium. Both shows strong positive correlation and rapid convergence to the equilibrium.

Some forecast exercise is done estimating the impulse-response answer based on the VEC result. Figure 9<sup>10</sup> shows housing price reactions in Alicante in presence of innovations in any of the long term determinants included into the model. Regarding the retiree flow of migrants (LR55), an increase of 1% on migration have a positive impact on the house price acceleration in Alicante starting smoothly in the second period after the shock and increasing during all period without convergence. It surpasses the 0.01% of reaction from the 9<sup>th</sup> future period. Interest rates differences and income are the components with stronger impacts on housing prices increase meanwhile purchase capacity and exchange rate has no or negative impact.

#### - **British model**

British model shows many differences with the German model results comment before. Firstly, their convergence coefficient shows significant parameter for both long term relationships and lower convergence power than in the German case (beta for Long T-1 = -0.1 and for Long T-2 = -0.04). The significant of two cointegration vectors means that both contribute to the price equilibrium with different dynamism. Regarding the Long T-1, the value of the estimated parameters show they strongly determine the price dynamism, with significant coefficients in the income (positive) and also in the purchase capacity and exchange rates (negative). The former shows robust and inelastic reaction (0.65 = -6.28\*-.01) but the latter both shows very robust and elastic reactions (-2.69 and -2.3), suggesting that both play a role diminishing the housing price growth meanwhile relative income flow increase, at one unit of price. This equation does not show as significant the British flow of migration which suggests that the flow of retiree migrants is not large enough to affect the housing prices changes but the rest of long term determinant does.

The long term relation T-1 explain that real prices in Alicante are related to a decreasing UK income relative with the Alicante income, but with an increase on the exchange rate (which is the measure of purchase capacity of the income in pounds) and an increase on general purchase capacity due to the relative evolution of price index in both countries (the ratio between Spanish CPI and British CPI diminish showing a relative higher purchase capacity of consumption of Spanish goods). These results seems to support what the British retirees declared about the better purchase capacity of their income in Spain and the impact of the exchange rates on that. An increase of 1% in the relative UK income affects a 0.65% in the increase on prices.

The long term relation T-2 nor show any statistically significant parameter for the flow of British retirees. It captures the long term combination of income, purchase capacity and exchange rate at a one point of interest rates difference. In this case, the signs are the contrary but with strong and significant parameters, highly elastic as explained in the case of T-1. The final effect on housing price changes (-0.69 for relative income, 2.6 for purchase capacity and 2.1 for exchange rate) are similar than in the previous case but with opposite sign.

Representing the trend to the equilibrium (figure 8), the effect on the two long term relations inside the UK model could be seen due to the contrary behaviour of both cointegrated relationships. First relation is the leader driving their impact on housing prices acting the second one, diminishing their strong shock. These seems to suggest that influences coming from the financial variables could slow down the direct effect on housing prices coming from

---

<sup>10</sup> Impulse-response answers are not accumulated in figures 9 and 10

the income level, the attraction of differences on purchase capacity as well as the exchange rate effect.

Another different result is the role of vacancies in the equilibrium. In the UK case, vacancies are not significant suggesting that prices do not send any signal to developers in presence of British retirees, or, in other words, British could be decide to locate in those markets with excess of construction absorbing vacancies units and (or) arriving to those markets where the construction of houses rise due to other reasons.

This interpretation could be supported also by the short terms results. The UK model show short term significant parameters of interest rates differences and exchange rates, so, with those variables related to capital movements. In both cases, the parameters are positive showing a direct relation between them and the house price change. This could be interpreted that an increase in 10 year bond interest rate ratio (UK/Spanish IR) and/or the exchange rate (pounds by euro) accelerate the housing price in Alicante. These sort term reactions could explain how a better conditions in the financial or currency market affecting the purchase capacity of the UK income (for houses as well as for other goods in Spain) make to retirees to take the decision to buy a home in Alicante and migrate.

## **Conclusions**

This paper presents research about retiree migration from Germany and the UK to Alicante, Spain. Based on the results of a primary data base (REVIcVAL), some characteristics of these homebuyers are revealed which suggest their presence in the housing market has important impacts on equilibrium. Retiree migration is concentrating in locations such as the province of Alicante, where they are creating an external shock in the local housing markets. Because their socioeconomic characteristics differ from the residents in the receiving markets, they constitute a strong demand force. They purchase homes with cash upon arrival, which means that local housing markets are receiving flows of capital from outside the country. The decision to move appears to depend on the destination housing market's economic characteristics, the economic differential between origin and destination housing market, and the level of retiree's income. We contrast if their presence in Alicante housing market could segment the markets and the economic reasons moving the retiree to buy homes in their municipalities. We use dynamic time series techniques testing cointegration in an error correction framework. The analysis is conducted separately for British and Germans in order to check their different behavior.

Results show strong evidence Strong evidence about the impact of the retire migration to Alicante on housing prices as a permanent demand, with more volatility in the convergence process in the case of Britons rather than in the Germans, supporting the theory of housing markets receive permanent impact on prices but with distinct intensity depending on the nationalities (explanatory variables).

The Germans model shows a significant main long term relationship (markets fundamentals), with highly dependent of income premium, rapid convergence process (coint=-0,023), a long term relationship governed by interest rates (financial reasons) being not significant which suggest that capital movements reasons are not playing any role to intensify the presence of German retirees buying purchasing homes in Alicante. The market adjust is according with the principles in this case, with capital gains play its role and vacancies showing the increase on

starts reacting to prices change and related to the presence of German retirees. There is a high explanatory capacity in this model (Ad R2=0,52).

The model for Britons also shows an high explanatory capacity, AdR2=0.63, with both long term relationship being significant and a bit less speed to reach the convergence (-0.1 and -0.04), suggesting that both groups of determinants, fundamental and finance variables, governing the retiree decisions to buy houses in Alicante. Income, Exchange rates and Purchase capacity are the main determinants of the demand and, then, interest rates. First long term relationship stress housing prices (first equation) and second one balance them on the market. In no one, the flow of retiree migrants seems to affect directly to housing prices but indirectly through the income and purchase capacity, part due to the currency evolution and relative CPI prices. Vacancy has no significant, so, market fits only through prices in presence of British and they do not seem to affect the construction of new units.

The results seem to show a more volatile demand of British rather than the Germans, following other incentives rather than the only housing ones.



## References

- Arcelus, F.Y. and A.F. Meltzer. 1973. The Markets for Housing and Housing Services. *Journal of Money, Credit and Banking* 5 (1): 78-99.
- Bennett, D. G. 1996. Implications of Retirement Development in High-Amenity, Nonmetropolitan Coastal Areas. *Journal of Applied Gerontology* 15: 345-360.
- Buller, H. J. and K. Hoggart. 1994. Les Anglais du Coin. *Etudes Rurales* 135-136: 59-68.
- Casado, M. A. and V. Rodríguez. 2002. La Migración Internacional de Retirados en España: Limitaciones de las Fuentes de Información. *Estudios Geográficos* 63: 533-558.
- Clark, W. A. V. and S. D. Withers. 1999. Changing Jobs and Changing Houses: Mobility Outcomes of Employment Transitions. *Journal of Regional Science* 39 (4): 653-673.
- Coulson, N. E. 1999. Sectoral Sources of Metropolitan Growth. *Regional Science and Urban Economics* 29: 723-743.
- Dougherty and Van Order, 1987
- Eaton, J. and Z. Eckstein. 1997. Cities and Growth: Theory and Evidence from France and Japan. *Regional Science and Urban Economics* 27: 443-474.
- Hanushek, E. A. and J. M. Quigley. 1979. The Dynamics of the Housing Market: A Stock Adjustment Model of Housing Consumption. *Journal of Urban Economics* 6(1): 90-111.
- King, R., A. Warnes and A. M. Williams. 1998. International Retirement Migration in Europe. *International Journal of Population Geography* 4(2):91-111.
- King, R. A. Warnes, A. and A. M. Williams. 2000. *Sunset lives. British Retirement Migration to the Mediterranean*. Berg: Oxford.
- Meen, Geoffrey, 2001, *Modelling Spatial Housing Markets*, Advances in Urban and Regional Economics, Kluwer Academic Publisher, London
- Meen, G. and M. Andrew. 1998. *Modelling Regional House Prices: A Review of the Literature*. Centre for Spatial and Real Estate Economics, University of Reading: Reading.
- Miller, R., R. J. Hy, and C. Romund. 1998. *Economic and Fiscal Impact of In-migrating Retirees on Arkansas' Economy*. University of Arkansas Cooperative Extension Service: Little Rock.
- OECD. 2001. *Reforms for an Ageing Society*. OECD: Paris.
- O'Reilly, K. 2000. *The British on the Costa Del Sol. Trans-National Identities and Local Communities*. Routledge: London.
- Orzechowski, S. and P. Sepielli. 2003. *Net Worth and Asset Ownership of Households: 1998 and 2000*. U.S. Census Bureau, Current Population Reports, Series P70-988, U.S. Government Printing Office: Washington, DC.
- Quigly, J. M. 1997. *The Economics of Housing*, Vols. 1-2. Edward Elgar Publishing. Washington.
- Reeder, R.J. 1998. *Retiree-Attraction Policies for Rural Development*, Agriculture Information Bulletin No. 741. U.S. Department of Agriculture, Economic Research Service: Washington, DC.
- Rodríguez, V. 2004. *La Migración de Jubilados en España*. En Cátedra UNESCO, La inmigración en España, Universidad de Santiago de Compostela, Santiago de Compostela, 225-251.
- Rodríguez, V., G. Fernandez-Mayoralas, and F. Rojo. 1998. European Retirees on the Costa del Sol: A Cross-National Comparison. *International Journal of Population Geography* 4(2): 183-200.
- Serow, W. J. and W. H. Haas III. 1992. Measuring the Economic Impact of Retirement Migration, *Journal of Applied Gerontology* 11: 200-215.
- Skelley, B. D. 2004. Retiree-Attraction Policies: Challenges for Local Governance in Rural Regions. *Public Administration and Management: An Interactive Journal* 9 (3): 212-223.

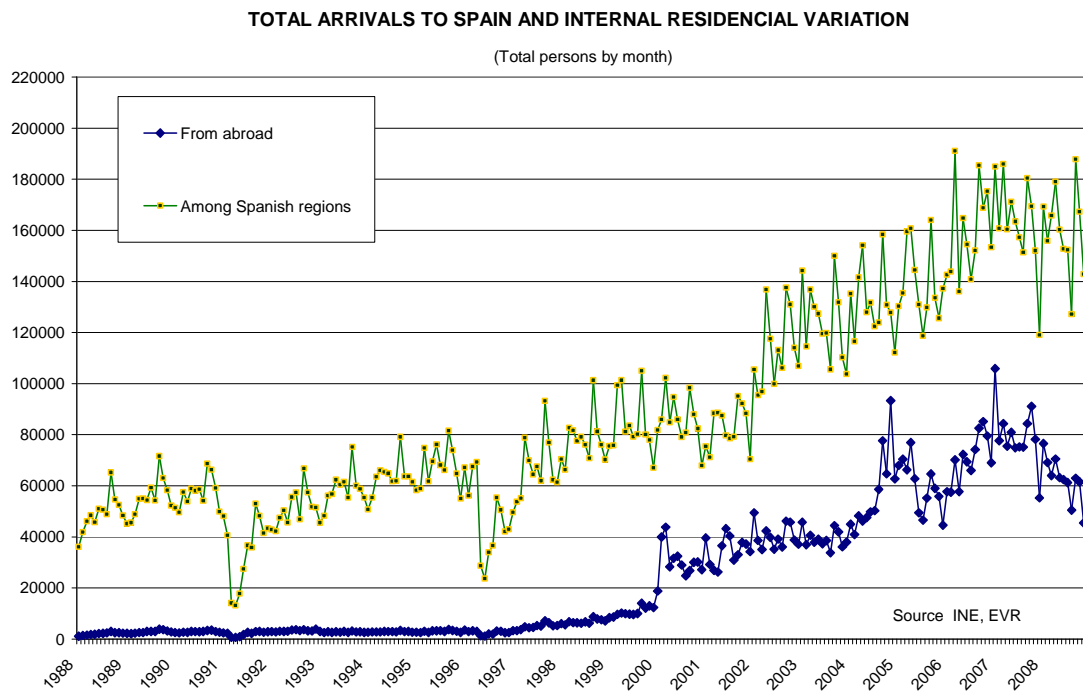
- Smith, L., K. Rosen, and G. Fallis. 1988. Recent Developments in Economic Models of Housing Markets. *Journal of Economic Literature* 26: 33-41.
- Estadística de Variaciones Residenciales. Microdatos. INE. 1988-2004
- Stallmann, J. I., S. C. Deller, and M. Shields. 1999. The Economic and Fiscal Impact of Aging Retirees on a Small Rural Region," *Gerontologist*, 39: 599-610.
- Warnes, A. M. 1991. Migration to and Seasonal residence in Spain of Northern European Elderly People. *European Journal of Gerontology* 1(1):53-82.
- Warnes, A. M. 1994. Permanent and Seasonal International Retirement Migration: The Prospects for Europe. *Netherlands Geographical Studies* 173: 69-81.
- Williams, A., M., R. King, and A. M. Warnes. 1997. A Place in the Sun: International Retirement Migration from Northern to Southern Europe. *European Urban and Regional Studies*. 4(2): 115-134.

**Table A . Foreigner Mobility to and within Spain 1988-2004**

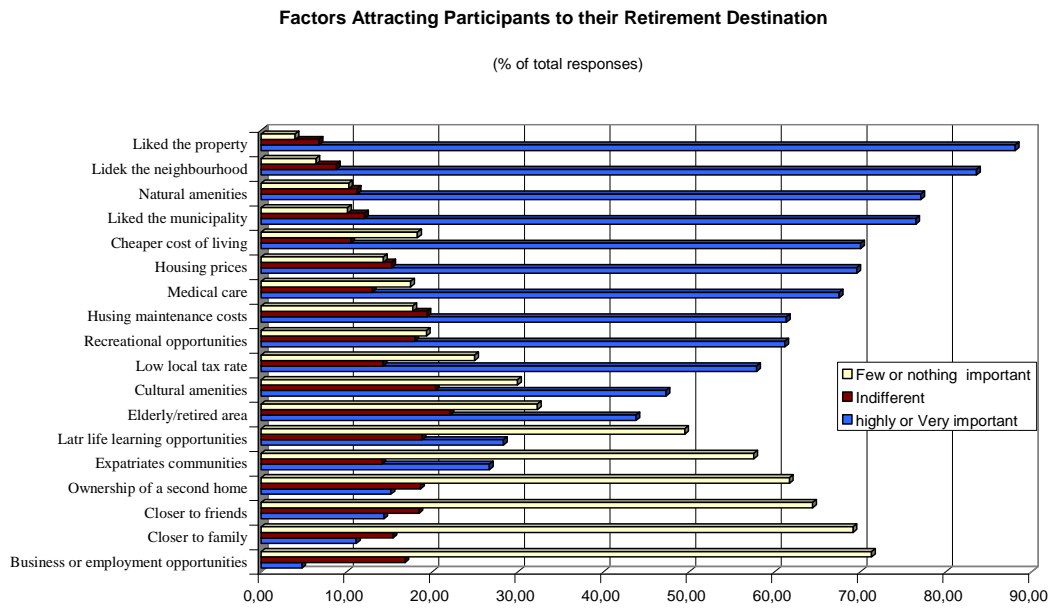
		Residential moves	
		Millions of persons	%
<b>Total</b>	1988-2008	28.67	100.00
	1999-2008	20.70	72.22
<b>Foreigners moving to Spain</b>	1988-2008	6.21	100.00
	1999-2008	5.79	93.12
<b>Internal movements within Spain</b>	1988-2008	22.45	100.00
	1999-2008	14.92	66.4

Source. Estadística de Variaciones Residenciales. Microdata. INE, 1988-2008

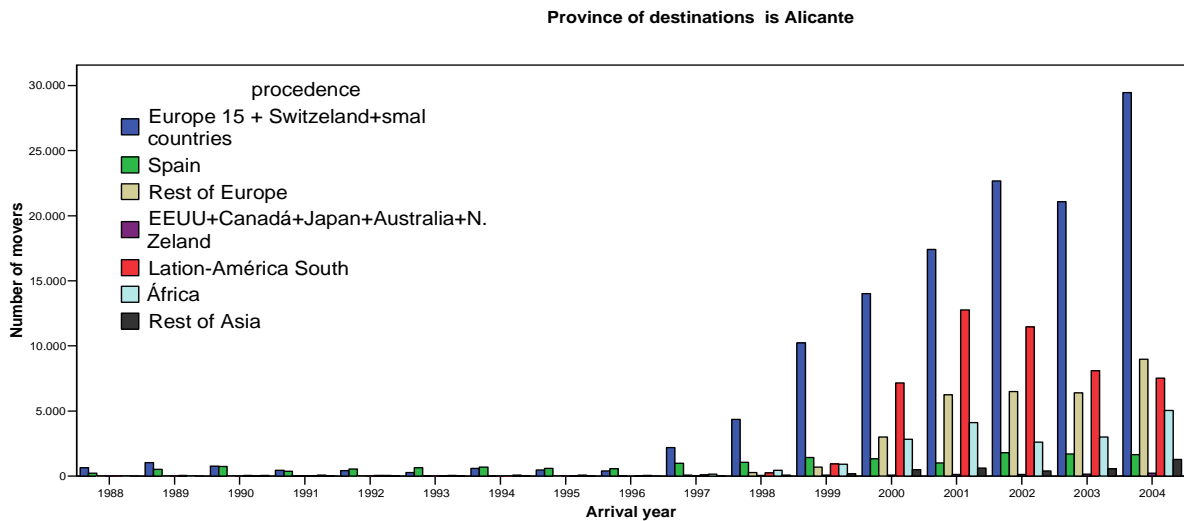
**Figure A**



**Figure B. REVICVAL. Factors Attracting Participants to their Retirement Destination.**

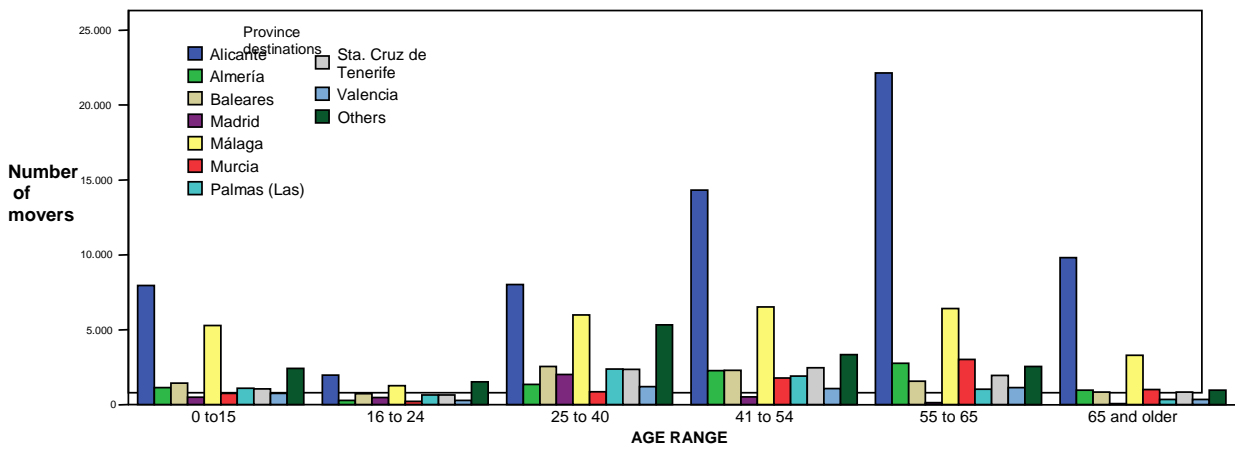


**Figure C.- Immigrants to Alicante Age 55 and Older by Year of Arrival**



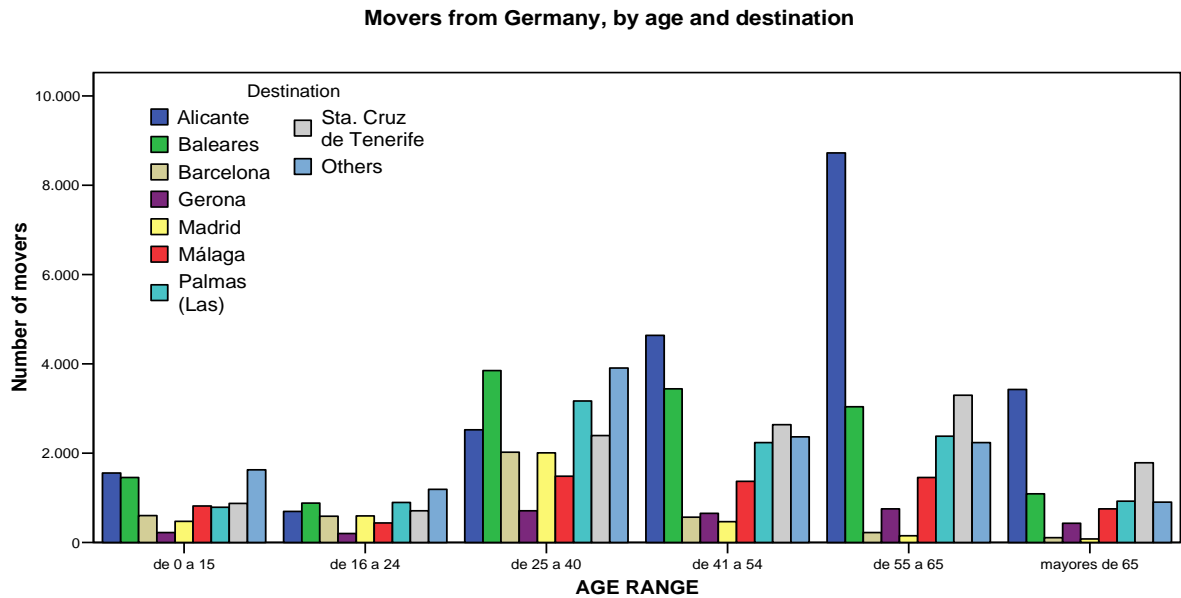
Source. SPANISH STATISTICAL INSTITUTE(INE), Residential Variations Survey (Encuesta de Variaciones Residenciales), microdata 1988-2004.

Figure d. Destination of UK Immigrants to Spain 1998-2004



Source. SPANISH STATISTICAL INSTITUTE(INE), Residential Variations Survey (Encuesta de Variaciones Residenciales), microdata 1988-2004.

Figure E. Destination of German Immigrants to Spain 1998-2004



Source. SPANISH STATISTICAL INSTITUTE(INE), Residential Variations Survey (Encuesta de Variaciones Residenciales), microdata 1988-2004.

Figure F. REVICVAL Participants' Year of Arrival in Spain

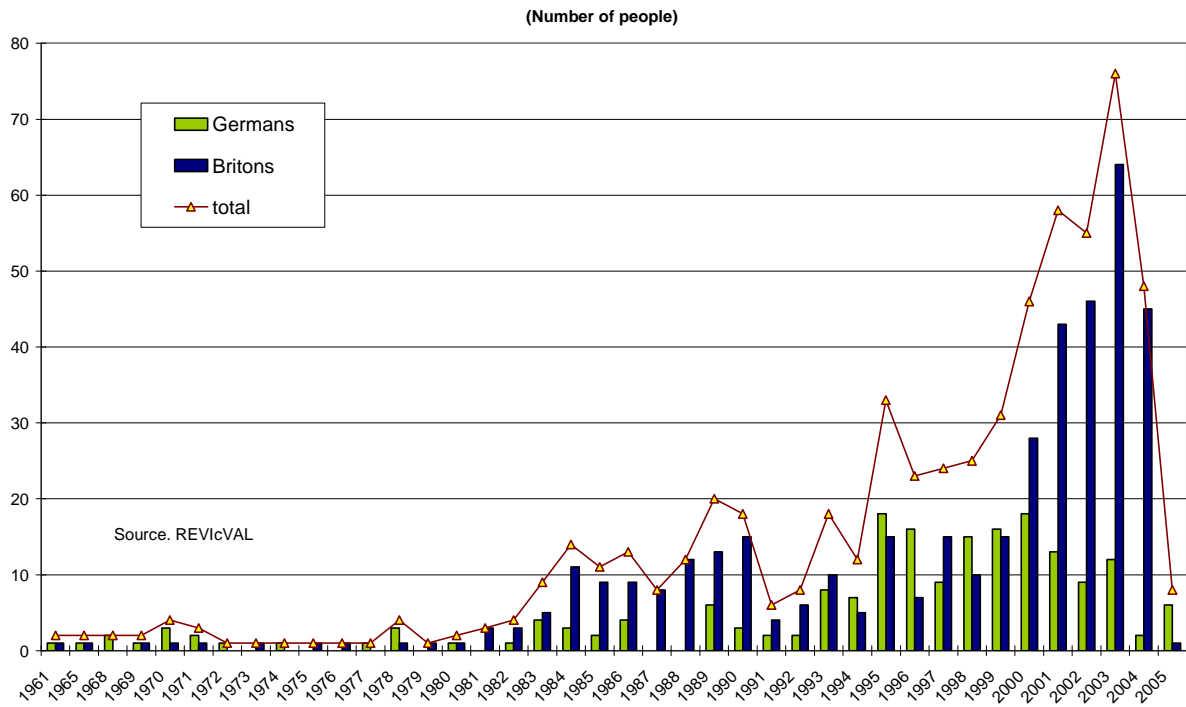
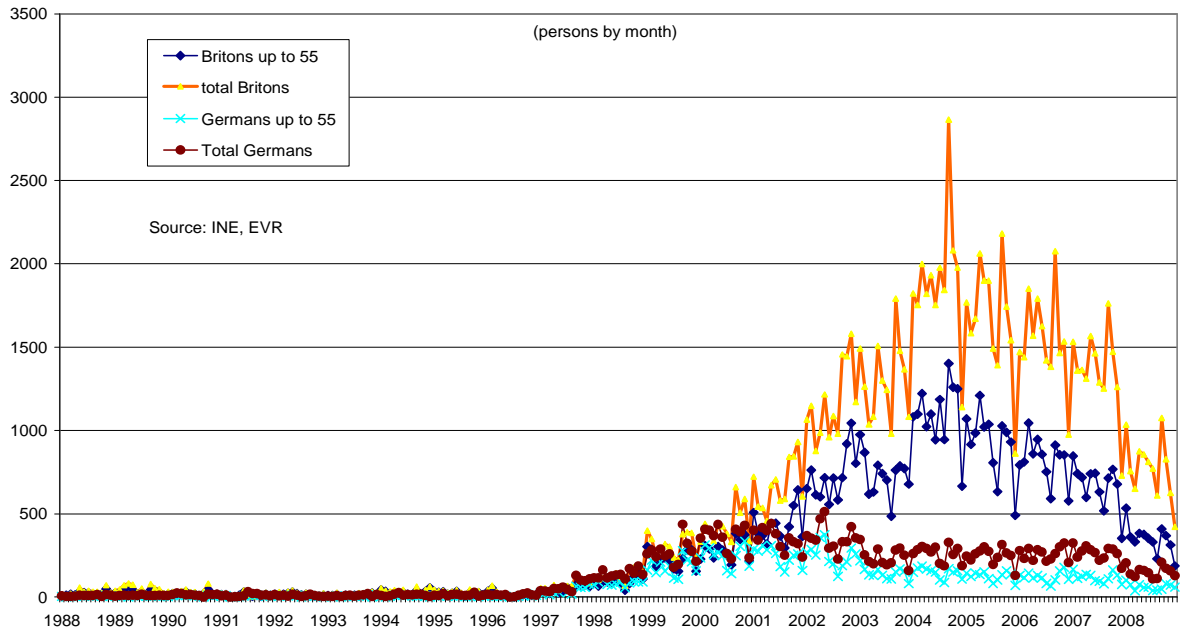


Figure G.

RESIDENTIAL VARIATIONS IN ALICANTE. BRITONS AND GERMANS ARRIVALS TOTAL AND UP FROM 55 YEARS OLD



**Table 1. Variables Used in the Analysis**

Variables		NAME IN THE MODEL
$P_h$	Price per square meter paid for current home. Real terms	PRICE
[IR]	Flow of new retiree migrants arriving to Alicante older than 55 years	MIGRANTS
$[y_e / (y_s)]_t$	Ratio of GDP per capita in real terms from the origin country out of the Spain	INCOME
$Exr_{UK, GE}$	Exchange rate of British Pounds to pesetas and then euros for British retirees; Exchange rate of German Marks to pesetas for German retirees $Exr_{GER} = EXR$ mark/ECU if $t < 1999$ , $Exr = 0$ otherwise	EXCHANGE
$[CPI_e / CPI_t]$	Ratio of CPI in Great Britain or Germany to CPI in Alicante at time of retiree move	CPI
$H_{cg}$	Capital gains in Alicante housing market	GAIN
$Irp_t = Mire_t - Mir_t$	Difference between mortgage interest rate in Great Britain or Germany versus the rate in Alicante at each time	INTEREST
$\Delta h = \text{start/completed units}$	Vacancy rate in the Alicante market at the time the retiree moved – housing starts?	VACANCIES

**Figure 1.- Housing prices in Alicante province**

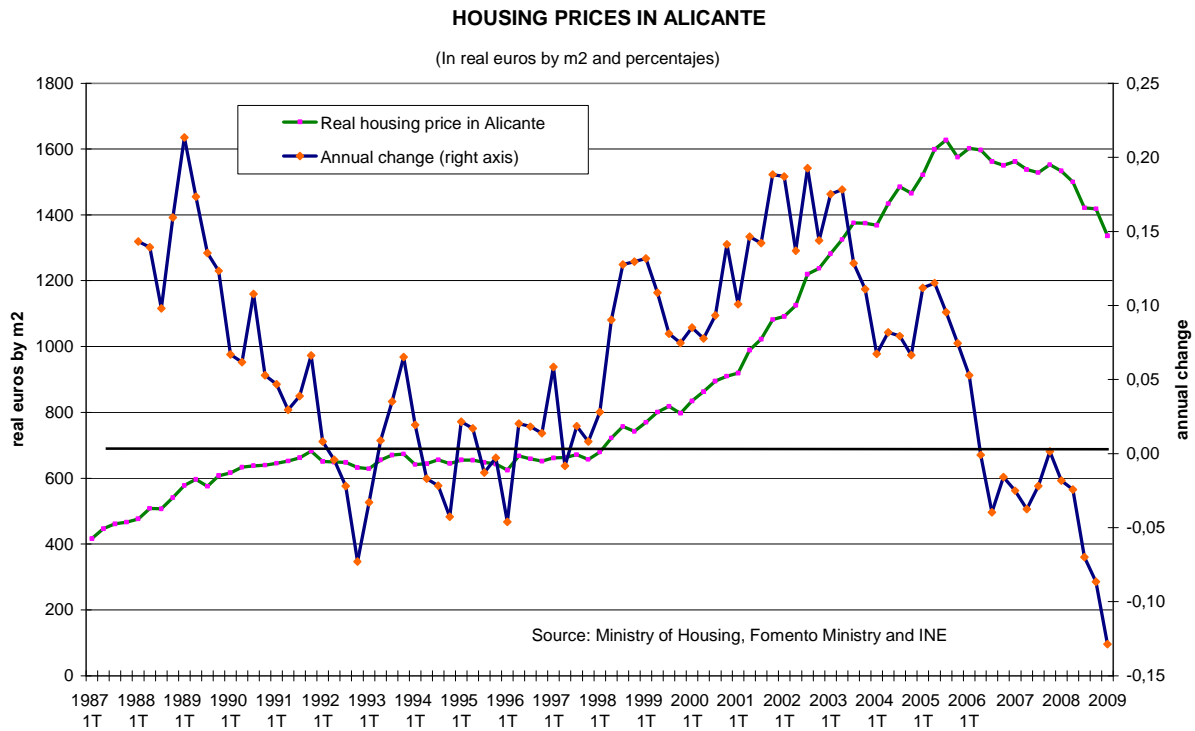


Figure 2.- Relative income measure

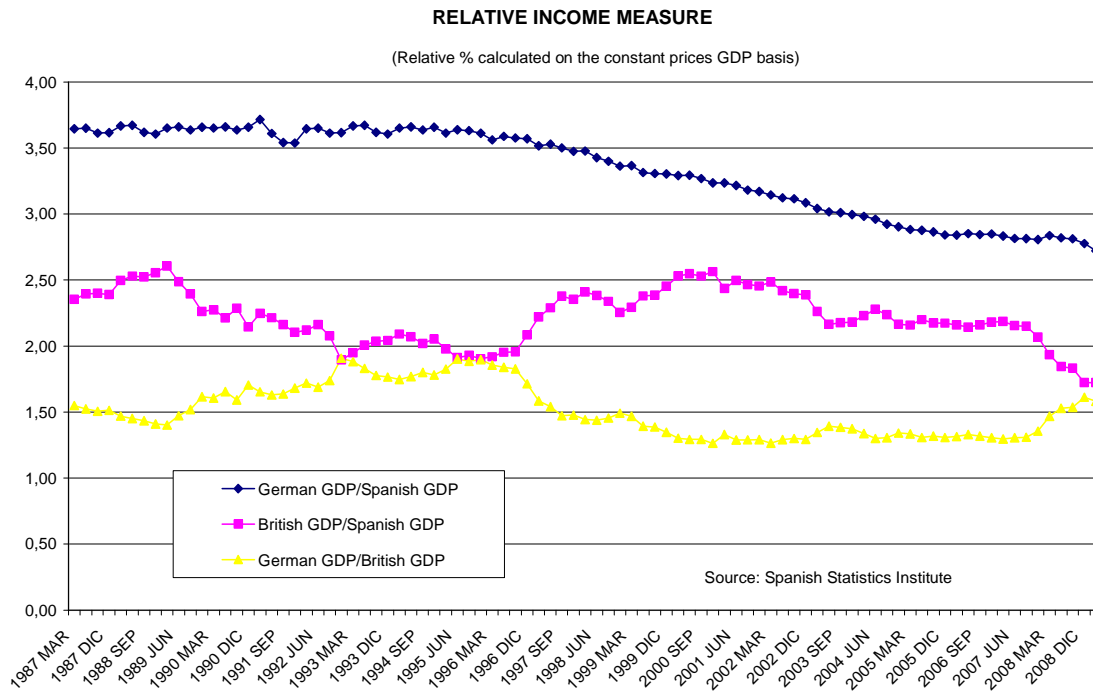


Figure 3.- Exchange rates relative to the euro

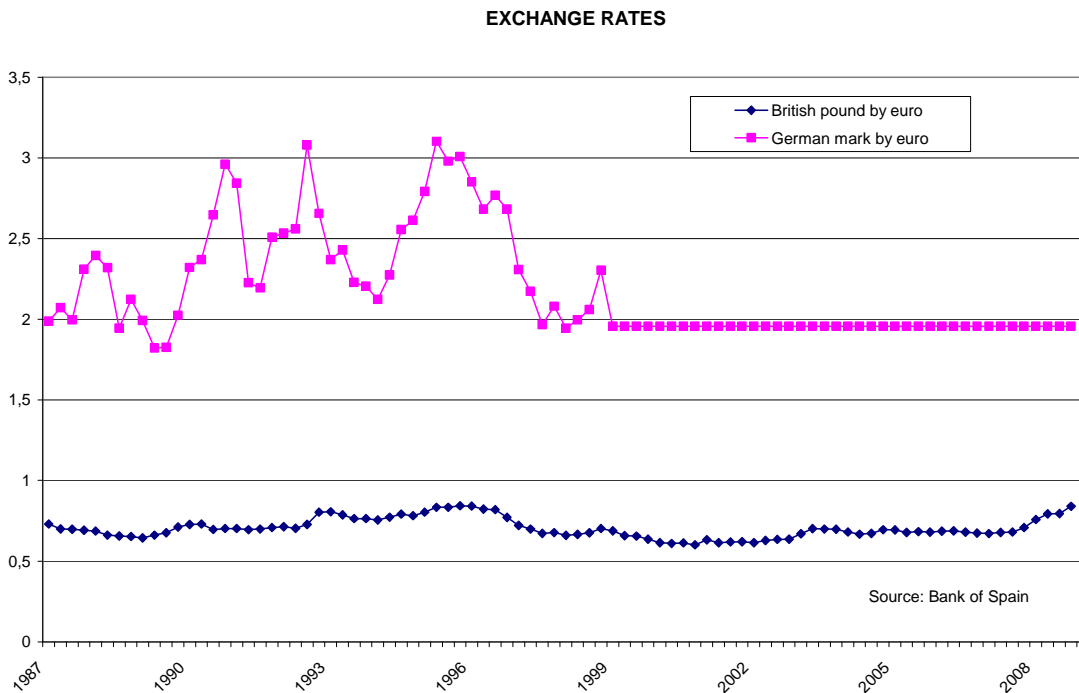




Figure 4.- Relative consumer price index relationship

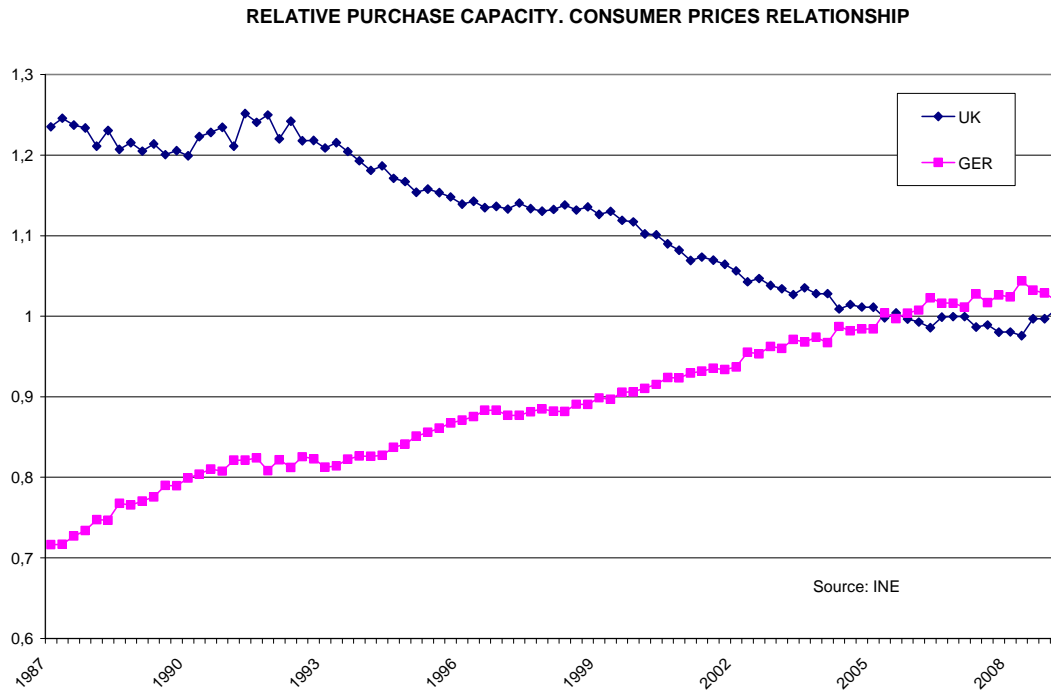


Figure 5.- Long term interest rates differences

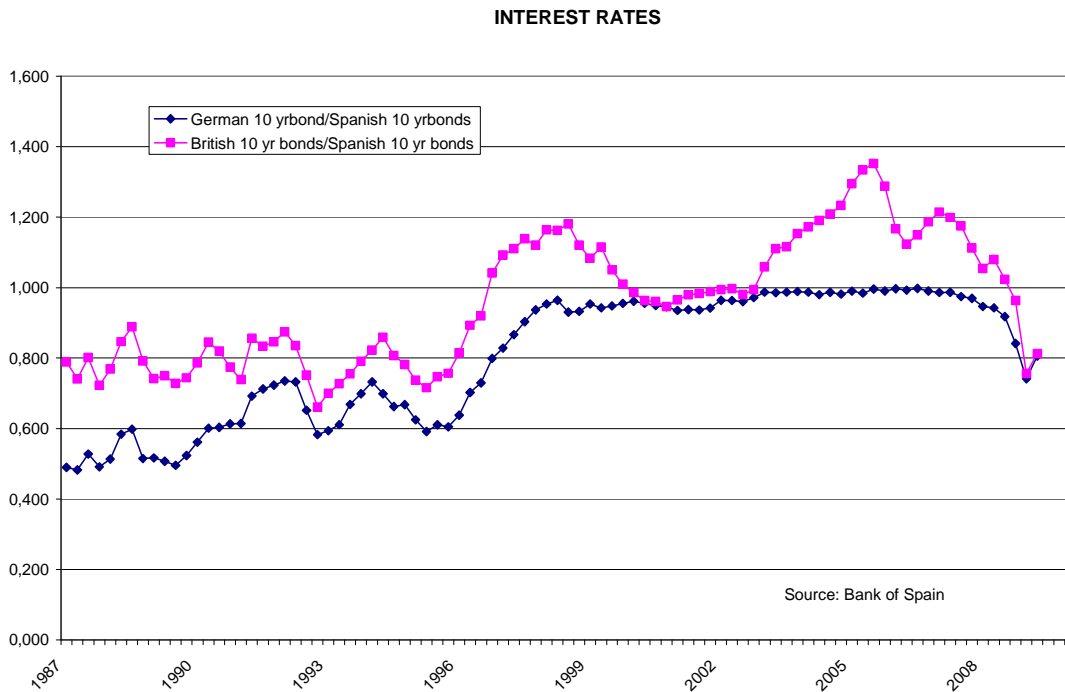
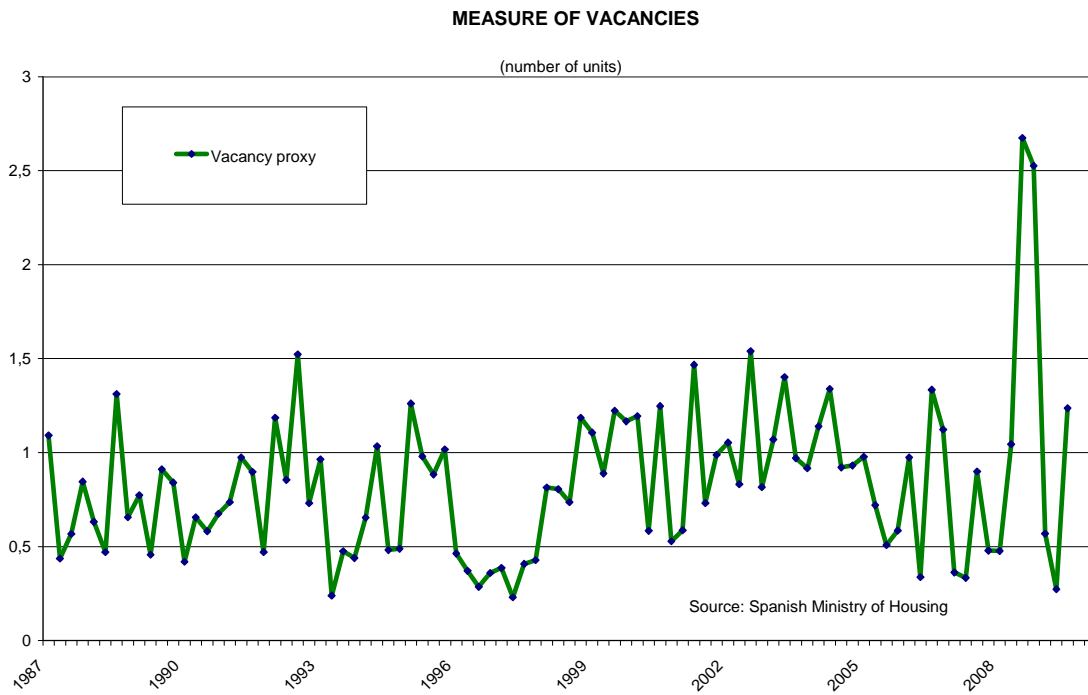


Figure 6.- A measure of vacancies for Alicante housing market



**Table 3.- VEC results for retirees impact on housing market equilibrium in Alicante province**

VEC FRAMEWORK  
semilog definition

**Dependent variable: D(lphr)**  
**GERMAN RETIREE'S**  
**EQUATION**

Variables	Long term relationships with permanent effects			
	Long T-1		Long t-2	
	$\beta$	<i>t</i>	$\beta$	<i>t</i>
LPHR(-1)	1,000		0,000	
IRP_GER(-1)	0,000		1,000	
LR55_GER(-1)	0,134	[0,496]	<b>-0,092</b>	<b>[-6,017]</b>
GER_INC(-1)	<b>-3,632</b>	<b>[-3,049]</b>	0,089	[1,3190]
PC_GER(-1)	4,945	[1,3094]	<b>0,467</b>	<b>[2,1854]</b>
EXR_GER(-1)	-0,002	[-0,3004]	<b>-0,001</b>	<b>[-2,627]</b>
C	<b>-4,780</b>		<b>-1,088</b>	
<b>Long term convergence coef.</b>	<b>-0,023</b>	<b>[-4,268]</b>	-0,091	[-1,1582]

**Dependent variable: D(lphr)**  
**BRITISH RETIREE'S**  
**EQUATION**

Variables	Long term relationships with permanent effects			
	Long T-1		Long t-2	
	$\beta$	<i>t</i>	$\beta$	<i>t</i>
LPHR(-1)	1,00		0,00	
IRP_UK(-1)	0,00		1,00	
UK_INC(-1)	<b>-6,28</b>	<b>[-3,203]</b>	<b>18,82</b>	<b>[3,8472]</b>
LR55_UK(-1)	0,27	[0,6130]	-1,09	[-1,0007]
EXR_UK(-1)	<b>22,04</b>	<b>[5,1212]</b>	<b>-58,47</b>	<b>[-5,445]</b>
PC_UK(-1)	<b>25,78</b>	<b>[3,0670]</b>	<b>-70,52</b>	<b>[-3,3623]</b>
C	-31,57		62,19	
<b>Long term convergence coef.</b>	<b>-0,10</b>	<b>[-3,266]</b>	<b>-0,04</b>	<b>[-2,866]</b>

Short term relationships with temporary effects

D(LPHR(-1))	0,018	[0,1984]
<b>D(LPHR(-2))</b>	<b>-0,200</b>	<b>[-2,059]</b>
D(IRP_GER(-1))	0,136	[1,3624]
D(IRP_GER(-2))	0,031	[0,2671]
D(LR55_GER(-1))	0,008	[0,8587]
D(LR55_GER(-2))	0,004	[0,5691]
D(GER_INC(-1))	0,037	[0,7947]
D(GER_INC(-2))	-0,063	[-1,440]
D(PC_GER(-1))	0,004	[0,0132]
D(PC_GER(-2))	0,388	[1,2843]
D(EXR_GER(-1))	0,000	[0,3650]
D(EXR_GER(-2))	0,000	[0,1722]
C	-0,001	[-0,1049]
exogenous effects		
<b>VAC1</b>	<b>0,021</b>	<b>[2,5092]</b>
<b>D(HCG)</b>	<b>-0,484</b>	<b>[-6,6467]</b>

tests:

R-squared	0,62
Adj,R-squared	0,52
Sumsq,resides	0,02
S,E,equation	0,02
F-statistic	6,21
Loglikelihood	204,55
Determinant resid covariance (dofadj,)	0,00
Determinant resid covariance	0,00
Loglikelihood	517,87

Short term relationships with temporary effects

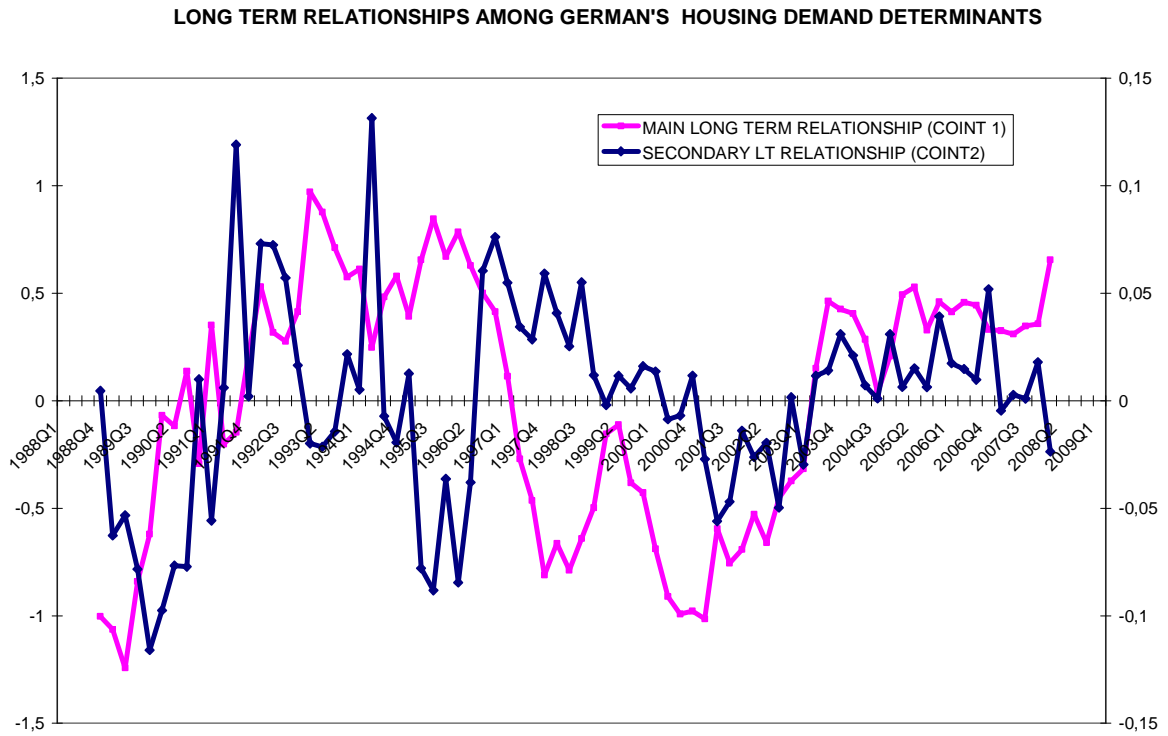
D(LPHR(-1))	-0,02	[-0,2368]
<b>D(LPHR(-2))</b>	<b>-0,19</b>	<b>[-2,264]</b>
<b>D(IRP_UK(-1))</b>	<b>0,12</b>	<b>[2,1602]</b>
D(IRP_UK(-2))	0,11	[1,8919]
D(UK_INC(-1))	-0,07	[-0,8360]
D(UK_INC(-2))	0,00	[0,0500]
D(LR55_UK(-1))	0,00	[0,0579]
D(LR55_UK(-2))	0,01	[1,0903]
D(EXR_UK(-1))	-0,11	[-0,7644]
<b>D(EXR_UK(-2))</b>	<b>0,30</b>	<b>[2,1981]</b>
D(PC_UK(-1))	-0,22	[-0,853]
D(PC_UK(-2))	0,05	[0,2024]
C	0,01	[1,2143]
exogenous effects		
VAC1	0,01	[0,8826]
<b>D(HCG)</b>	<b>-0,47</b>	<b>[-7,3328]</b>

tests:

R-squared	0,71
Adj,R-squared	0,63
Sumsq,resids	0,02
S,E,equation	0,02
F-statistic	9,19
Loglikelihood	214,70
Determinant resid covariance (dofadj,)	0,00
Determinant resid covariance	0,00
Loglikelihood	1032,32

- Number of lags chosen to those minimizing the Akaike criteria, in two lags
- Bold numbers means a level of significant at 0.01

**Figure 7.- Long term determinants of housing prices in German model**



**Figure 8.- Long term determinants of housing prices in British model**

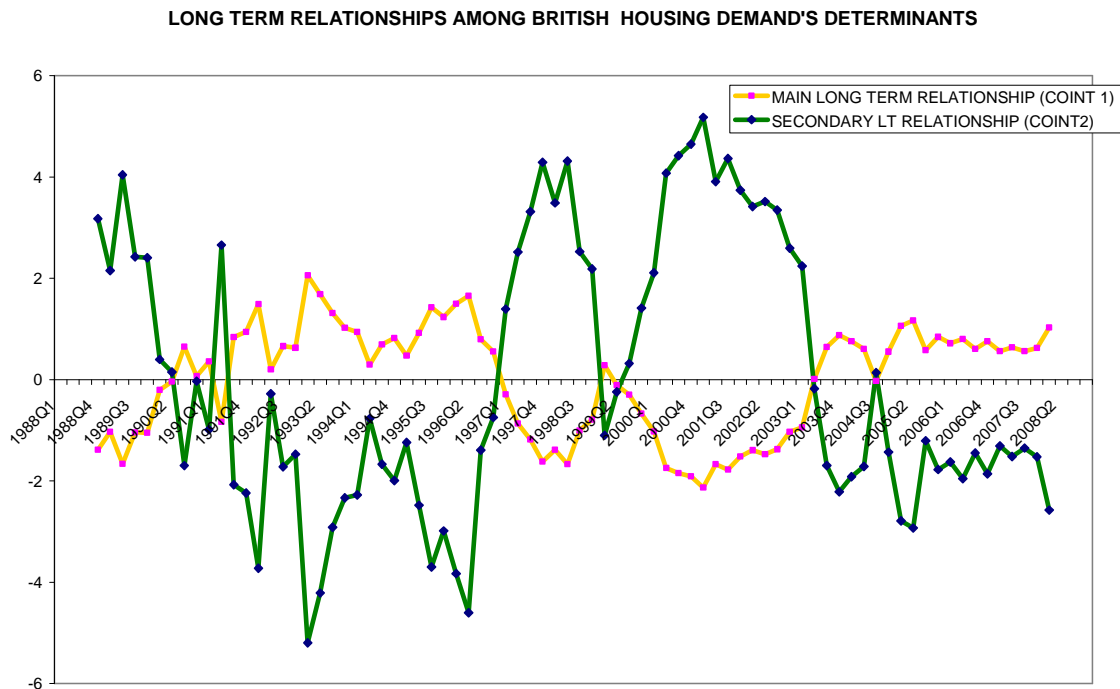


Figure 9.- Impulse-response effects on housing prices of the retiree migrants presence. German retirees' model

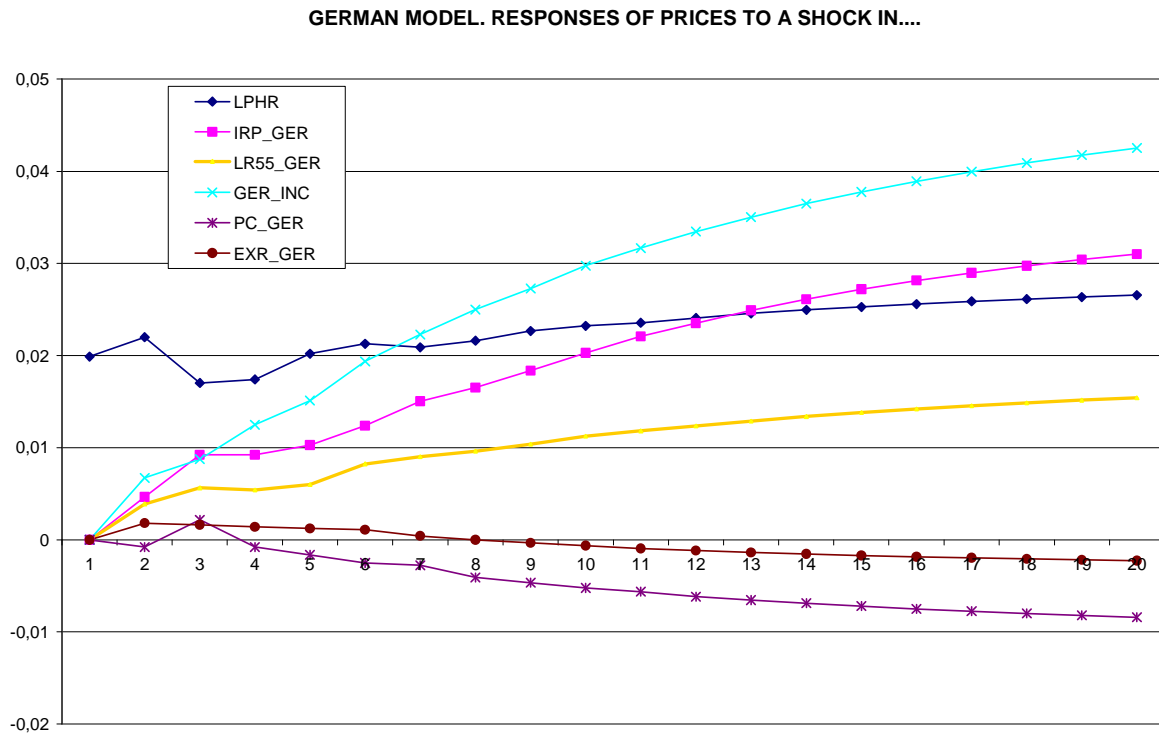
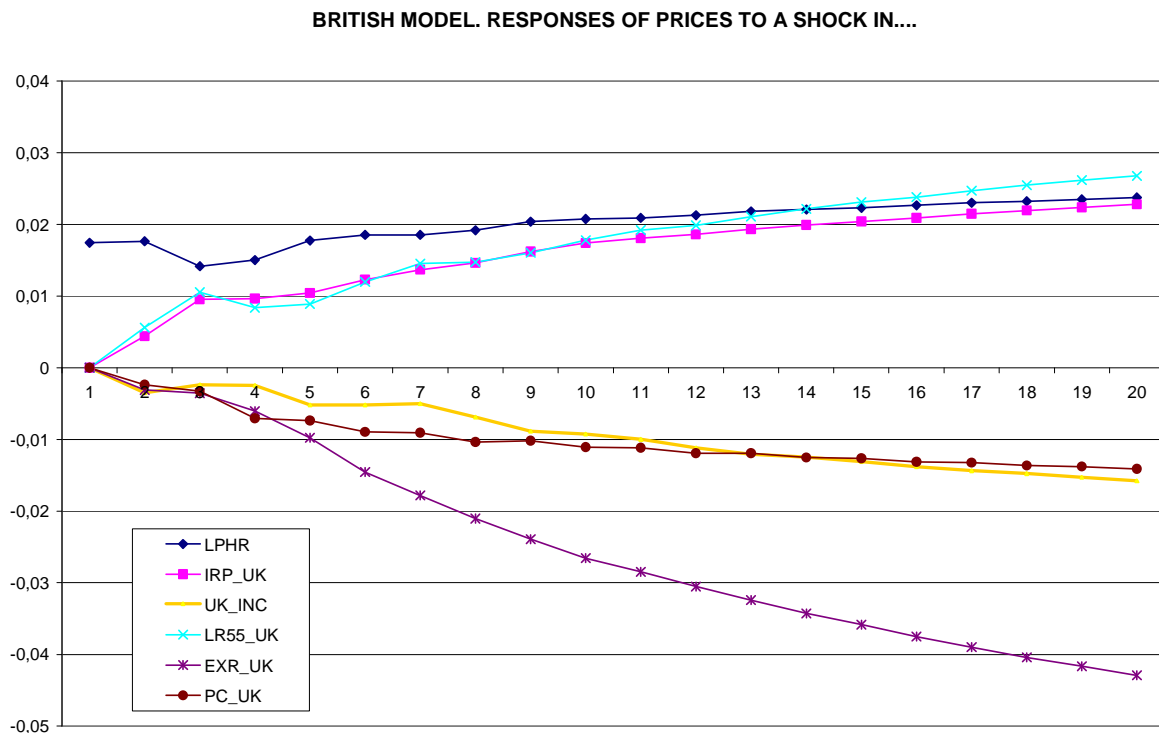


Figure 10.- Impulse-response effects on housing prices of the retiree migrants presence. British retiree's model



## **Annex. Details about REVicVAL project**

The REVicVAL project is exploring the role of European retirees in the housing market in the Valencia Community. This fundamental objective determines various aspects related to the geographical boundaries of the study, the population groups involved, and the housing market components analysed. REVicVAL tried to identify the relationships between retired European immigrants and the housing market. The project uses a questionnaire, a number of in-depth interviews, and several focus groups to obtain this data. The questionnaire was composed of 52 questions grouped together in several thematic blocks. In the main block dedicated to property, the aim was to obtain quantitative data on the retiree's housing (size, design, year purchased, price paid, etc.) through which the economic mechanisms underlying the operation of the retiree housing market can be extrapolated. Other qualitative data collected include opinions about what attracted them to the area and their specific home and their perception about their income relative to the cost of living. Regarding the mechanisms that determine retiree mobility across Europe and the movement of capital, it was considered important to gather information about how the residents financed the purchase of their Spanish homes. The questionnaire also collected sociodemographic data (age, gender, educational level, nationality, income, etc.).

The geographical context in which the research is developed is the Alicante province, Valencia region of Spain, where 16% of the population of 1.65 million is foreigners; two out of three of these foreigners are over 55 years old and nine out of ten are Europeans (Census, 2001). The most recent official data make it possible to identify the dominant national retiree groups. Britons and Germans, in this order, are the national groups with greater numbers in the Alicante province and its municipalities. The research team therefore decided to focus its work on Britons and Germans because they comprise the largest groups with enough numbers and economic power to have a significant impact on the housing market in Alicante.

The distribution of European retirees in Alicante is not uniform and tends to concentrate in specific areas inside the province, the northern and southern coastal communities (Casado and Rodríguez 2002; Rodríguez 2004). Taking this into account, and considering the lack of accurate knowledge about the universe from which the sample should be drawn (foreign resident retirees), the questionnaire was distributed in Alicante to a proportional sample according to town size (municipalities with less than 2,000 inhabitants, those with 2,001 to 10,000 inhabitants, and those with 10,001 inhabitants or more), their coastal or inland location, and north/south location within the province based on proportions found in the 2001 Census. Sex and age were selected as demographic criteria for further stratification.

The 636 homeowners who responded demonstrated the same accelerated immigration pattern as the general population (Figure 5). Their average age is 65, with the British a bit younger (Table 3). Most have attained a secondary or university education. Average annual household income falls between 12,000 to 36,000 euros a year, with the British reporting slightly lower incomes. Most British retirees receive income from both public and private pensions whereas most Germans report only a public pension. This income is sufficient to live comfortably in Spain according to the retirees; however, 28.3% of the British say it would be difficult to impossible to live in the UK on their income (Table 4).

The retirees purchase a home in Spain close to the time they move (Figure 6) at the prices shown in Figure 7. Neighbourhood and economic characteristics such as housing prices and cost of living affected their housing decision (Figure 8). The great majority of retirees purchased their

homes with cash, which means an extremely intensive flow of capital into the market from other European housing or financial markets (Figure 9). The full estimated flow of capital into the Alicante housing market due to the survey participants' purchases of housing is represented in Figure 10. The tremendous increase in capital inflow during recent years is a signal of a shock to the housing markets in those areas receiving retirees.